# Natura Impact Statement

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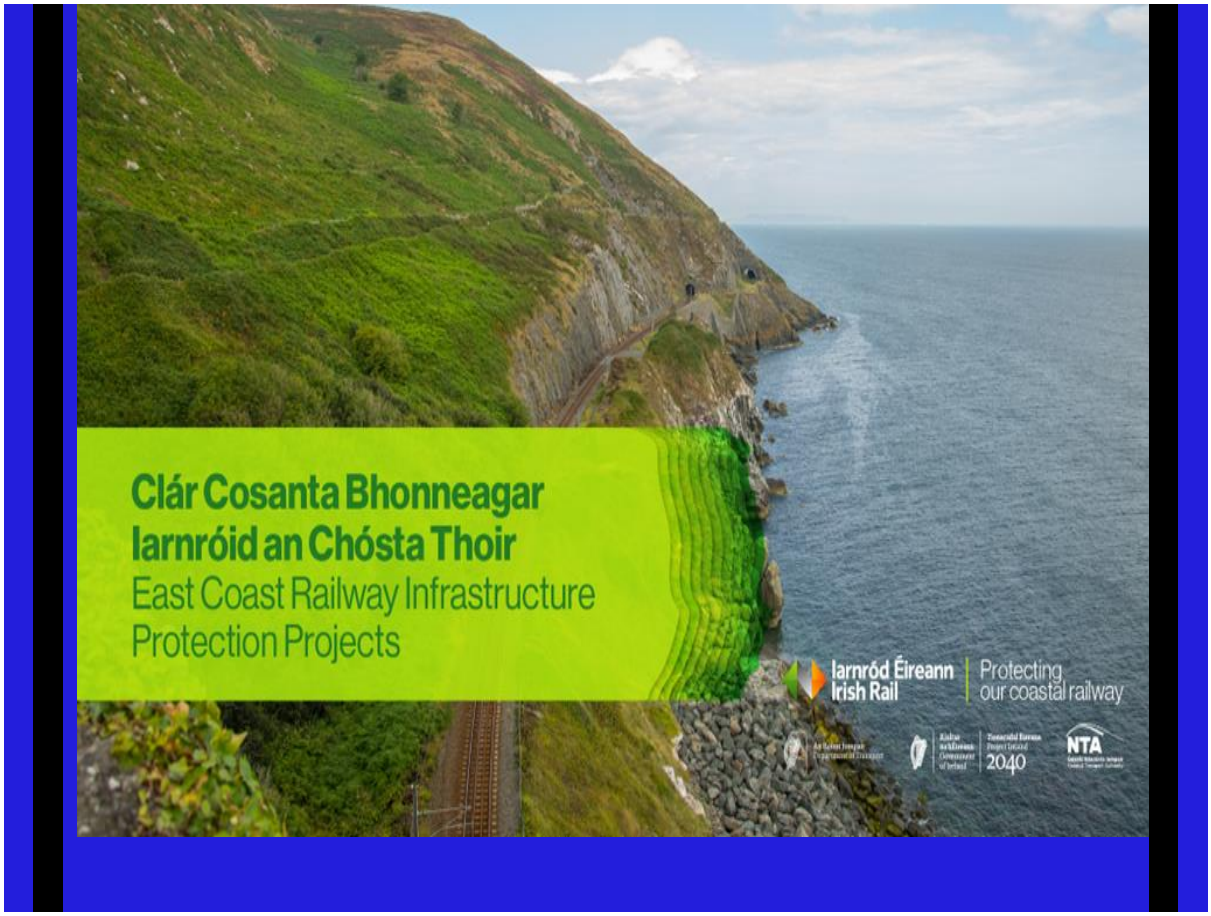
Iarnród Éireann

East Coast Railway Infrastructure Protection Projects

March 2025



# Executive Summary

The east coast of Ireland is prone to coastal erosion due to the nature of the geology forming the coastline and the generally low-lying topography between headlands. Along the coast, Iarnród Éireann Irish Rail (IÉ) operates and maintains a safe rail network. The section of railway between Dublin and Wicklow is situated close to the high tide mark, except at Bray Head and Killiney where it is raised up onto, and occasionally tunnelled through, the cliff faces. Disruption to train services caused by storm events and the resultant damage to infrastructure is becoming increasingly common; with climate change and related sea level rise in sea level expected to be a contributing factor, with disruption predicted to significantly increase in the future. Maintenance works carried out to respond to the effects of coastal erosion and flooding on the railway line and supporting infrastructure result in increasing disruption to existing services and may render the line unviable in this area in the future. If left unattended, there is a risk that the railway route and surrounding land will be lost to the sea.

Recognising the urgency of taking action and the need for a strategic approach, IÉ established the East Coast Railway Infrastructure Protection Projects (ECRIPP). The primary aim of ECRIPP is to provide improved coastal protection works against predicted climate change effects of sea level rise and coastal erosion on the east coast railway corridor between Merrion Gates (Co. Dublin) and Wicklow Harbour (Co. Wicklow). Five key locations along the railway route (known as Coastal Cell Areas (CCAs)) were identified as requiring increase resilience to coastal erosion and coastal flooding as a result of climate change.

A network of protected areas for certain habitats and species of conservation importance has been established by European Union (EU) member states under the Habitats and Birds Directives (Council Directive 92/43/EEC and Directive 2009/147/EC); these areas are known as European sites.

The EU Habitats Directive (92/43/EEC) has been transposed into Irish law by the Planning and Development Act 2000 (as amended) and the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477/2011). Articles 6(3) and 6(4) of the Habitats Directive set out the decision-making tests for plans and projects likely to affect European sites. Appropriate Assessment of the implications must be made by the decision-making authority (or Competent Authority) if the project is likely to have a significant effect on a European site alone or in-combination with other plans or projects. Appropriate Assessment is a two-stage process of determining impacts to European sites which are Stage 1 Screening and Stage 2 Appropriate Assessment.

The Supporting Information for Screening Appropriate Assessment (SISAA) (Appendix C) found that it can be concluded, on the basis of best scientific knowledge and objective evidence, that there was potential for the proposed surveys and site investigation works, in the absence of mitigation measures, to have the following Likely Significant Effects (LSE) on the conservation objectives of 58 European sites:

- Habitat loss / degradation- temporary
- Habitat degradation – changes in land quality
- Habitat degradation – spread of invasive species
- Disturbance of species

Mitigation measures have been committed to in order to reduce the impacts on these European designated sites. These measures include:

- The presence of a Marine Mammal Observer (MMO) during bathymetric surveys;
- Completing surveys within the intertidal zone outside of sensitive seasons;
- Tracking GI machinery away from areas of vegetation, where possible; and.
- Timings of surveys outside of the wintering or breeding bird season will minimise disturbance to QI bird species.

Based on the best available scientific information and professional judgement, it is considered that with the mitigation measures, there will be no adverse effects on the integrity of those European sites, alone or in-combination with other plans or projects in light of those site's conservation objectives.

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## Acronyms and Abbreviations

| Acronym | Full Name |
|---|---|
| **AA** | Appropriate Assessment |
| **ACIEEM** | Associate Member of the Chartered Institute of Ecology and Environmental Management |
| **CCA** | Coastal Cell Area |
| **CEMP** | Construction Environmental Management Plans |
| **CIEEM** | Chartered Institute of Ecology and Environmental Management |
| **CO** | Conservation Objectives |
| **DoEHLG** | Department of Environment, Heritage and Local Government |
| **ECJ** | European Court of Justice |
| **EC** | European Commission |
| **ECoW** | Ecological Clerk of Works |
| **EPA** | Environmental Protection Agency |
| **GI** | Geotechnical Investigation |
| **IAMMWG** | Inter-Agency Marine Mammal Working Group |
| **IROPI** | Imperative Reasons of Overriding Public Interest |
| **JNCC** | Joint Nature Conservation Committee |
| **LSE** | Likely Significant Effects |
| **MCIEEM** | Member of the Chartered Institute of Ecology and Environmental Management |
| **MMO** | Marine Mammal Observer |
| **NBDC** | National Biodiversity Data Centre |
| **NIS** | Natura Impact Statement |
| **NPAD** | National Planning Application Database |
| **NPWS** | National Parks and Wildlife Service |
| **NRA** | National Roads Authority |
| **OPR** | Office of the Public Regulator |
| **QI** | Qualifying Interest |
| **SAC** | Special Areas of Conservation |
| **SCI** | Special Conservation Interest |
| **SPA** | Special Protection Areas |
| **WFD** | Water Framework Directive |
| **ZoI** | Zone of Influence |

# 1. Introduction

## 1.1 Background

Iarnród Éireann Irish Rail (IÉ) operates and maintains a safe rail network on the east coast of Ireland. The Dublin to Wicklow section of this line is a critical part of the rail network, with southside DART, Gorey commuter and Rosslare Europort Intercity services operating along this scenic route. The railway is situated along the coast close to the high tide mark, except at Bray Head and Killiney where it is raised up onto, and occasionally tunnelled through, the cliff faces. The east coast of Ireland is prone to coastal erosion due to the nature of the unconsolidated glacial till forming the coastline and cliffs as well as the generally low-lying topography between headlands. This has been demonstrated through a number of technical studies over the years carried out by IÉ, the Office of Public Works and the affected County Councils. The frequency of erosion events as well as wave overtopping has increased in the last 20 years. These incidents have had significant impacts on performance and safety of the railway. Other effects have included major losses of land and impacts on habitats and species using these areas.

Site investigations and environmental baseline surveys (hereby referred to as Survey Works) are required to inform the development of the ECRIPP design as well as to inform the environmental impact assessment for the project. These surveys include a geotechnical investigation (GI), geophysical survey, marine archaeology surveys, bathymetric surveys, benthic ecology surveys and ecological surveys. A SISAA Report was prepared which concluded that there was potential for Likely Significant Effects (LSEs) on European sites within the Zone of Influence (ZoI) from ECRIPP. As such the Survey Works have been progressed to stage 2 AA which is detailed in this NIS. This NIS has been undertaken to support the Maritime Area Regulatory Authority (MARA) Maritime Usage Licence (MUL) required for the Survey Works to be undertaken in intertidal and subtidal areas.

### 1.1.1 Location of ECRIPP

The Survey Works are located along the east coast railway line in Ireland. As part of ECRIPP, five study areas, called CCA's, have been identified as vulnerable to coastal erosion and other climate change effects such as wave overtopping. As part of this assessment of the Survey Works and throughout the MUL documentation these will be referenced as "Licence Areas". These Licence Areas as they relate to the CCA's can be seen in Table 1.1 and are shown in Appendix A, Figures 1,2 and 3.

**Table 1.1: Licence Areas**

| CCA | Description | Licence Area |
|---|---|---|
| **1** | Merrion Gates to Dun Laoghaire | A |
| **2/3** | Dalkey Tunnel to Killiney South | B |
| **5** | Bray Head to Greystones North Beach | C |
| **6.1** | Greystones South to Newcastle | D |
| **6.2** | Newcastle to Wicklow | D |

For the purpose of this assessment, CCA6.1 and CCA6.2 are combined into one – Licence Area D. It should be noted that no protection measures are proposed as part of ECRIPP in CCA4 and therefore no Survey Works are proposed in this CCA.

Licence Map Areas have been developed and accompany this licence application in Appendix A.

- Licence Map Area A
- Licence Map Area B
- Licence Map Area C
- Licence Map Area D

## 1.2 Purpose and Structure of this Report

### 1.2.1 Informing Appropriate Assessment Screening

In the context of Article 6(3) of the Habitats Directive and Section 177U(1) of Planning and Development Act 2000 (as amended), Maritime Area Regulatory Authority (MARA) as the competent authority for this project, must carry out an Appropriate Assessment (AA) of the Survey Works to assess whether, on the basis of objective scientific information, the Survey Works, individually or in-combination with other plans or projects, is likely to have a significant effect on the conservation objectives of any European sites and the mitigation measures required to prevent adverse effects on site integrity. This report presents the information required for the competent authority to undertake the AA for the Survey Works.

### 1.2.2 Legislative Context

Habitats and species of European importance are provided legal protection under Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (hereafter referred to as the Habitats Directive) and Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds (hereafter referred to as the Birds Directive). The Habitats Directive protects habitats and species of community interest through the establishment and conservation of an EU-wide network of sites known as the Natura 2000 network (hereafter referred to as European sites, as the term Natura 2000 network was replaced by 'European site' under S.I. No. 473 of 2011 – European Union (Environmental Impact Assessment and Habitats) Regulations 2011). European sites comprise Special Areas of Conservation (SACs) and Special Protection Areas (SPAs). Candidate SACs (cSACs) and potential SPAs (pSPAs) are afforded the same protection as SACs and SPAs and are therefore assessed in the same manner within this NIS.

The Habitats Directive has been transposed into Irish law by Number 30 of 2000 - Planning and Development Act, 2000 (as amended) and S.I. No. 477/2011 - European Communities (Birds and Natural Habitats) Regulations 2011 (hereafter referred to as the Birds and Habitats Regulations). Articles 6(3) and 6(4) of the Habitats Directive set out the decision-making tests for plans and projects likely to affect European sites.

Article 6(3) establishes the requirement for AA:

> *"Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to Appropriate Assessment of its implications for the site in view of the site's conservation objectives. In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public."*

Article 6(4) states:

> *"If, in spite of a negative assessment of the implications for the [Natura 2000] site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a social or economic nature, Member States shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted."*

The Habitats Directive was transposed into Irish law from a planning perspective through Part XAB of the Planning and Development Act 2000 (as amended). The circumstances under which an AA is required, the stages of that assessment which must be undertaken and the responsibilities of the Competent Authority in considering whether or not to approve consent for proposed plans or projects are outlined in the Act.

Section 177U(1) states that:

> *"A screening for appropriate assessment of a draft Land use plan or application for consent for proposed development shall be carried out by the competent authority to assess, in view of best scientific knowledge, if that Land use plan or proposed development, individually or in combination with another plan or project is likely to have a significant effect on the European site."*

Where likely significant effects upon a European site are predicted, or cannot be ruled out, it is the responsibility of the Competent Authority to undertake an AA under Article 6(3) of the Habitats Directive, informed through an Natura Impact Statement (NIS), to determine whether or not the proposed plan in combination with any other plan or project would adversely affect the integrity of a European site in light of its Conservation Objectives.

Section 177T(1) states that:

> *"(a) A Natura impact report means a statement for the purposes of Article 6 of the Habitats Directive, of the implications of a Land use plan, on its own or in combination with other plans or projects, for one or more than one European site, in view of the conservation objectives of the site or sites.*
>
> *(b) A Natura impact statement means a statement, for the purposes of Article 6 of the Habitats Directive, of the implications of a proposed development, on its own or in combination with other plans or projects, for one or more than one European site, in view of the conservation objectives of the site or sites."*

Section 177T(2) states that:

> *"Without prejudice to the generality of subsection (1), a Natura impact report or a Natura impact statement, as the case may be, shall include a report of a scientific examination of evidence and data, carried out by competent persons to identify and classify any implications for one or more than one European site in view of the conservation objectives of the site or sites."*

### 1.2.3 Case Law

A number of cases have been brought to both the national and European courts in relation to the AA process. Therefore, relevant case law, European Court of Justice rulings and EC publications have also been considered in the preparation of this NIS.

### 1.2.4 Stages in Appropriate Assessment

An overview of the Appropriate Assessment process is outlined below:

- Stage 1 Screening: Screening determines whether an AA is required by determining if the project or plan is likely to have a significant effect on any European site(s) either individually or in-combination with other plans or projects, in light of the site's conservation objectives.
- Stage 2 Appropriate Assessment: If the screening has determined that AA is required, the competent authority then considers the effect of the project or plan on the integrity of the European site(s), specifically it must be determined if the project or plan will adversely affect the integrity of a European site(s) either individually or in-combination with other plans and projects in view of the conservation objectives of the site(s). Where potential adverse effects on site integrity (AESI) are identified, mitigation measures are proposed to avoid adverse effects, as appropriate. For projects, the AA process is documented within a NIS.

Following AA, including mitigation proposals, if AESI remain, or uncertainty remains and the project/plan is to be progressed, an Assessment of Alternative Solutions is required under the provisions of Article 6(4) of the Habitats Directive. This process examines the alternative ways of achieving the objectives of the project or plan that avoid adverse impacts on the integrity of the European site. If no alternatives exist, or all alternatives would result in adverse effects on the integrity of a European site, then if the project/plan is to be progressed, the process moves to the next stage.

Where an Assessment of Alternative Solutions fails to identify any suitable alternatives, for a project or plan to be progressed it must demonstrate that there are Imperative Reasons for Overriding Public Interest (IROPI).

If, following an assessment of IROPI, it is deemed that the project or plan can proceed, compensatory measures must be secured to maintain the coherence of the European site network despite adverse effects to the integrity of the site(s).

### 1.2.5 Authors Qualifications and Expertise

This report has been prepared by [redacted] and reviewed by [redacted]

[redacted] is a Senior Ecologist and holds a BSc (Hons) in Conservation Biology and Ecology from Exeter University. He is an Associate member of the Chartered Institute of Ecology and Environmental Management (ACIEEM) and has five years of pure consultancy associated project experience including Preliminary Ecological Appraisals (PEA), Environmental Impact Assessments (EIA), AA Screening Reports and Natura Impact Statements (NIS). [redacted] has a strong background in ornithology and is well practiced in a range of survey techniques.

[redacted] is a Chartered Environmentalist and Senior Associate Director of Ecology and has over 20 years of experience of supporting infrastructure projects in ecological assessment, specialising in Habitats Regulations Assessment. Before this, he spent 18 years developing land management, team / project management and stakeholder engagement skills in the nature conservation field. [redacted]s experience has been in the voluntary, public and private sectors and has included infrastructure projects including new nuclear build, trunk roads, pipelines, electricity transmission and waste management facilities, as well as development of decision-making processes and strategic assessments in the government sector.

# 2. Assessment Methodology

## 2.1 Guidance Documents

This Report was undertaken in accordance with the following guidance:

- Office of the Planning Regulator (2021). Appropriate Assessment Screening for Development Management. OPR Practice Note PN01.
- Appropriate Assessment of Plans and Proposed Schemes in Ireland. Guidance for Planning Authorities (Department of Environment, Heritage and Local Government (DoEHLG), 2010).
- Assessment of Plans and Projects in Relation to Natura 2000 Sites – Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC (EC, 2021a)
- Communication from the Commission on the Precautionary Principle (EC, 2000).
- Guidance Document on Article 6(4) of the 'Habitats Directive' 92/43/EEC. Clarification of the concepts of: Alternative Solutions, Imperative Reasons of Overriding Public Interest, Compensatory Measures, Overall Coherence, Opinion of the Commission (EC, 2007).
- Managing Natura 2000 sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (EC, 2018).
- Guidance document on the strict protection of animal species of Community interest under the Habitats Directive (EC, 2021b).
- Guidance on the strict protection of certain animal and plant species under the Habitats Directive in Ireland (Department of Housing, Local Government and Heritage (DHLGH), 2021).
- Commission Notice: Assessment of plans and projects in relation to Natura 2000 sites – Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC (2021/C 437/01).

Definitions of favourable conservation status, integrity and significance used in this assessment are defined in accordance with '*Managing Natura 2000 sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC'* (European Commission, 2018):

- "The term 'Favourable Conservation Status' is defined in Article 1(e) and 1(i) [of the 'Habitats' Directive 92/43/EEC] and refers to the conservation status of the species or habitat types of Community interest across their natural range within the EU".
- "The 'integrity of the site' can be usefully defined as the coherent sum of the site's ecological structure, function and ecological processes, across its whole area, which enables it to sustain the habitats, complex of habitats and/or populations of species for which the site is designated".
- "The significance of effects should be determined in relation to the specific features and environmental conditions of the protected site concerned by the plan or project, taking particular account of the site's Conservation Objectives and ecological characteristics".

## 2.2 Appropriate Assessment Methodology

Following screening and where the potential for LSEs has been identified the assessment is progressed to the next step, known as Stage 2 AA.

Stage 2 AA is a focused and detailed examination, analysis and evaluation carried out by the competent authority of the implications of the plan or project, alone and in-combination with other plans and projects, on the integrity of a European site in view of that site's conservation objectives. Case law has established that such an Appropriate Assessment, to be lawfully conducted, in summary:

> (i) must identify, in the light of the best scientific knowledge in the field, all aspects of the proposed development which can, by itself or in-combination with other plans or projects, affect the conservation objectives of the European site;

(ii) must contain complete, precise and definitive findings and conclusions and may not have lacunae or gaps; and

(iii) may only include a determination that the proposed development will not adversely affect the integrity of any relevant European site where the competent authority decides (on the basis of complete, precise and definitive findings and conclusions) that no reasonable scientific doubt remains as to the absence of the identified potential effects. If adverse impacts can be satisfactorily avoided or successfully mitigated at this stage, so that no reasonable doubt remains as to the absence of the identified potential effects, then the process is complete. If the assessment is negative, i.e. adverse effects on the integrity of a site cannot be excluded, then the process must proceed to stage three and, if necessary, stage four.

The process is shown in Figure 2.1 below:

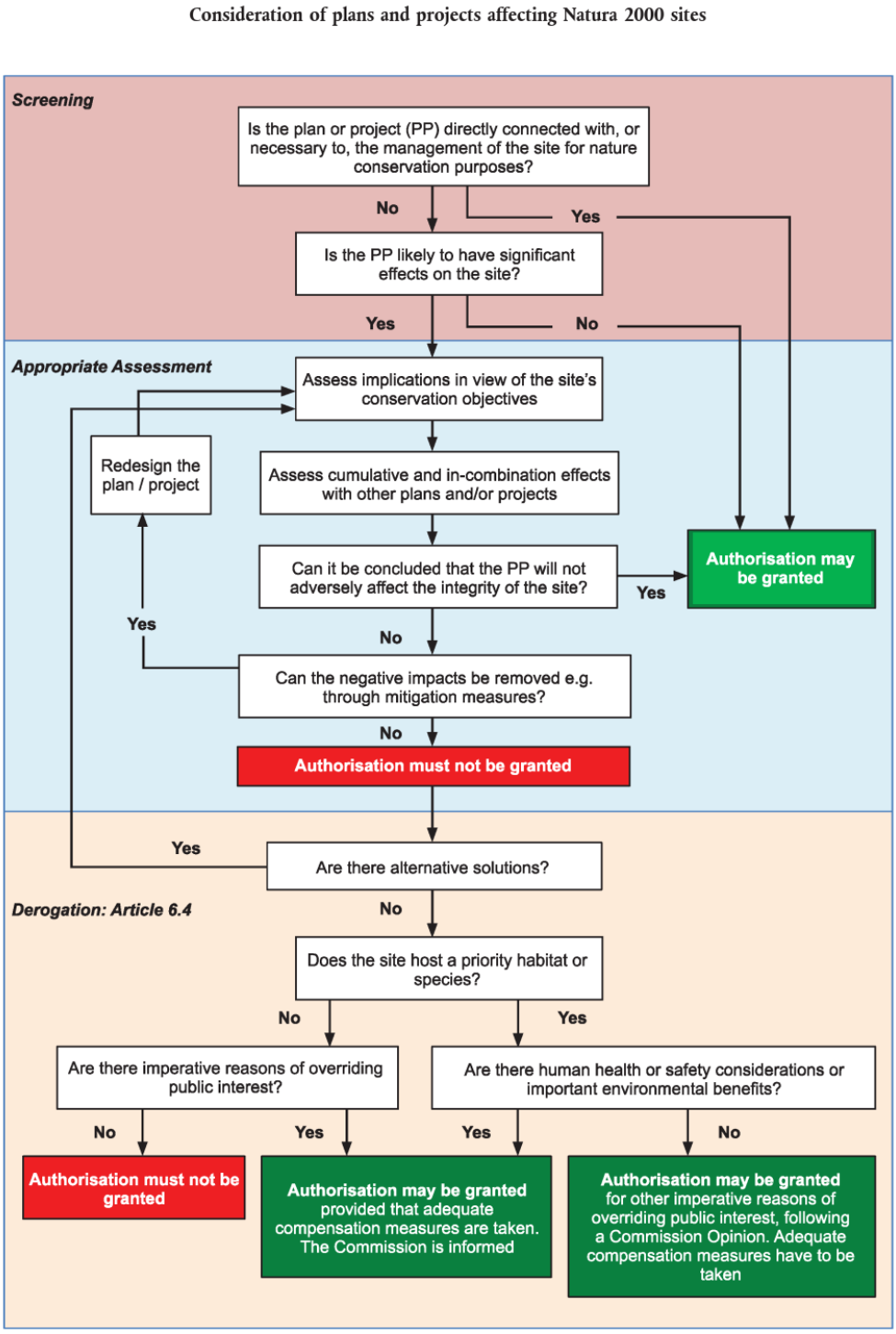


**Figure 2.1: Flow chart of Article 6 (3) and (4) procedure (EC, 2018).**

### 2.2.1 Desk Review

The following key resources were analysed to inform the baseline description of the Proposed Survey Works site and surrounding environment:

- Aerial imagery (Google Earth; ESRI 2023) (accessed December 2023);
- Environmental Protection Agency (EPA) rivers and water quality data, Water Framework Directive (WFD) status (accessed December 2023) (EPA, 2023);

- National Parks and Wildlife Service (NPWS) Mapping of European site boundaries (accessed December 2023) (NPWS 2023a and b);
- Projects from the NPAD (accessed April 2024) (DoEHLG, ND);
- The Status of EU Protected Habitats and Species in Ireland. Volume 1: Summary Overview (NPWS, 2019a);
- The Status of EU Protected Habitats and Species in Ireland. Volume 2: Habitat Assessments (NPWS, 2019b);
- The Status of EU Protected Habitats and Species in Ireland. Volume 3: Species Assessments (NPWS, 2019c);
- Other open-source information available online regarding fisheries (e.g. www.salmonireland.com and www.fishingireland.info);
- Online data available on Natura 2000 sites as held by the NPWS, including the Natura 2000 network Data Form; Site Synopsis; Conservation Objective data (accessed March, 2025);
- Online data available on Natura 2000 sites as held by the JNCC, including Natura 2000 network data forms; Site Synopsis; Conservation Objectives Data (accessed March 2025);
- Online data available on Natura 2000 sites as held by the European Environment Agency (EEA), including Natura 2000 network data forms (accessed March 2025); and
- Protected and invasive species data from the NBDC database (NBDC ND) (accessed April 2024).

## 2.3 Site Visit

The site surveys carried out to inform the assessment are summarised in Table 2.1. Habitats were assessed for their potential to support qualifying interests (Annex I habitats or Annex II species) potentially associated with European sites. The assessment of species and habitats including invasive species was undertaken in line with the following guidelines and informed this NIS:

- A Guide to Habitats in Ireland. (Hereafter referred to as Fossitt) (Fossitt, 2000).
- Article 17 reports (NPWS, 2019a, 2019b, and 2019c).
- CIEEM Good Practice Guidance for Habitats and Species (CIEEM, 2021).
- CIEEM Guidelines for Preliminary Ecological Appraisal. Second Edition (CIEEM, 2017).
- CIEEM Guidelines for Ecological Impact Assessment in the UK and Ireland (CIEEM, 2018).
- National Roads Authority (NRA) Guidelines on The Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads (NRA, 2010).
- Transport Infrastructure Ireland (TII) The Management of Invasive Alien Plant Species on National Roads, Standard (TII, 2020a).
- Transport Infrastructure Ireland (TII) The Management of Invasive Alien Plant Species on National Roads, Technical Guidance (TII, 2020b).

### 2.3.1 Wintering Bird Surveys

Wintering bird surveys were undertaken during winter 2022/23. The surveys were undertaken every hour within a six-hour period at vantage points covering all Licence Areas. Low and high tide counts have been used due to the differences in behaviour and site use between tidal states, with different species likely to be foraging and roosting in different areas, depending on the stage of the tidal cycle. The overall objective of the winter bird surveys was to assess the distribution and usage by a variety of wintering wildfowl, seabirds and waders within the ZoI of the Survey Works. All target species were noted with a focus on QI species.

Surveys were undertaken in accordance with the Wetland Bird Survey (WeBS) and Low Tide Count Survey methodologies in (Gilbert et al., 1998). The surveys were carried out at suitable vantage points, located overlooking large sections of the Licence Areas. The vantage points were chosen to give as wide as possible a view of the survey area.

### 2.3.2 Breeding Bird Surveys

Breeding bird surveys were undertaken in April, May and June 2023. The survey area included Licence Areas A, B, C and D. Vantage Points were completed within Licence Area B and C. Transects were walked within Licence Areas C and D. The overall objective of the breeding bird surveys was to assess the distribution and usage of breeding wildfowl, seabirds and waders of the ZoI, including QI species. All target species were noted with a focus on QI species.

Surveys were undertaken in accordance with the Common Bird Census (CBC) and WeBS methodologies. The vantage points, were located overlooking known breeding areas in Licence Areas B, C and D. The transects were chosen to cover large areas of suitable habitat. Survey dates are provided in Table 2.1 below:

**Table 2.1: Ecological surveys informing baseline environment and examining potential effects on Annex I habitats and Annexed species.**

| Survey Methodology | Survey date(s) | Surveyors | Scope / method and equipment |
|---|---|---|---|
| Walkover (otter, badger, American mink), invasive species survey, habitat surveys | 2023 | Experienced Jacobs ecologists | Walkover surveys. Habitat surveys according to Fossitt 2000 |
| Additional habitat survey to detect Annex I habitats and condition assessment | 2023 | Experienced botanists | Undertaken across all licence areas. Assessment as detailed in Irish Vegetation Classification (Perrin, 2019) |
| Wintering bird surveys | Between October 2022-March 2023 | Experienced Jacobs ecologists | Monthly recorded the abundance and distribution of bird species during low and high tide to identify roosting and foraging populations, with specific focus on QI species |
| Breeding bird surveys | Between April 2023 – June 2023 | Experienced Jacobs ecologists | From land, focusing on the abundance and distribution of breeding wild fowl and seabirds |

## 2.4 Consultation

Consultation has been undertaken with the National Parks and Wildlife Service.

# 3. Description of Survey Works and site characteristics

## 3.1 Overview of the Baseline Environment

### 3.1.1 Habitats (including Annex I)

A desk-based review of the NPWS datasets for Annex I habitats was conducted on the 23 May 2024 which found a number of protected habitats within the Licence Areas. Habitats include mudflats and sandflats not covered by seawater at low tide, annual vegetation of drift lines, Salicornia and other annuals colonising mud and sand, embryonic shifting dunes, European dry heaths, reefs, vegetated sea cliffs of the Atlantic and Baltic coasts, perennial vegetation of stony banks, Atlantic salt meadows, Mediterranean salt meadows, calcareous fens and alkaline fens.

## 3.2 Description of the Survey Works

Full methodologies for all Survey Works and their locations are described below and summarised in Table 3.1.

**Table 3.1: Summary of works to be undertaken in each Licence Area**

| Licence Area | Works to be undertaken | |
|---|---|---|
| | Foreshore and intertidal zone (land-based) | Intertidal and subtidal zone (boat-based) |
| A | Geotechnical investigations, geophysical investigations, bathymetric surveys, benthic ecology surveys (intertidal cores and transects), licenced metal detection surveys | Bathymetric surveys |
| B | Licenced metal detection surveys, bathymetric surveys, benthic ecology surveys (intertidal transects and subtidal day grabs) | Bathymetric surveys |
| C | Licenced metal detection surveys, bathymetric surveys, benthic ecology surveys (intertidal transects and subtidal day grabs) | Bathymetric surveys, breeding bird surveys, drop down camera surveys, bat surveys, subtidal day grabs |
| D | Licenced metal detection surveys, bathymetric surveys, benthic ecology surveys (intertidal transects) | Bathymetric surveys, subtidal day grabs |

## 3.3 Geotechnical and Geophysical Investigations

GI works will be carried out along the upper shore of Licence Area A (Appendix A, Figure 2), as follows:

- 22 borehole surveys (4 no. windows samples and 18 no. windowless samples);
- 19 Trial pits (one hand dug pit and 18 machine excavated pits ("slit trenches"));
- One Dynamic Cone Penetrometer (DCP) test;
- One sediment sample for particle size analysis of beach material; and
- Geophysical surveys comprising two techniques Seismic Refraction Tomography (SRT) and Multichannel Analysis of Surface Waves (MASW).

Works areas will be reinstated to their original state as directed by an on-site Ecological Clerk of Works (ECoW), which will typically involve reinstatement of backfill material.

A temporary mobile portacabin will be provided for the duration of the works in a self-contained facility, which will be parked on roads in public areas outside of any SAC / SPA boundary.

### 3.3.1 Window Sample Boreholes

#### 3.3.1.1 Windowless Sampler

The percussive window or windowless sampling method involves driving cylindrical steel tubes into the ground using a hydraulic hammer (Figure 3.1). The resulting samples will have a maximum surface diameter of 100mm and a maximum depth of 8m. The drilling rig will be mounted onto rubber tracks to minimise disturbance and ensure the method is suitable for use on environmentally sensitive sites. Each windowless sample will take between 1 to 4 hours to complete depending on ground conditions. The backfilling of locations on the beach will be made using the extracted soil horizons. Any additional backfill material required will comprise bentonite pellets.

**Figure 3.1. Windowless sampler example**

#### 3.3.1.2 Window Sampler

A further four window samples will be drilled on the slope of the existing revetment. This method is similar to the windowless samples described above, with one initial additional step due to the need to core through the hard strata before commencing with the windowless sample technique. The initial upper layers in the revetment will be cored using the coring application on the drill rig. This core-drilling is designed to produce cores up to 150mm diameter from asphalt, concrete and similar materials. The backfilling of locations on the revetment face will be used via a combination of bentonite pellets, and bentonite grout cement. The cored coping stone will then be placed back into the hole and grouted in place.

### 3.3.2 Trial Pits

#### 3.3.2.1 Hand-dug Trial Pit

A single foundation inspection pit will be excavated using hand digging tools up to 1m long by 1m in width and excavated to a maximum depth of 2m below ground level. The pit will take approximately 30 minutes to complete, and the contractors will backfill the pit on the same day. This pit will be dug by hand due to access restrictions for an excavator.

#### 3.3.2.2 Slit Trench Works

A slit trench is a long narrow trench commonly used to determine the position of existing services (Figure 3.2). Eighteen trenches will be excavated up to 4m long by up to 1m in width and to a maximum depth of 2m below ground level using a tracked excavator or a wheeler back-hoe excavator. This method typically takes 1-2 hours

to complete depending on ground conditions. These trial pits will be backfilled with the beach sediment or soil arisings as appropriate by the contractors on the same day. Generally, the material will be backfilled in the order it was excavated so as to reinstate the different horizons/ layers to their prior locations. In order to achieve this, during excavation any soil risings/spoil will be placed adjacent to the pit on a tarpaulin or similar material.

**Figure 3.2. Slit trench example**

### 3.3.3 Dynamic Cone Penetrometer test

A single Dynamic Cone Penetrometer (DCP) will be undertaken. The DCP test involves driving a steel cone vertically into the ground using a sliding hammer and will take approximately 5-10 minutes to carry out. The number of blows required for each 100mm of penetration will be measured and used to determine the strength and thickness of unbound pavement layers. The resulting depth profile is useful for identifying anomalously weak layers.

### 3.3.4 Sediment Sampling

Sediment sampling will be undertaken with the use of hand excavation tools. A bag of sediment will be collected for subsequent particle size analysis with one sample taken from the mean high water spring, mean sea level and mean low water spring. This will be taken at a maximum depth of 0.5m and typically takes under an hour to complete.

## 3.4 Geophysical Surveys

These surveys comprising Seismic Refraction Tomography (SRT) and Multichannel Analysis of Surface Waves (MASW) will be undertaken at two locations within Licence Area A, as shown in Appendix A Figure 3.

### 3.4.1 Seismic Refraction Tomography

The SRT technique is based on the refraction of seismic energy at the interfaces of geological layers of different velocity (Figure 3.3). A geophysics technician will use a drop weight such as a hammer to transmit a series of signals into the ground[1]. These geophysical signals will be detected by a series of receivers which will be laid out along a transect line at a set distance, with each receiver connected to a control box. These receivers comprise of geophones with 100mm metal spikes that are inserted into the ground. The signals received by

[1] Typical noise levels for a hammer onto solid item are around 120dBA.

these receivers helps determine velocity of these input signals and infer the depth of underlying objects/interface between layers.

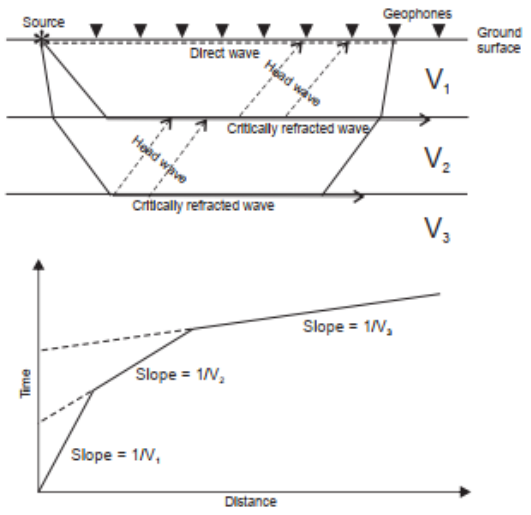


**Figure 3.3 SRT Set-Up**

## 3.4.2 Multichannel Analysis of Surface Waves

The MASW technique generates surface waves, which allow the measurement of the variation in soil stiffness with depth (Figure 3.4). A geophysics technician will use a drop weight such as a hammer to transmit a series of signals into the ground. These geophysical signals will be detected by a series of receivers which will be laid out along a transect line at a set distance, with each receiver connected to a control box. These receivers comprise of geophones with 100mm metal spikes that are inserted into the ground. The signals received are used to determine the velocity of surface waves generated. A stiffness profile can be generated and ground properties determined at different depths. A transect line can be numbered at 0.5m, or 1m intervals, all the way along its length. This line will be laid across the study area. This method allows for 15m-70m length of geophysical transect per hour.

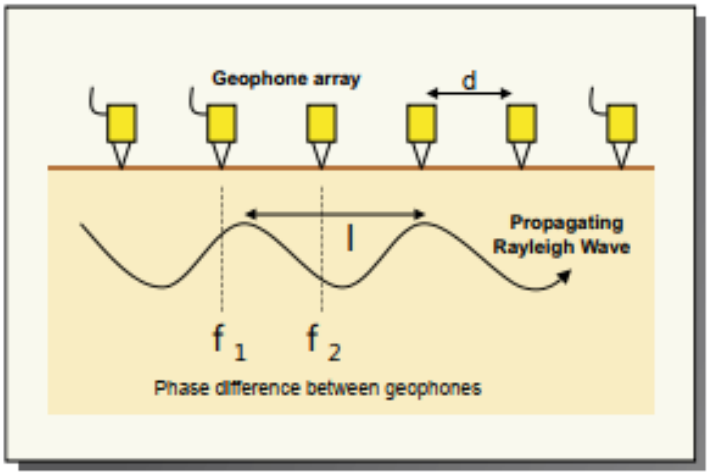


**Figure 3.4. MASW Set-Up**

## 3.5 Marine Archaeology Surveys

### 3.5.1 Licenced Metal Detection Surveys

These will involve a two-person intertidal (foreshore) walkover survey using a metal detector, as and where appropriate in the footprint of future ECRIPP works and areas affected by the proposed GI.

### 3.5.2 Other Archaeological Considerations

Archaeological considerations will be integrated with the planning and execution of the proposed geotechnical and geophysical site investigations (see Sections 2.1 and 2.2) and the resultant data will be assessed for archaeological purposes, as appropriate. Any additional survey requirements agreed in consultation with the Underwater Unit of the National Monuments Service.

## 3.6 Bathymetric Surveys

The bathymetric and sub-bottom profiling (SBP) surveys are proposed to be carried out within all areas, with coverage between mean high water and either 500m seaward of mean high water or to -10m OD Malin bathymetric contour. The survey works will require mobilisation of survey vessel(s) with survey equipment on board.

- The survey team shall mobilise the survey equipment and carry out all necessary calibrations and verifications of the survey set. Following satisfactory completion of the calibrations and verifications, survey lines shall commence along the planned line plans for the vessel(s).
- In order to ensure coverage of seabed levels up to MHW, an Aerial Drone Survey Contractor will be achieving coverage of the Licence Areas at low water to provide sufficient overlap between the two survey techniques; vessel based and aerial drone based.
- A qualified and experienced marine mammal observer (MMO) will be appointed to monitor for marine mammals on each survey vessel, to log all relevant events using standardised data forms.

### 3.6.1 Offshore Bathymetric Surveys

The bathymetric survey will be undertaken with the following parameters:

- A nominal planned main line spacing of 20m in water depths below -6m OD.
- A nominal planned main line spacing of 40m in water depths between -6m OD and -10m OD.
- A cross line spacing of 250m, perpendicular to main lines.
- In practice, in extreme shallows, lines will be spaced closer than 20m, and around water depths of between 4 - 6m, line spacing may be greater than 20m. Therefore, a line spacing of 20m has been assumed to be a mean line spacing in this region. Line spacing shall be modified in real time whilst on site in order to ensure 100% coverage in the most efficient manner, whilst achieving the project specifications.
- Bathymetric survey coverage will be continually assessed, and line planning will be adjusted in real time in order to ensure 100% coverage. In order to ensure maximum bathymetric coverage as close as possible up towards mean high water, shoreline survey lines will be carried out during periods of high water. This line will progress simultaneously while collecting bathymetric coverage.

### 3.6.2 Sub-bottom Profiling Surveys

For the sub-bottom profiling surveys (SBP), it is proposed to carry out a single SBP line, in each of the areas of Multi-Beam Echo Sounder data capture at 300 ±50m offshore of mean high water. In general, shallow-water MBESs operate at a frequency between 100 and 700kHz. A single line of sub-bottom profiler data shall be

conducted, around 300m +/-50m from mean high water. These lines have been planned to have the following lengths:

- Licence Area A; SBP Line – 6.4km length
- Licence Area B; SBP Line – 4.1km length
- Licence Area C; SBP Line – 5.5km length
- Licence Area D; SBP Line – 9.1km length
- Licence Area D; SBP Line – 10.4km length

## 3.7 Ecology Surveys

### 3.7.1 Breeding Birds – Boat Counts

The sea cliffs in Licence Area C between Bray and Greystones have a high ecological value for coastal birds and their prey. These cliffs are a *key* breeding site for coastal bird species including herring gull (Larus argentatus), common gull (*Larus* canus), black-headed gull (*Chroicocephalus ridibundus*), greater black-backed gull (*Larus marinus*), lesser black-backed gull (*Larus fuscus*), *kittiwake* (*Rissa tridactyla*), fulmar (Fulmarus *glacialis*), guillemot (*Uria aalge*), black guillemot (*Cepphus* grylle), razorbill (*Alca torda*), shag (*Gulosus aristotelis*) and cormorant (*Phalacrocorax carbo*). Additionally, the coastal waters at the base of the cliffs are a key foraging site for these bird species and additional *species* which breed in *the* vicinity which may include arctic tern (*Sterna paradisaea*), common tern (*Sterna hirundo*), little tern (*Sterna albifrons*) and roseate tern (*Sterna dougallii*).

When determining the breeding activity on the cliff face, it is required that at least three surveys are completed between the months of April and August, however the ideal period is between May and June. The survey will be conducted in daylight hours between 07:00 and 18:00. The entire length of the cliff face from grid reference: O 27668 17934 to grid reference O 28717 15209 shall be surveyed which is approximately 3.3km long.

The boat will be driven 100-200m from the cliff face, with surveyors keeping an eye for bird disturbance as this will not allow for an accurate assessment of breeding activity. If the boat is causing disturbance, surveys will move out to a maximum of 400m.

Surveyors will stop approximately every 300m and will spend up to one hour surveying the stretch of cliff face at each point. These distances may be adjusted on site if the aspect of the cliff face blocks the field of view for surveyors. Surveyors will first survey for breeding activity on the cliff face, looking for nesting sites and resting birds. If time allows, then a count of birds foraging in the waters at the base of the cliff will be conducted.

Species, breeding activity and number of birds will be drawn onto the printed maps/ iPad mapping app. The entire length of the cliff face will be photographed using a high-quality camera.

It is preferred that surveyors do in situ counts of breeding bird activity. Photographs taken on the day may only be used for counts if the surveyors first check for the accuracy of the photography. However, this method is not recommended as accuracy tends to be low. This can be done by taking a sample count of 200 birds then photographing the area immediately and repeating this five times. Subsequently, at the desk the photographs can be analysed for accuracy and all other photographs can be used for completing counts with this error reported alongside the count data.

### 3.7.2 Drop Down Camera Work

During one of the boat survey trips, the drop-down camera work will be conducted. These surveys will be conducted on a day with calm weather conditions to reduce turbidity in the water and allow for maximum camera clarity. A waterproof camera will be lowered to just above the sea floor and images gathered to check for the presence or absence of sandy substrate. The camera will be dropped and will be above the substrate travelling along the entire length of Licence Area C as close to the cliff face as is safe following the boat crew's

advice. The camera work will be conducted after the breeding bird surveys are complete to prevent any potential disturbance from effecting those surveys. Footage will be assessed during a desk-based assessment.

### 3.7.3 Bat Roosting Assessment

During one of the boat-survey trips a bat roosting assessment will be undertaken to examine the cliffs for caves and cracks above the sea level and assess these areas for bat roost potential. Upon completion of the breeding bird surveys on the return trip the bat roosting assessment will take place. The boat will drive at a pace guided by ecologists so that all features can be recorded and photographed. Ecologists will instruct the boat crew to stop if required. Potential roosts will be mapped on the iPad and photographs will be taken.

### 3.7.4 Benthic Ecology Surveys

#### 3.7.4.1 Intertidal Cores

In Licence Area A and B, six core replicates will be taken at 15 intertidal core sites, with 75 replicates in total for infaunal analysis and15 replicates for sediment particle size and chemistry. Each intertidal core will cover an area of approximately 0.01m$^2$, and the core will be taken to a depth of 20cm, sieved and infaunal preserved for laboratory identification. The cores are proposed to be undertaken in September to replicate the overwintering bird period.

#### 3.7.4.2 Intertidal Transects

Intertidal transects are proposed from the high-water mark to the low water mark with quadrats undertaken to allow for accurate biotope mapping to be established. Between two and four transects are proposed per 1km of frontage, with up to eight transects completed in one day per team. Where intertidal areas are homogenous then a lower number of transects may be required (>500m apart). In Licence Area A, up to ten intertidal transects are proposed, up to 13 in Licence Area B, up to three in Licence Area D and up to 88 intertidal transects in Licence Area D.

#### 3.7.4.3 Subtidal Day Grabs

In Licence Area C, up to six 0.1m subtidal day grabs (or equivalent) are proposed to allow the collection of benthic fauna and to allow habitat categorisation, with three replicates for each sample (and up to 18 replicates in total). In Licence Area D, up to three 0.1m subtidal day grabs (or equivalent) are proposed (up to nine replicates in total). The subtidal day grabs would be undertaken by hand between May and August.

# 4. Identification of relevant European Sites

## 4.1 Conclusion of Screening for Appropriate Assessment

The Survey Works will occur within South Dublin Bay SAC, Bray Head SAC, The Murrough SAC, South Dublin Bay and Tolka Estuary SPA and The Murrough SPA. The Survey Works are not directly connected with or necessary to the conservation management of any these European sites.

The associated SISAA Report (Appendix C) presents the objective scientific information required to inform a robust and complete examination of the potential impacts of the Survey Works on European sites.

The conclusion of the SISAA Report was that, in the absence of mitigation measures, the following Likely Significant Effects with the potential to undermine the conservation objectives of the following European sites cannot be excluded:

**Table 4.1: European sites with the potential for LSEs from the Survey Works and the potential pathways**

| European Site | Qualifying Interests (QI) | Potential Pathway |
|---|---|---|
| South Dublin Bay SAC (IE000210) | Mudflats and sandflats not covered by seawater at low tide [1140], annual vegetation of drift lines [1210], *Salicornia* and other annuals colonising mud and sand [1310], embryonic shifting dunes [2110]. | Habitat loss – temporary, change in land quality and spread of invasive species |
| Bray Head SAC (IE000714) | Vegetated sea cliffs of the Atlantic and Baltic coasts [1230], European dry heaths [4030] | Change in land quality and spread of invasive species |
| The Murrough Wetlands SAC (IE002249) | Annual vegetation of drift lines [1210], Perennial vegetation of stony banks [1220], Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330], Mediterranean salt meadows (*Juncetalia maritimi*) [1410], Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* [7210]*, Alkaline fens [7230] | Change in land quality and spread of invasive species |
| North Dublin Bay SAC (IE000206) | Harbour porpoise is present within this SAC but is not specifically designated as a QI. | Disturbance of species |
| Rockabill to Dalkey Island SAC (IE003000) | Harbour Porpoise (*Phocoena phocoena*) [1351] | Disturbance of species |
| Lambay Island SAC (IE000204) | Harbour Porpoise (*Phocoena phocoena*) [1351], Grey Seal (*Halichoerus grypus*) [1364], Harbour Seal (*Phoca vitulina*) [1365] | Disturbance of species |
| Codling Fault Zone SAC (IE003015) | Harbour Porpoise (*Phocoena phocoena*) [1351] | Disturbance of species |
| Slaney River Valley SAC (IE000781) | Harbour Seal (*Phoca vitulina*) [1365] | Disturbance of species |
| Carnsore Point SAC (IE002269) | Harbour Porpoise (*Phocoena phocoena*) [1351] | Disturbance of species |
| Saltee Islands SAC (IE000781) | Grey Seal (*Halichoerus grypus*) [1364] | Disturbance of species |
| Hook Head SAC (IE000764) | Common Bottlenose Dolphin (*Tursiops truncatus*) [1349], Harbour Porpoise (*Phocoena phocoena*) [1351] | Disturbance of species |
| Roaringwater Bay and Islands SAC (IE000101) | Harbour Porpoise (*Phocoena phocoena*) [1351] | Disturbance of species |

| European Site | Qualifying Interests (QI) | Potential Pathway |
|---|---|---|
| Kenmare River SAC (IE002158) | Harbour Porpoise (*Phocoena phocoena*) [1351] | Disturbance of species |
| Blasket Islands SAC (IE0002172) | Harbour Porpoise (*Phocoena phocoena*) [1351] | Disturbance of species |
| Belgica Mound Province SAC (IE002327) | Harbour Porpoise (*Phocoena phocoena*) [1351] | Disturbance of species |
| Bunduff Lough and Machair/Trawalua/Mullaghmore SAC | Harbour Porpoise (*Phocoena phocoena*) [1351] | Disturbance of species |
| West Connacht Coast SAC (IE002998) | Harbour Porpoise (*Phocoena phocoena*) [1351] | Disturbance of species |
| Inishmore Island SAC (IE000213) | Harbour Porpoise (*Phocoena phocoena*) [1351] | Disturbance of species |
| Kilkieran Bay and Islands SAC (IE002111) | Harbour Porpoise (*Phocoena phocoena*) [1351] | Disturbance of species |
| North Anglesey Marine SAC (UK0030398) | Harbour Porpoise (*Phocoena phocoena*) [1351] | Disturbance of species |
| Lleyn Peninsula and the Sarnau SAC (UK0013117) | Common Bottlenose Dolphin (*Tursiops truncatus*) [1349], Grey Seal (*Halichoerus grypus*) [1364] | Disturbance of species |
| West Wales Marine SAC (UK0030397) | Harbour Porpoise (*Phocoena phocoena*) [1351] | Disturbance of species |
| Murlough SAC (UK0016612) | Harbour Seal (*Phoca vitulina*) [1365] | Disturbance of species |
| Strangford Lough SAC (UK0016608) | Harbour Seal (*Phoca vitulina*) [1365] | Disturbance of species |
| Cardigan Bay SAC (UK0013117) | Common Bottlenose Dolphin (*Tursiops truncatus*) [1349], Grey Seal (*Halichoerus grypus*) [1364] | Disturbance of species |
| North Channel SAC (UK0030399) | Harbour Porpoise (*Phocoena phocoena*) [1351] | Disturbance of specie |
| Bristol Channel Approaches SAC (UK0030396) | Harbour Porpoise (*Phocoena phocoena*) [1351] | Disturbance of species |
| The Maidens SAC (UK0030384) | Grey Seal (*Halichoerus grypus*) [1364] | Disturbance of species |
| Mers Celtiques – Talus du golfe de Gascogne SAC (FR5302015) | Harbour Porpoise (*Phocoena phocoena*) [1351] | Disturbance of species |
| Nord Bretagne DH SAC (FR2502022) | Harbour Porpoise (*Phocoena phocoena*) [1351] | Disturbance of species |
| Ouessant-Molène SAC (FR5300018) | Harbour Porpoise (*Phocoena phocoena*) [1351] | Disturbance of species |
| Abers - Côte des légendes SAC (FR5300017) | Harbour Porpoise (*Phocoena phocoena*) [1351] | Disturbance of species |
| Côte de Granit rose-Sept-Iles SAC (FR5300009) | Harbour Porpoise (*Phocoena phocoena*) [1351] | Disturbance of species |
| Baie de Morlaix SAC (FR5300015) | Harbour Porpoise (*Phocoena phocoena*) [1351] | Disturbance of species |
| Tregor Goëlo SAC (FR5310070) | Harbour Porpoise (*Phocoena phocoena*) [1351] | Disturbance of species |

| European Site | Qualifying Interests (QI) | Potential Pathway |
|---|---|---|
| Côtes de Crozon SAC (FR5302006) | Harbour porpoise is present within this SAC but is not specifically designated as a QI. | Disturbance of species |
| Riviére Leguer, forêts de Beffou, Coat an Noz et Coat an Hay SAC (FR5300008) | Harbour porpoise is present within this SAC but is not specifically designated as a QI. | Disturbance of species |
| Chaussée de Sein SAC (FR5302007) | Harbour Porpoise (*Phocoena phocoena*) [1351] | Disturbance of species |
| Récifs du talus du golfe de Gascogne SAC (FR5302016) | Harbour Porpoise (*Phocoena phocoena*) [1351] | Disturbance of species |
| Récifs et landes de la Hague SAC (FR2500084) | Harbour porpoise is present within this SAC but is not specifically designated as a QI. | Disturbance of species |
| Anse de Vauville SAC (FR2502019) | Harbour porpoise is present within this SAC but is not specifically designated as a QI. | Disturbance of species |
| Cap d'Erquy-Cap Fréhel SAC (FR5300011) | Harbour Porpoise (*Phocoena phocoena*) [1351] | Disturbance of species |
| Banc et récifs de Surtainville SAC (FR2502018) | Harbour porpoise is present within this SAC but is not specifically designated as a QI. | Disturbance of species |
| Baie de Saint-Brieuc SAC (FR5300066) | Harbour porpoise is present within this SAC but is not specifically designated as a QI. | Disturbance of species |
| Baie de Lancieux, Baie de l'Arguenon, Archipel de Saint Malo et Dinard SAC (FR5300012) | Harbour porpoise is present within this SAC but is not specifically designated as a QI. | Disturbance of species |
| Chausey SAC (FR2500079) | Harbour porpoise is present within this SAC but is not specifically designated as a QI. | Disturbance of species |
| Estuaire de la Rance SAC (FR5300061) | Harbour porpoise is present within this SAC but is not specifically designated as a QI. | Disturbance of species |
| Baie du Mont Saint-Michel SAC (FR2500077) | Harbour porpoise is present within this SAC but is not specifically designated as a QI. | Disturbance of species |
| South Dublin Bay and River Tolka SPA (IE004024) | Light-bellied Brent goose (*Branta bernicla hrota*) [A046], Oystercatcher (*Haematopus ostralegus*) [A130], Ringed plover (*Charadrius hiaticula*) [A137], Grey plover (*Pluvialis squatarola*) [A141], Knot (*Calidris canutus*) [A143], Sanderling (*Calidris alba*) [A144] Dunlin (*Calidris alpina*) [A149], Bar-tailed godwit *(Limosa lapponica*) [A157], Redshank *(Tringa totanus*) [A162], Black-headed gull *(Chroicocephalus ridibundus*) [A179], Roseate tern (*Sterna dougallii*) [A192], Common tern (*Sterna hirundo*) [A193], Arctic tern (*Sterna paradisaea*) [A194], Wetlands and Waterbirds [A999] | Habitat loss – temporary, change in land quality, spread of invasive species and disturbance of species |
| The Murrough SPA (IE004186) | Red-throated diver (*Gavia stellata*) [A001], Greylag goose (*Anser anser*) [A043], Light-bellied brent goose (*Branta bernicla hrota*) [A046], Wigeon (Mareca *penelope*) [A050], Teal (*Anas crecca*) [A052], Black-headed gull (*Chroicocephalus ridibundus*) [A179], Herring | Change in land quality, spread of invasive species and disturbance of species |

| European Site | Qualifying Interests (QI) | Potential Pathway |
|---|---|---|
| | gull (*Larus argentatus*) [A184], Little tern (*Sterna albifrons*) [A195], Wetlands and Waterbirds [A999] | |
| Dalkey Island SPA (Site Code IE004172) | Roseate tern (*Sterna dougallii*) [A192], Common tern (*Sterna hirundo*) [A193], Arctic tern (*Sterna paradisaea*) [A194] | Disturbance of species |
| Wicklow Head SPA (IE004127) | Kittiwake (*Rissa tridactyla*) [A188] | Disturbance of species |
| North Bull Island SPA (IE004006) | Light-bellied Brent goose (*Branta bernicla hrota*) [A046], Shelduck (Tadorna tadorna) [A048], Teal (Anas crecca) [A052], Pintail (Anas acuta) [A054], Shoveler (Spatula clypeata) [A056], Oystercatcher (*Haematopus ostralegus*) [A130], Golden Plover (Pluvialis apricaria) [A140], Grey plover (*Pluvialis squatarola*) [A141], Knot (*Calidris canutus*) [A143], Sanderling (*Calidris alba*) [A144], Dunlin (*Calidris alpina*) [A149], Black-tailed Godwit (Limosa limosa) [A156], Bar-tailed godwit *(Limosa lapponica*) [A157], Curlew (Numenius arquata) [A160], Redshank *(Tringa totanus*) [A162], Turnstone (Arenaria interpres) [A169], Black-headed gull *(Chroicocephalus ridibundus*) [A179] | Disturbance of species |
| North West Irish Sea SPA (IE004236) | Red-throated Diver (*Gavia stellata*) [A001], Great Northern Diver (*Gavia immer*) [A003], Fulmar (*Fulmarus glacialis*) [A009], Manx Shearwater (*Puffinus puffinus*) [A013], Cormorant (*Phalacrocorax carbo*) [A017], Shag (*Gulosus aristotelis*) [A018], Common Scoter (*Melanitta nigra*) [A065], Little Gull (*Larus minutus*) [A177], Black-headed Gull (*Chroicocephalus ridibundus*) [A179], Common Gull (*Larus canus*) [A182], Lesser Black-backed Gull (*Larus fuscus*) [A183], Herring Gull (*Larus argentatus*) [A184], Great Black-backed Gull (*Larus marinus*) [A187], Kittiwake (*Rissa tridactyla*) [A188], Roseate Tern (*Sterna dougallii*) [A192], Common Tern (*Sterna hirundo*) [A193], Arctic Tern (*Sterna paradisaea*) [A194], Little Tern (*Sterna albifrons*) [A195], Guillemot (*Uria aalge*) [A199], Razorbill (*Alca torda*) [A200], Puffin (*Fratercula arctica*) [A204] | Disturbance of species |
| Wicklow Mountains SPA (Site code IE004040) | Merlin (*Falco columbarius*) [A098], Peregrine (*Falco peregrinus*) [A103] | Disturbance of species |
| Baldoyle Bay SPA (IE004016) | Light-bellied Brent Goose (*Branta bernicla hrota*) [A046], Shelduck (*Tadorna tadorna*) [A048], Ringed Plover (*Charadrius hiaticula*) [A137], Golden Plover (*Pluvialis apricaria*) [A140], Grey Plover (*Pluvialis squatarola*) [A141], Bar-tailed Godwit (*Limosa lapponica*) [A157] | Disturbance of species |
| Malahide Estuary SPA (IE004025) | Great Crested Grebe (*Podiceps cristatus*) [A005], Light-bellied Brent Goose (*Branta bernicla hrota*) [A046], Shelduck (*Tadorna tadorna*) [A048], | Disturbance of species |

| European Site | Qualifying Interests (QI) | Potential Pathway |
|---|---|---|
| | Pintail (*Anas acuta*) [A054], Goldeneye (*Bucephala clangula*) [A067], Red-breasted Merganser (*Mergus serrator*) [A069], Oystercatcher (*Haematopus ostralegus*) [A130], Golden Plover (*Pluvialis apricaria*) [A140], Grey Plover (*Pluvialis squatarola*) [A141], Knot (*Calidris canutus*) [A143], Dunlin (*Calidris alpina*) [A149], Black-tailed Godwit (*Limosa limosa*) [A156], Bar-tailed Godwit (*Limosa lapponica*) [A157], Redshank (*Tringa totanus*) [A162] | |
| Rogerstown Estuary SPA (IE004015) | Greylag Goose (*Anser anser*) [A043], Light-bellied Brent Goose (*Branta bernicla hrota*) [A046], Shelduck (*Tadorna tadorna*) [A048], Shoveler (*Spatula clypeata*) [A056], Oystercatcher (*Haematopus ostralegus*) [A130], Ringed Plover (*Charadrius hiaticula*) [A137], Grey Plover (*Pluvialis squatarola*) [A141], Knot (*Calidris canutus*) [A143], Dunlin (*Calidris alpina*) [A149], Black-tailed Godwit (*Limosa limosa*) [A156], Redshank (*Tringa totanus*) [A162] | Disturbance of species |

It was therefore concluded that the Survey Works is progressed to Stage 2 AA which will comprise a detailed assessment of the potential for adverse effects on the integrity of European sites through these LSEs including an assessment of the Survey Works in-combination with other plans and projects. Detailed information to inform the AA for the Survey Works will be presented in this Natura Impact Statement which will be submitted at planning to enable the Competent Authority to undertake an AA in respect of the Survey Works.

### 4.1.1 Potential Effect Pathways from the Survey Works

Table 4.2 outlines broad categories of potential impacts that could occur as a result of the Survey Works, and the potential effects on European sites and associated Qualifying Interest (QI) species or habitats.

**Table 4.2: Potential effect pathways from Survey Works on European sites**

| Pathway name | Potential Pathway | Zone of Influence |
|---|---|---|
| Habitat loss - temporary | Geotechnical Investigation works and surveys removing samples from the intertidal area could result in the temporary loss of habitats, potentially affecting QI habitat or supporting habitat for QI species in a European site, or functionally linked land associated with mobile QI species outside the boundaries of European sites. | The ZoI assessed is within the footprint of the Survey Works<br>Physical loss of habitat is only possible within the boundary of a European site, or within an area of functionally linked land habitat outside of the European site (for example, off-site area of known foraging, roosting, breeding habitat for a QI for which a European site is designated). |
| Habitat degradation – change in land quality | Habitat degradation could include oil spills, rutting from tyres/tracks or substrate compaction. These are considered temporary due to the ability of the habitat to quickly regenerate after any impact. | The ZoI assessed is within the footprint of the Survey Works<br>Physical loss of quality is only possible within the boundary of a European site, or within an area of functionally linked land habitat outside of the European site (for example, off-site area of known foraging, roosting, breeding habitat for a QI for which a European site is designated). |

| Pathway name | Potential Pathway | Zone of Influence |
|---|---|---|
| Habitat degradation – spread of invasive species | Construction activities can cause the spread of invasive species already within the construction site (through transfer on plant or within materials moved during earthworks), or by importing materials from outside the construction site (on the wheels of plant or delivery vehicles, etc). This can cause the degradation of QI habitats or supporting and functionally linked habitats of QI species | The ZoI assessed is within the footprint of the Survey Works<br>The spread or importing of invasive species can only occur within the boundaries of the Survey Works. |
| Disturbance of species | Survey Works could result in disturbance of QI species through changes in noise, vibration, movement (of people and/or vehicles) and lighting.<br>Disturbance may lead to the abandonment of breeding, foraging or resting sites by QI species, potentially resulting in increased energy expenditure, reduced fitness and inability to complete lifecycle stages | The ZoI assessed depends on the species being assessed.<br>300m is considered to be an appropriate distance to assess disturbance of QI bird species as they are unlikely to be significantly disturbed beyond this distance. An assessment of the disturbance distance and response threshold for QI bird species to qualify this distance is undertaken in Section 4.1.4.2.<br>500m is considered to be the distance at which marine mammals are disturbed by load works, such as piling, due to their heightened senses underwater. An assessment of the distance and response threshold for QI mammal species is discussed in Section 4.1.4.1<br>The foraging ranges of mobile species was used to identify European designated sites with functionally linked or supporting habitat within the ZoI of the Survey Works. |

### 4.1.2 Establishing a Zone of Influence for Temporary Habitat Loss

The ZoI for temporary habitat loss is under the temporary footprint of the Survey Works, specifically the GI works. Other Survey Works will not result in temporary habitat loss. Appendix A, Figure 2 shows the location of the GI works within Licence Area A.

Access to GI locations will be via public access routes to South Dublin Bay and along the beach thereafter. Specifically, for Licence Area A this will be via Merrion Gates (northern section) and Dun Laoghaire West Pier (southern section). The proposed access route for the drilling rig and excavator onto the beach will be via the R131 adjacent to Merrion Strand to the north-west of Blackrock Station. The proposed route towards Booterstown and Blackrock Stations will be along the northern section of the spit formation, along the flat sandy area of the beach. The intertidal area is considered suitable and should be capable of supporting a 3T Excavator or Terrier Rig. There will be one channel crossing necessary, but it is narrow and shallow in nature. Any rigs travelling along the beach will stay as close to the coastal embankment wall as possible (where the ground is less saturated and therefore will provide more support for travelling rigs). Following the surveys any backfill material will be reinstated.

### 4.1.3 Establishing a Zone of Influence for Change in Land Quality

The ZoI for habitat degradation from a change in land quality is under the temporary footprint of the Survey Works. Surveyors and machinery can cause physical degradation to habitats through trampling and compaction of substrate. GI works could cause habitat degradation through pollution.

GI locations are within Licence Area A. Intertidal benthic surveys and metal detection surveys are being undertaken across all Licence Areas.

### 4.1.4 Establishing a Zone of Influence for Spread of Invasive Species

The ZoI for spread of invasive species is under the footprint of the Survey Works. Invasive species can be spread between survey areas through seeds in footwear or machinery or aquatic species on boats.

GI locations are within Licence Area A. Intertidal benthic surveys and metal detection surveys are being undertaken across all Licence Areas. Bathymetric surveys are being undertaken across all Licence Areas.

Establishing a Zone of Influence for Disturbance

#### 4.1.4.1 Qualifying Interest Mammal Species

The ZoI for noise and visual disturbances demarcates the area within which marine mammal species could be disturbed/displaced by bathometric surveys. NPWS guidance (2014) states that underwater sound can have a number of impacts on marine mammals, including behavioural, physical, stress and indirect effects. There are a range of factors involved in determining the impact.

- Frequency, bandwidth, duration, duty cycle and directionality of the sound;
- A sounds energy output, rise time and persistence;
- Sound Pressure Level (SPL) –the amplitude of a sound's waveform;
- Sound Exposure Level (SEL) – A measure of sound energy over a given duration;
- Sound Received Level (RL) – the pressure level measured at the receiver, e.g., mammal;
- Ambient sound - i.e., background sound levels from all sources including natural sources; and
- Water depth, stratification and seabed characteristics – e.g., topography, substrate type, slope.

Different species have different levels of hearing with harbour porpoise being the most at risk from high frequency noise. Species will also differ in periods of sensitivity, for example during the breeding season. NPWS (2014) guidance states that for multibeam, single beam, side-scan sonar and sub-bottom profiler surveys a 500m radial distance of the sound source is required.

How far species could travel to use the habitats within the ZoI also needs to be taken into account. It was concluded that the mean maximum foraging distances of grey seal and harbour as defined in Carter et al (2022) would detail which SACs have the potential for disturbance within the SAC itself and/or supporting and functionally linked habitats. These distances are 448km for grey seal and 273km for harbour seal.

The Inter-Agency Marine Mammal Working Group (IAMMWG) on behalf of the Joint Nature Conservation Committee (JNCC) created management units of cetacean species (IAMMWG, 2023). These are used to identify meta-populations and therefore, which SACs are functionally linked to the Survey Works.

#### 4.1.4.2 Qualifying Interest Bird Species

The ZoI for noise and visual disturbances demarcates the area within which birds could be disturbed/displaced by all Survey Works. The breeding and wintering bird data (Tables 5.5 and 5.6) shows the numbers of birds within this ZoI which could be disturbed or displaced, the locations at which aggregations of birds occur, during which period of the year and at what tidal state. To establish a ZoI around visual and noise disturbances, and potential impacts to qualifying species, an understanding of potential disturbance distances for individual species is required.

How far species could travel to use the habitats within the ZoI of disturbance also needs to be taken into account. It was concluded that the mean maximum foraging distances of bird species as defined in Woodward

*et al.* (2019) and Scottish Natural Heritage (2016) would detail which QIs of SPAs have the potential to be disturbed within their SPAs, supporting and/or functionally linked habitats.

Cutts *et al.* (2013) at a strategic level, suggests a 300m ZoI for noise and visual disturbances. As part of the ornithological investigation of this assessment the suitability of this 300m ZoI distance has been tested for each of the qualifying species individually by investigating all available literature. A summary of this review and the thresholds for each qualifying species based on a range of academic literature and research studies can be found in Table 4.3.

**Table 4.3: Disturbance distance / response threshold for QI species of SPAs within the ZoI.**

| Species | Disturbance distance/ response threshold range (m) | Description | Citation(s) |
|---|---|---|---|
| Brent goose | 200-400m | High sensitivity. | Cutts et al., 2013 |
| Greylag goose | 200-600m | Medium sensitivity. | Goodship and Furness, 2022 |
| Shelduck | 200-300m | High sensitivity. Wary species highly sensitive to visual disturbances during construction activities. Noted as a moderate to low response level to disturbance during wintering months and shows signs of habituation. | Goodship and Furness, 2022 |
| Wigeon | 100-250m | Less tolerant of some disturbances than other duck species. | Goodship and Furness, 2022 |
| Teal | 50m | Low sensitivity. | Ross and Liley, 2014 |
| Pintail | 100 – 250m | Medium sensitivity. | Goodship and Furness, 2022 |
| Shoveler | 150 – 250m | Moderate sensitivity to noise and visual disturbances. | Bregnballe et al., 2009 |
| Common scoter | 1-4km | Foraging and roosting flocks have high sensitivity especially due to large watercraft. | Goodship and Furness, 2022 |
| Red-breasted merganser | 50-300m | Limited research. High degree of sensitivity to marine traffic. | Liley et al., 2011<br>Gittings and O'Donoghue, 2016<br>Goodship and Furness, 2019 |
| Red-throated diver | Up to 1000m | High sensitivity | Goodship and Furness, 2022 |
| Great northern diver | 100-350m | Medium to high sensitivity | Goodship and Furness, 2022 |
| Cormorant | 100-200m | Cormorant tolerate high levels of human activity and the presence of | Bregnballe et al. 2009<br>Dierschke et al., 2016 |

| Species | Disturbance distance/ response threshold range (m) | Description | Citation(s) |
|---|---|---|---|
| | | artificial structures, so are less vulnerable to disturbance (i.e. noise, visual). | Goodship and Furness, 2019 |
| Shag | 200-500m | Shag are more sensitive to disturbance than cormorant. | Goodship and Furness, 2019 |
| Oystercatcher | 100-200m | Moderate sensitivity. Relatively tolerant and will habituate to activity. | Goodship and Furness, 2022 |
| Curlew | 300m | Moderate sensitivity. Curlew is a wary species that does not habituate to works rapidly and is also particularly intolerant of people, allowing approach to a range of 120-300m before flushing when confronted with a lone walker on a mudflat. More tolerant of vehicle movements. | Cutts et al., 2013<br>Goodship and Furness, 2022 |
| Dunlin | 75-300m | Low sensitivity. Dunlin is a relatively tolerant species in comparison to other wader species. | Goodship and Furness, 2022 |
| Knot | 100-200m | Moderate sensitivity | Goodship and Furness, 2022 |
| Sanderling | 50-100m | Low sensitivity | Cutts et al., 2013 |
| Golden plover | 100-300m | Moderate sensitivity. Little research however noted to exhibit more tolerance to moderate level visual disturbance than other waders. | Goodship and Furness, 2022 |
| Grey plover | 250-300m | Moderate sensitivity. Considered relatively tolerant of disturbances. Lack of studies available. | Laursen et al., 2005<br>Cutts et al., 2013<br>Goodship and Furness, 2022 |
| Ringed plover | 50-100m | Low sensitivity. Quick to habituate, however nesting will often be abandoned in areas of consistently high human disturbance. | Liley and Sutherland, 2007<br>Cutts et al., 2013<br>Goodship and Furness, 2022 |
| Bar-tailed godwit | 150-200m | Moderate sensitivity. Bar-tailed godwits are likely to be absent in highly disturbed areas and those | Laursen et al., 2005<br>Cutts et al., 2013 |

| Species | Disturbance distance/ response threshold range (m) | Description | Citation(s) |
|---|---|---|---|
| | | that are present are likely to be highly stressed. Birds are particularly sensitive to disturbance at roost sites. | Goodship and Furness, 2022 |
| Black-tailed godwit | 100-200m | Moderate sensitivity to noise and visual disturbances. | Ross and Liley, 2014; Cutts et al., 2013<br>Goodship and Furness, 2022 |
| Redshank | 115-300m | Low sensitivity. Although highly sensitive to noise stimuli redshank are relatively tolerant to visual disturbances. May be displaced by workers at mudflat level and where facilitation occurs (i.e. when multiple stimuli occur at the same time). | Laursen et al., 2005<br>Cutts et al., 2013<br>Goodship and Furness, 2022 |
| Turnstone | 50-100m | Low sensitivity | Cutts et al., 2013 |
| Black-headed gull | 100m | Low sensitivity | Goodship and Furness, 2019 |
| Little gull | 120m | Limited research. Considered to have a low to moderate sensitivity to human disturbances. | Goodship and Furness, 2019 |
| Kittiwake | 120m | Limited research. Considered to have a low to moderate sensitivity to human disturbances. | Goodship and Furness, 2019 |
| Common gull | 120m | Limited research. Considered to have a low to moderate sensitivity to human disturbances. | Goodship and Furness, 2019 |
| Herring gull | 25m | Low sensitivity to human disturbances | Goodship and Furness, 2019 |
| Lesser black-backed gull | 25m | Low sensitivity to human disturbances | Goodship and Furness, 2019 |
| Great black-backed gull | 100m | Lower sensitivity to human disturbance | Goodship and Furness, 2019 |
| Common tern | 200m-400m | Moderate sensitivity to human disturbance at breeding colonies. Lack of research available. | Goodship and Furness, 2022 |
| Roseate tern | 200m-400m | Moderate sensitivity to human disturbance at breeding colonies. Lack of research available. | Goodship and Furness, 2022 |

| Species | Disturbance distance/ response threshold range (m) | Description | Citation(s) |
|---|---|---|---|
| Arctic tern | 200m-400m | Moderate sensitivity to human disturbance at breeding colonies. Lack of research available. | Goodship and Furness, 2022 |
| Little tern | 100-300m | Moderate sensitivity to human disturbance at breeding colonies. Lack of research available. | Goodship and Furness, 2022 |
| Manx shearwater | 100-300m | Low sensitivity from general boat traffic. Lack of research available. | Cook and Burton, 2010 |
| Fulmar | 100-300m | Low sensitivity from general boat traffic. Lack of research available. Use great black-backed gull as proxy | Goodship and Furness, 2019 |
| Common guillemot | 50-100m | Medium sensitivity. Lack of research available. | Goodship and Furness, 2019 |
| Razorbill | 50-100m | Medium sensitivity. Lack of research available. | Goodship and Furness, 2019 |
| Puffin | 50-100m | Medium sensitivity. Lack of research available. Use Common Guillemot as proxy. | Goodship and Furness, 2019 |
| Merlin | Up to 200m | Medium sensitivity | Goodship and Furness, 2022 |
| Peregrine | Up to 200m | Medium sensitivity | Goodship and Furness, 2022 |

The approach of a 300m ZoI suggested by Cutts *et al*. (2013) has been shown to be suitable for the majority of purposes of this NIS based on the Survey Works being undertaken. Given the Study Works area, baseline levels of disturbance and nature of the Survey Works, a ZoI of 300m has been concluded as appropriate for the assessment by reviewing studies on disturbance distance/response thresholds for qualifying species of the European sites identified within the AA screening report, South Dublin Bay and Tolka Estuary SPA, The Murrough SPA, Howth Head SPA, Wicklow Head SPA, North Bull Island SPA, Dalkey Island SPA, North West Irish Sea SPA, Wicklow Mountains SPA, Baldoyle Bay SPA, Malahide Estuary SPA and Rogerstown Estuary SPA.

## 4.2 European Sites within the ZoI of the Proposed Survey Works

The 'source-pathway-receptor' model was applied taking consideration of all potential impact pathways connecting elements of the Survey Works to European sites in view of their conservation objectives. The Survey Works were examined with reference to their location to European sites, and taking account of the potential effects outlined in **Table 4.1** above. The conservation objectives and QIs of European sites within the ZoI of the Survey Works are detailed in **Table 4.4** below and these European sites are shown in Appendix A, Figure 1.

Table 4.4: European sites and QIs within ZoI of the Survey Works.

| European Sites | QIs within ZoI | Conservation Objectives |
|---|---|---|
| **Special Areas of Conservation (SACs)** | | |
| South Dublin Bay SAC (000210)<br>0m. Within Licence Area A | 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] | To maintain the favourable conservation condition of Mudflats and sandflats not covered by seawater at low tide in South Dublin Bay SAC, which is defined by the following list of attributes and targets:<br>▪ The permanent habitat area is stable or increasing.<br>▪ Maintain the extent of the Zostera-dominated community.<br>▪ Conserve the high quality of the Zostera-dominated community.<br>▪ Conserve the following community type in a natural condition: Fine sands with Angulus tenuis community complex.<br>No conservation objectives were present Annual vegetation of drift lines [1210] for South Dublin Bay SAC. Conservation objectives listed for The Murrough Wetlands SAC can be used as proxy, which are defined by the following list of attributes and targets:<br>▪ The habitat area is stable or increasing<br>▪ The habitat distribution does not decline<br>▪ The natural circulation of sediment and organic matter is restored<br>▪ Vegetation structure (zonation) is maintained<br>▪ Vegetation composition is as follow: typical species and sub-communities are maintained, cover of native negative indicator species is, non-native species cover is less than 20%<br>No conservation objectives were present *Salicornia* and other annuals colonising mud and sand for South Dublin Bay SAC. Conservation objectives listed for North Dublin Bay SAC can be used as proxy and are as follows: To restore the favourable conservation condition of *Salicornia* and other annuals colonizing mud and sand, which is defined by the following list of attributes and targets:<br>▪ Habitat area is maintained or increased.<br>▪ Habitat distribution does not decline or change.<br>▪ The presence/absence of physical barrier is maintained or restored.<br>▪ Creeks and pans structure and tidal regime are maintained.<br>▪ The vegetation structure (zonation, vegetation height) is maintained.<br>▪ The vegetation cover is maintained higher than 90% outside creeks.<br>▪ The vegetation composition is maintained (with maintenance of species-poor communities listed in SMP). |

| European Sites | QIs within ZoI | Conservation Objectives |
|---|---|---|
| | | ▪ Annual spread of *Spartina anglica* has to be maintained lower than 1%.<br>No conservation objectives were present Embryonic shifting dunes for South Dublin Bay SAC. Conservation objectives listed for North Dublin Bay SAC can be used as proxy and are defined by the following list of attributes and targets:<br>▪ Habitat area is maintained or increased.<br>▪ Habitat distribution does not decline or change.<br>▪ The presence/absence of physical barrier is maintained or restored.<br>▪ The vegetation structure (zonation) is maintained.<br>▪ More than 95% of the vegetation cover of sand couch (*Elytrigia* juncea) and/or lyme-grass (*Leymus arenarius*) is healthy<br>▪ The presence of species-poor communities with typical species: sand couch (*Elytrigia juncea*) and/or lyme-grass (*Leymus arenarius*) is maintained<br>▪ Negative indicator species are maintained at level inferior to the 5% of the cover. |
| Bray Head SAC (000714)<br>0m. Within Proposed Works | Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]<br>European dry heaths [4030] | To maintain the favourable conservation condition of vegetated sea cliffs of the Atlantic and Baltic coasts in Bray Head SAC, which is defined by the following list of attributes and targets:<br>▪ The habitat area is stable.<br>▪ The habitat distribution does not decline.<br>▪ No alteration occurs to natural functioning of geomorphological and hydrological processes, due to artificial barriers.<br>▪ Vegetation structure (zonation, height) are maintained.<br>▪ Vegetation composition is maintained as follow: typical species and sub-species communities are maintained negative indicator species cover is less than 5%, bracken and woody species are respectively less than 10% and 20%.<br>To restore the favourable conservation condition of European dry heaths in Bray Head SAC, which is defined by the following list of attributes and targets:<br>▪ The habitat area is stable or increasing.<br>▪ The habitat distribution does not decline.<br>▪ Soil nutrients are maintained.<br>▪ Vegetation community diversity is maintained.<br>▪ Vegetation composition is as follow: lichen and bryophytes are present at each monitoring stop, the cover of number of positive indicator species is 50% for siliceous dry heath and 50-75% for calcareous dry heath, dwarf shrubs cover is less than 50%, negative indicator species and non-native species covers are both less than 1%, native |

| European Sites | QIs within ZoI | Conservation Objectives |
|---|---|---|
| | | trees and shrubs are less than 20%, bracken is less than 10%, soft rush is less than 10%.<br>▪ Vegetation structure shows limited signs of damage (low level of senescent ling and signs of browsing, no signs of burning, all growth phases of ling present, low percentage of disturbed bare ground).<br>▪ Distribution and population sizes of rare, threatened or scarce species associated with the habitat are not in decline. |
| The Murrough Wetlands SAC (002249)<br>0m. Within Proposed Works | Annual vegetation of drift lines [1210]<br>Perennial vegetation of stony banks [1220]<br>Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330]<br>Mediterranean salt meadows (*Juncetalia maritimi*) [1410]<br>Calcareous fens with *Cladium* mariscus and species of the *Caricion davallianae* [7210]*<br>Alkaline fens [7230] | To restore the favourable conservation condition of Annual vegetation of drift lines in The Murrough Wetlands SAC, which is defined by the following list of attributes and targets:<br>▪ The habitat area is stable or increasing.<br>▪ The habitat distribution does not decline.<br>▪ The natural circulation of sediment and organic matter is restored.<br>▪ Vegetation structure (zonation) is maintained.<br>▪ Vegetation composition is as follow: typical species and sub-communities are maintained, cover of native negative indicator species is low, non-native species cover is less than 20%.<br>To restore the favourable conservation condition of Perennial vegetation of stony banks in The Murrough Wetlands SAC, which is defined by the following list of attributes and targets:<br>▪ The habitat area is stable or increasing.<br>▪ The habitat distribution does not decline.<br>▪ The natural circulation of sediment and organic matter is restored.<br>▪ Habitat affected by disturbance is less than 20%.<br>▪ Vegetation structure (zonation) is maintained.<br>▪ Vegetation composition is as follow: communities and typical species maintained, native and negative indicator species and non-native species covers are low.<br>To restore the favourable conservation condition of Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) in The Murrough Wetlands SAC, which is defined by the following list of attributes and targets:<br>▪ The habitat area is stable or increasing.<br>▪ The habitat distribution does not decline.<br>▪ No occurrence of human disturbance on hydrology. |

| European Sites | QIs within ZoI | Conservation Objectives |
|---|---|---|
| | | ▪ Vegetation structure is as follow: plant height standard deviation more than 5, cover of disturbed ground less than 5%, zonation is adequate, no loss of natural transitions.<br>▪ Vegetation composition as follow: Typical species in adequate number, no establishment of invasive species such as Spartina spp.<br>▪ No signs of infilling, reclamation, turf-cutting or pollution or other negative indicators.<br>▪ Distribution or population sizes of rare, threatened or scarce species associated with the habitat does not decline.<br><br>To restore the favourable conservation condition of Mediterranean salt meadows (*Juncetalia maritimi*) in The Murrough Wetlands SAC, which is defined by the following list of attributes and targets:<br><br>▪ The habitat area is increasing.<br>▪ The habitat distribution does not decline.<br>▪ No occurrence of human disturbance on hydrology.<br>▪ Vegetation structure is as follow: cover of disturbed ground less than 5%, no loss of natural transitions.<br>▪ Vegetation composition is as follow: Minimum number of typical species, no establishment of invasive species such as Spartina spp.<br>▪ No signs of infilling, reclamation, turf-cutting or pollution or other negative indicators.<br>▪ Distribution or population sizes of rare, threatened or scarce species associated with the habitat does not decline.<br><br>To restore the favourable conservation condition of Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae** in The Murrough Wetlands SAC, which is defined by the following list of attributes and targets:<br><br>▪ The habitat area is stable or increasing.<br>▪ The habitat distribution does not decline.<br>▪ Soil pH and nutrients status are maintained.<br>▪ Active peat formation are maintained.<br>▪ Natural hydrological regimes and drainage conditions are maintained or restored.<br>▪ Water quality (including pH and nutrient levels) is maintained.<br>▪ Vegetation composition is as follow: cover of *Cladium mariscus* at least 25%, cover of typical vascular plants is maintained adequate, cover of native negative indicator species is at insignificant levels, cover of non-native species is less than 1%, covered of scattered native trees and shrubs us less than 10%, cover of algae is less than 2%. |

| European Sites | QIs within ZoI | Conservation Objectives |
|---|---|---|
| | | ▪ The height of live shoots is over 1m.<br>▪ Disturbed proportion of vegetation cover where tufa is present is less than 1%.<br>▪ Distribution or population sizes of rare, threatened or scarce species associated with the habitat does not decline, and features of local distinctiveness are maintained.<br>▪ Transitional areas between fen and adjacent habitats are maintained or restored.<br>To restore the favourable conservation condition of Alkaline fens in The Murrough Wetlands SAC, which is defined by the following list of attributes and targets:<br>▪ The habitat area is stable or increasing.<br>▪ The habitat distribution does not decline.<br>▪ Soil pH and nutrients status are maintained.<br>▪ Active peat formation are maintained.<br>▪ Natural hydrological regimes and drainage conditions are maintained or restored.<br>▪ Water quality (including pH and nutrient levels) is maintained.<br>▪ Community vegetation diversity is maintained.<br>▪ Vegetation composition is as follow: typical brown mosses and typical vascular plants maintained adequate, native negative indicator species at insignificant level, non-native species cover less than 1%, cover of scattered trees and shrubs less than 10%, algal cover less 2%.<br>▪ Vegetation structure is as follow: at least 50% of the live leaves/flowering shoots are more than either 5cm or 15cm.<br>▪ Disturbed bare ground and proportion of vegetation cover where tufa is present are respectively less than 1% and 1%.<br>▪ Distribution or population sizes of rare, threatened or scarce species associated with the habitat does not decline, and features of local distinctiveness are maintained.<br>▪ Transitional areas between fen and adjacent habitats are maintained or restored |
| North Dublin Bay SAC (IE000206)<br>3.2km north direct distance and hydrological distance | Harbour porpoise is present within this SAC but is not specifically designated as a QI. | No site-specific conservation objectives were present for Harbour Porpoise for North Dublin Bay SAC. |
| Rockabill to Dalkey Island SAC (003000)<br>4km east direct distance and 4.5km east hydrological distance | Harbour Porpoise (*Phocoena phocoena*) [1351] | To maintain the favourable conservation condition of Harbour Porpoise (*Phocoena phocoena*) in Roackabill to Dalkey Islands SAC, which is defined by the following list of attributes and targets:<br>▪ The access to suitable habitat is not restricted by artificial barriers.<br>▪ Disturbance correlated to human activities occur at levels that do not affect the species. |

| European Sites | QIs within ZoI | Conservation Objectives |
|---|---|---|
| Lambay Island SAC (000204)<br>21.8km north east direct distance and 23.2km hydrological distance | Harbour Porpoise (*Phocoena phocoena*) [1351]<br>Grey Seal (*Halichoerus grypus*) [1364]<br>Harbour Seal (*Phoca vitulina*) [1365] | To maintain the Favourable conservation condition of Harbour Porpoise (*Phocoena phocoena*) in Lambay Island SAC, which is defined by the following list of attributes and targets:<br>▪ The access to suitable habitat is not restricted by artificial barriers.<br>▪ Disturbance correlated to human activities occur at levels that do not affect the species.<br>To maintain the favourable conservation condition of Grey Seal and Harbour Seal in Lambay Island SAC, which is defined by the following list of attributes and targets:<br>▪ The access to suitable habitat is not restricted.<br>▪ Breeding sites are maintained.<br>▪ Moult haul-out sites are maintained.<br>▪ Resting haul-out sites are maintained.<br>▪ Disturbance correlated to human activities occur at levels that do not affect the species. |
| Codling Fault Zone SAC (003015)<br>28.5km north east direct distance and hydrological distance | Harbour Porpoise (*Phocoena phocoena*) [1351] | To maintain the Favourable conservation condition of Harbour Porpoise (*Phocoena phocoena*) in Codling Fault Zone SAC, which is defined by the following list of attributes and targets:<br>▪ The access to suitable habitat is not restricted by artificial barriers.<br>▪ Disturbance correlated to human activities occur at levels that do not affect the species. |
| Slaney River Valley SAC (IE000781)<br>30km direct distance. 124km hydrological distance | Harbour Seal (*Phoca vitulina*) [1365] | To maintain the favourable conservation condition of Harbour Seal in the Slaney River Valley SAC, which is defined by the following list of attributes and targets:<br>▪ Species range within the site is not restricted by artificial barriers.<br>▪ Breeding sites should be maintained in a natural condition.<br>▪ Moult/resting haul-out sites should be maintained in a natural condition.<br>Human activities should occur at levels that do not adversely affect the harbour seal population at the site |
| Carnsore Point SAC (IE002269)<br>150km southeast direct distance. 144km hydrological distance | Harbour Porpoise (*Phocoena phocoena*) [1351] | To maintain the favourable conservation condition of Harbour Porpoise (*Phocoena phocoena*) in Carnsore Point SAC, which is defined by the following list of attributes and targets:<br>▪ The access to suitable habitat is not restricted by artificial barriers |

| European Sites | QIs within ZoI | Conservation Objectives |
|---|---|---|
| | | ▪ Disturbance correlated to human activities occur at levels that do not affect the species |
| Saltee Islands SAC (IE000781)<br>102km southwest direct distance. 180km hydrological distance | Grey Seal (*Halichoerus grypus*) [1364] | To maintain the favourable conservation condition of Grey Seal (*Halichoerus grypus*) in the Saltee Islands SAC, which is defined by the following list of attributes and targets:<br>▪ The access to suitable habitat is not restricted.<br>▪ Breeding sites are maintained.<br>▪ Moult haul-out sites are maintained.<br>▪ Resting haul-out sites are maintained.<br>▪ Population composition includes adult, juvenile and pup cohorts annually.<br>▪ Disturbance correlated to human activities occur at levels that do not affect the species. |
| Hook Head SAC (IE000764)<br>102km southwest direct distance. 212km hydrological distance | Common Bottlenose Dolphin (*Tursiops truncatus*) [1349]<br>Harbour Porpoise (*Phocoena phocoena*) [1351] | To maintain the favourable conservation condition of Bottlenose Dolphin (*Tursiops truncatus*) and Harbour Porpoise (*Phocoena phocoena*) and in Hook Head SAC, which is defined by the following list of attributes and targets:<br>▪ The access to suitable habitat is not restricted by artificial barriers.<br>▪ Disturbance correlated to human activities occur at levels that do not affect the species. |
| Roaringwater Bay and Islands SAC (IE000101)<br>280km southwest direct distance. 325km hydrological distance | Harbour Porpoise (*Phocoena phocoena*) [1351] | To maintain the favourable conservation condition of Harbour Porpoise (*Phocoena phocoena*) in Roaringwater Bay and Islands SAC, which is defined by the following list of attributes and targets:<br>▪ The access to suitable habitat is not restricted by artificial barriers.<br>▪ Disturbance correlated to human activities occur at levels that do not affect the species. |
| Kenmare River SAC (IE002158)<br>270km southwest direct distance. 398km hydrological distance | Harbour Porpoise (*Phocoena phocoena*) [1351] | No site-specific conservation objectives were present for Harbour Porpoise (*Phocena phocena*) for Kenmare River SAC (IE002158). Conservation objectives listed for The Roaringwater Bay SAC can be used as proxy, which are defined by the following list of attributes and targets<br>▪ The access to suitable habitat is not restricted by artificial barriers.<br>▪ Disturbance correlated to human activities occur at levels that do not affect the species. |

| European Sites | QIs within ZoI | Conservation Objectives |
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| Blasket Islands SAC (IE002172)<br>310km southwest direct distance. 455km hydrological distance | Harbour Porpoise (*Phocoena phocoena*) [1351] | To maintain the favourable conservation condition of Harbour Porpoise (*Phocoena phocoena*) in Blasket Islands SAC, which is defined by the following list of attributes and targets:<br>▪ The access to suitable habitat is not restricted by artificial barriers.<br>▪ Disturbance correlated to human activities occur at levels that do not affect the species. |
| Belgica Mound Province SAC (IE002327)<br>420km southwestdirect distance. 480km hydrological distance | Harbour Porpoise (*Phocoena phocoena*) [1351] | To maintain the favourable conservation condition of Harbour Porpoise (*Phocoena phocoena*) in Belgica Mound Province SAC, which is defined by the following list of attributes and targets:<br>▪ The access to suitable habitat is not restricted by artificial barriers<br>▪ Disturbance correlated to human activities occur at levels that do not affect the species. |
| Bunduff Lough and Machair/Trawalua/Mullaghmore SAC (IE000625)<br>195km northwest direct distance<br>495km hydrological distance | Harbour Porpoise (*Phocoena phocoena*) [1351] | No site-specific conservation objectives were present for Harbour Porpoise (*Phocoena phocoena*) for Bunduff Lough and Machair/Trawalua/Mullaghmore SAC (IE000625). Conservation objectives listed for West Connacht Coast SAC can be used as proxy, which are defined by the following list of attributes and targets<br>▪ The access to suitable habitat is not restricted by artificial barriers.<br>▪ Disturbance correlated to human activities occur at levels that do not affect the species. |
| West Connacht Coast SAC (IE002998)<br>264km northwest direct distance.<br>540km hydrological distance | Harbour Porpoise (*Phocoena phocoena*) [1351] | To maintain the favourable conservation condition of Harbour Porpoise (*Phocoena phocoena*) in West Connacht Coast SAC, which is defined by the following list of attributes and targets:<br>▪ The access to suitable habitat is not restricted by artificial barriers.<br>▪ Disturbance correlated to human activities occur at levels that do not affect the species. |
| Inishmore Island SAC (IE000213)<br>240km west direct distance. 590km hydrological distance | Harbour Porpoise (*Phocoena phocoena*) [1351] | To maintain the favourable conservation condition of Harbour Porpoise (*Phocoena phocoena*) in Inishmore Island SAC, which is defined by the following list of attributes and targets:<br>▪ The access to suitable habitat is not restricted by artificial barriers.<br>▪ Disturbance correlated to human activities occur at levels that do not affect the species |

| European Sites | QIs within ZoI | Conservation Objectives |
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| Kilkieran Bay and Islands SAC (IE002111)<br>240km west direct distance. 600km hydrological distance | Harbour Porpoise (*Phocoena phocoena*) [1351] | No site-specific conservation objectives were present for Harbour Porpoise for Kilkieran Bay SAC (IE002111). Conservation objectives listed for Inishmore Island SAC can be used as proxy, which are defined by the following list of attributes and targets<br>▪ The access to suitable habitat is not restricted by artificial barriers.<br>▪ Disturbance correlated to human activities occur at levels that do not affect the species. |
| **International Special Areas of Conservation (SACs)** | | |
| North Anglesey Marine SAC (UK0030398)<br>55km hydrological distance | Harbour Porpoise (*Phocoena phocoena*) [1351] | To ensure that the integrity of the site is maintained and that it makes the best possible contribution to maintaining Favourable Conservation Status (FCS) for Harbour Porpoise in UK waters. In the context of natural change, this will be achieved by ensuring that:<br>▪ Harbour porpoise is a viable component of the sit.<br>▪ There is no significant disturbance of the species.<br>The condition of supporting habitats and processes, and the availability of prey is maintained. |
| Lleyn Peninsula and the Sarnau SAC (UK0013117)<br>135km hydrological distance | Common Bottlenose Dolphin (*Tursiops truncatus*) [1349]<br>Grey Seal (*Halichoerus grypus*) [1364] | To achieve favourable conservation status of bottlenose dolphin and grey seal all the following, subject to natural processes, need to be fulfilled and maintained in the long-term. If these objectives are not met restoration measures will be needed to achieve favourable conservation status.<br>▪ The population is maintaining itself on a long-term basis as a viable component of its natural habitat. Important elements are population size, structure, production, and condition of the species within the site.<br>▪ The species population within the site is such that the natural range of the population is not being reduced or likely to be reduced for the foreseeable future.<br>▪ The presence, abundance, condition and diversity of habitats and species required to support this species is such that the distribution, abundance and populations dynamics of the species within the site and population beyond the site is stable or increasing. |
| West Wales Marine SAC (UK0030397)<br>141km hydrological distance | Harbour Porpoise (*Phocoena phocoena*) [1351] | To ensure that the integrity of the site is maintained and that it makes the best possible contribution to maintaining Favourable Conservation Status (FCS) for Harbour Porpoise in UK waters. In the context of natural change, this will be achieved by ensuring that:<br>▪ Harbour porpoise is a viable component of the site.<br>▪ There is no significant disturbance of the species. |

| European Sites | QIs within ZoI | Conservation Objectives |
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| | | ▪ The condition of supporting habitats and processes, and the availability of prey is maintained. |
| Murlough SAC (UK0016612)<br>161km hydrological distance | Harbour Seal (*Phoca vitulina*) [1365] | To maintain (or restore where appropriate) the Harbour Seal to favourable condition.<br>▪ Maintain (and if feasible enhance) population numbers and distribution of Harbour Seal.<br>▪ Maintain and enhance, as appropriate, physical features used by Harbour Seals within the site. |
| Strangford Lough SAC (UK0016608)<br>179km hydrological distance | Harbour Seal (*Phoca vitulina*) [1365] | To maintain (or restore where appropriate) the Harbour Seal to favourable condition.<br>▪ Maintain (and if feasible enhance) population numbers and distribution of Harbour Seal.<br>▪ Maintain and enhance, as appropriate, physical features used by Harbour Seals within the site. |
| Cardigan Bay SAC (UK0012712)<br>183km hydrological distance | Common Bottlenose Dolphin (*Tursiops truncatus*) [1349]<br>Grey Seal (*Halichoerus grypus*) [1364] | To achieve favourable conservation status of bottlenose dolphin and grey seal all the following, subject to natural processes, need to be fulfilled and maintained in the long-term. If these objectives are not met restoration measures will be needed to achieve favourable conservation status.<br>▪ The population is maintaining itself on a long-term basis as a viable component of its natural habitat. Important elements are population size, structure, production, and condition of the species within the site.<br>▪ The species population within the site is such that the natural range of the population is not being reduced or likely to be reduced for the foreseeable future.<br>▪ The presence, abundance, condition and diversity of habitats and species required to support this species is such that the distribution, abundance and populations dynamics of the species within the site and population beyond the site is stable or increasing. |
| North Channel SAC (UK0030399)<br>187km hydrological distance | Harbour Porpoise (*Phocoena phocoena*) [1351] | To ensure that the integrity of the site is maintained and that it makes the best possible contribution to maintaining Favourable Conservation Status (FCS) for Harbour Porpoise in UK waters. In the context of natural change, this will be achieved by ensuring that:<br>▪ Harbour porpoise is a viable component of the site.<br>▪ There is no significant disturbance of the specie. |

| European Sites | QIs within ZoI | Conservation Objectives |
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| | | ▪ The condition of supporting habitats and processes, and the availability of prey is maintained. |
| Bristol Channel Approaches SAC (UK0030396)<br>326km hydrological distance | Harbour Porpoise (*Phocoena phocoena*) [1351] | To avoid deterioration of the habitats of the harbour porpoise or significant disturbance to the harbour porpoise, thus ensuring that the integrity of the site is maintained and the site makes an appropriate contribution to maintaining Favourable Conservation Status (FCS) for the UK harbour porpoise. To ensure for harbour porpoise that, subject to natural change, the following attributes are maintained or restored in the long term:<br>▪ The species is a viable component of the site.<br>▪ There is no significant disturbance of the species.<br>The supporting habitats and processes relevant to harbour porpoises and their prey are maintained. |
| The Maidens SAC (UK0030384)<br>345km hydrological distance | Grey Seal (*Halichoerus grypus*) [1364] | To maintain (or restore where appropriate) the Grey Seal to favourable condition.<br>▪ Maintain (and if feasible enhance) population numbers and distribution of Grey Seal.<br>Maintain and enhance, as appropriate, physical features used by Grey Seals within the site. |
| Mers Celtiques – Talus du golfe de Gascogne SAC (FR5302015)<br>440km hydrological distance | Harbour Porpoise (*Phocoena phocoena*) [1351] | No site-specific conservation objectives were present for Harbour Porpoise for Mers Celtiques – Talus du golfe de Gascogne SAC. |
| Nord Bretagne DH SAC (FR2502022)<br>455km hydrological distance | Harbour Porpoise (*Phocoena phocoena*) [1351] | No site-specific conservation objectives were present for Harbour Porpoise for Nord Bretagne DH SAC. |
| Ouessant-Molène SAC (FR5300018)<br>505km hydrological distance | Harbour Porpoise (*Phocoena phocoena*) [1351] | No site-specific conservation objectives were present for Harbour Porpoise for Ouessant-Molène SAC. |
| Abers - Côte des légendes SAC (FR5300017)<br>510km hydrological distance | Harbour Porpoise (*Phocoena phocoena*) [1351] | No site-specific conservation objectives were present for Harbour Porpoise for Abers - Côte des légendes SAC. |

| European Sites | QIs within ZoI | Conservation Objectives |
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| Côte de Granit rose-Sept-Iles SAC (FR5300009)<br>515km hydrological distance | Harbour Porpoise (*Phocoena phocoena*) [1351] | No site-specific conservation objectives were present for Harbour Porpoise for Côte de Granit rose-Sept-Iles SAC. |
| Baie de Morlaix SAC (FR5300015)<br>525km hydrological distance | Harbour Porpoise (*Phocoena phocoena*) [1351] | No site-specific conservation objectives were present for Harbour Porpoise for Baie de Morlaix SAC. |
| Tregor Goëlo SAC (FR5310010)<br>535km hydrological distance | Harbour Porpoise (*Phocoena phocoena*) [1351] | No site-specific conservation objectives were present for Harbour Porpoise for Tregor Goëlo SAC. |
| Côtes de Crozon SAC (FR5302006)<br>545km hydrological distance | Harbour porpoise is present within this SAC but is not specifically designated as a QI. | No site-specific conservation objectives were present for Harbour Porpoise for Côtes de Crozon SAC. |
| Riviére Leguer, forêts de Beffou, Coat an Noz et Coat an Hay SAC (FR5300008)<br>550km hydrological distance | Harbour porpoise is present within this SAC but is not specifically designated as a QI. | No site-specific conservation objectives were present for Harbour Porpoise for Riviére Leguer, forêts de Beffou, Coat an Noz et Coat an Hay SAC. |
| Chaussée de Sein SAC (FR5302007)<br>560km hydrological distance | Harbour Porpoise (*Phocoena phocoena*) [1351] | No site-specific conservation objectives were present for Harbour Porpoise for Chaussée de Sein SAC. |
| Récifs du talus du golfe de Gascogne SAC (FR5302016)<br>560km hydrological distance | Harbour Porpoise (*Phocoena phocoena*) [1351] | No site-specific conservation objectives were present for Harbour Porpoise for Récifs du talus du golfe de Gascogne SAC. |
| Récifs et landes de la Hague SAC (FR2500084)<br>605km hydrological distance | Harbour porpoise is present within this SAC but is not specifically designated as a QI. | No site-specific conservation objectives were present for Harbour Porpoise for Récifs et landes de la Hague SAC. |
| Anse de Vauville SAC (FR2502019)<br>605km hydrological distance | Harbour porpoise is present within this SAC but is not specifically designated as a QI. | No site-specific conservation objectives were present for Harbour Porpoise for Anse de Vauville SAC. |
| Cap d'Erquy-Cap Fréhel SAC (FR5300011)<br>605km hydrological distance | Harbour Porpoise (*Phocoena phocoena*) [1351] | No site-specific conservation objectives were present for Harbour Porpoise for Cap d'Erquy-Cap Fréhel SAC (FR5300011). |

| European Sites | QIs within ZoI | Conservation Objectives |
|---|---|---|
| Banc et récifs de Surtainville SAC (FR2502018)<br>610km hydrological distance | Harbour porpoise is present within this SAC but is not specifically designated as a QI. | No site-specific conservation objectives were present for Harbour Porpoise for Banc et récifs de Surtainville SAC. |
| Baie de Saint-Brieuc SAC (FR5300066)<br>610km hydrological distance | Harbour porpoise is present within this SAC but is not specifically designated as a QI. | No site-specific conservation objectives were present for Harbour Porpoise for Baie de Saint-Brieuc SAC. |
| Baie de Lancieux, Baie de l'Arguenon, Archipel de Saint Malo et Dinard SAC (FR5300012)<br>635km hydrological distance | Harbour porpoise is present within this SAC but is not specifically designated as a QI. | No site-specific conservation objectives were present for Harbour Porpoise for l'Arguenon, Archipel de Saint Malo et Dinard SAC. |
| Chausey SAC (FR2500079)<br>640km hydrological distance | Harbour porpoise is present within this SAC but is not specifically designated as a QI. | No site-specific conservation objectives were present for Harbour Porpoise for Chausey SAC. |
| Estuaire de la Rance SAC (FR5300061)<br>650km hydrological distance | Harbour porpoise is present within this SAC but is not specifically designated as a QI. | No site-specific conservation objectives were present for Harbour Porpoise for Estuaire de la Rance SAC. |
| Baie du Mont Saint-Michel SAC (FR2500077)<br>670km hydrological distance | Harbour porpoise is present within this SAC but is not specifically designated as a QI. | No site-specific conservation objectives were present for Harbour Porpoise for Baie du Mont Saint-Michel SAC. |
| **Special Protection Areas (SPAs)** | | |
| South Dublin Bay and River Tolka Estuary SPA (IE004024)<br>0m. Within Proposed Works | 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] | To maintain the favourable conservation condition of light-bellied brent goose, oystercatcher, ringed plover, knot, sanderling, dunlin, bar-tailed godwit, redshank and black-headed gull in South Dublin Bay and River Tolka Estuary SPA, which is defined by the following list of attributes and targets:<br>▪ Population trend is maintained or increased.<br>▪ The distribution of the species is maintained.<br>To maintain the favourable conservation condition of roseate tern and Arctic tern in South Dublin Bay and River Tolka Estuary SPA, which is defined by the following list of attributes and targets:<br>▪ Individual number is maintained or increased. |

| European Sites | QIs within ZoI | Conservation Objectives |
|---|---|---|
| | 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] | ▪ Distribution of roosting area does not decline.<br>▪ Prey biomass does not decline.<br>▪ Barriers to connectivity do not increase.<br>▪ Disturbance level occur at level that do not affect the number of roosting sites.<br>To maintain the favourable conservation condition of common tern in South Dublin Bay and River Tolka Estuary SPA, which is defined by the following list of attributes and targets:<br>▪ Individual number is maintained or increased.<br>▪ Breeding population abundance does not decline.<br>▪ Mean number of young per breeding pair does not decline.<br>▪ Distribution of breeding colonies and roosting area do not decline.<br>▪ Prey biomass does not decline.<br>▪ Barriers to connectivity do not increase.<br>▪ Disturbance level occur at level that do not affect the number of roosting and breeding sites.<br>To maintain the favourable conservation condition of the wetland habitat in South Dublin Bay and River Tolka Estuary SPA as a resource for the regularly-occurring migratory waterbirds that utilise it, which is defined by the following list of attributes and targets:<br>▪ Wetland habitat area is maintained and is not less than 2,192 ha.<br>▪ Grey Plover is proposed for removal from the list of Special Conservation Interests for South Dublin Bay and River Tolka Estuary SPA. As a result, a site-specific conservation objective has not been set for this species. |
| The Murrough SPA (IE004186)<br>0m. Within Proposed Works | Red-throated diver (*Gavia stellata*) [A001]<br>Greylag goose (*Anser anser*) [A043]<br>Light-bellied brent goose (*Branta bernicla hrota*) [A046]<br>Wigeon (Mareca *penelope*) [A050]<br>Teal (*Anas crecca*) [A052]<br>Black-headed gull (*Chroicocephalus ridibundus*) [A179]<br>Herring gull (*Larus argentatus*) [A184]<br>Little tern (*Sterna albifrons*) [A195] | To maintain the favourable conservation condition of red-throated diver in The Murrough SPA, which is defined by the following list of attributes and targets:<br>▪ Long term SPA population trend is stable or increasing.<br>▪ There is a sufficient number of locations, area, and availability of suitable habitat to support the population target.<br>▪ Disturbance level occur at level that do not affect the population trend and spatial distribution.<br>▪ Barriers to connectivity and site use do not increase.<br>▪ There is a sufficient number of locations, area of suitable habitat and available forage biomass and suitable roosting habitats to support the population target. |

| European Sites | QIs within ZoI | Conservation Objectives |
|---|---|---|
| | Wetland and Waterbirds [A999] | To restore the favourable conservation condition of greylag goose, light-bellied Brent goose, wigeon, teal, black-headed gull, herring gull, in The Murrough SPA, which is defined by the following list of attributes and targets:<br>▪ Long term winter population trend is stable or increasing.<br>▪ There is a sufficient number of locations, area, and availability of suitable habitat for winter spatial distribution to support the population target.<br>▪ Disturbance level occur at level that do not affect the population trend and spatial distribution in wintering sites.<br>▪ Barriers to connectivity and site use do not increase.<br>▪ There is a sufficient number of locations, area of suitable habitat and available forage biomass and suitable roosting habitats to support the population target.<br>▪ There is a sufficient area of utilisable habitat available in ecologically important sites outside the SPA.<br>To maintain the favourable conservation condition of little tern in The Murrough SPA, which is defined by the following list of attributes and targets:<br>▪ Long term SPA breeding population trend is stable or increasing.<br>▪ Productivity rate is sufficient to maintain a stable or increasing population.<br>▪ Extent of available nesting options within the SPA is sufficient to maintain a stable or increasing population.<br>▪ Extent of area of suitable habitat and available forage biomass is sufficient to maintain a stable or increasing population.<br>▪ Disturbance occurs at levels that do not affect the birds at the breeding sites and breeding population.<br>▪ Barriers to connectivity and site use do not increase.<br>To maintain the favourable conservation condition of Wetland habitats in The Murrough SPA as a resource for the regularly-occurring migratory waterbirds that utilise these areas. This is defined by the following list of attributes and targets:<br>▪ There is no wetland habitat loss within the SPA.<br>▪ There is no significant impact on the quality or functioning of the wetland habitat within the SPA. |
| Dalkey Islands SPA (IE004172)<br>0.5km north east both direct distance and hydrological distance | Roseate tern (*Sterna dougallii*) [A192]<br>Common tern (*Sterna hirundo*) [A193]<br>Arctic tern (*Sterna paradisaea*) [A194] | To restore the favourable conservation condition of roseate tern, common tern, Arctic tern in Dalkey Islands SPA, which is defined by the following list of attributes and targets:<br>▪ Long term SPA population trend is stable or increasing. |

| European Sites | QIs within ZoI | Conservation Objectives |
|---|---|---|
| | | ▪ There is a sufficient distribution of available roosting options within the SPA to maintain a stable or increasing population.<br>▪ There is a sufficient number of locations, area of suitable habitat and available forage biomass to support the population target.<br>▪ Disturbance occurs at levels that do not affect the birds at the breeding sites and breeding population.<br>▪ Barriers to connectivity and site use do not increase. |
| Wicklow Head SPA (004127)<br>2.5km south east both direct distance and hydrological distance | Kittiwake (*Rissa tridactyla*) [A188] | To restore the favourable conservation condition of kittiwake in Wicklow Head SPA, which is defined by the following list of attributes and targets:<br>▪ Long term SPA population trend is stable or increasing.<br>▪ Productivity rate is sufficient to maintain a stable or increasing population.<br>▪ There is a sufficient distribution of suitable nesting sites throughout the SPA to maintain a stable or increasing population.<br>▪ There is a sufficient number of locations, area of suitable habitat and available forage biomass to support the population target.<br>▪ Disturbance occurs at levels that do not affect the birds at the breeding sites and breeding population.<br>▪ Barriers to connectivity and site use do not increase. |
| North Bull Island SPA (004006)<br>4.8km north east both direct distance and hydrological distance | Light-bellied Brent Goose (*Branta bernicla hrota*) [A046]<br>Shelduck (*Tadorna tadorna*) [A048]<br>Teal (*Anas crecca*) [A052]<br>Pintail (*Anas acuta*) [A054]<br>Shoveler (*Spatula clypeata*) [A056]<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] | To maintain the favourable conservation condition of light-bellied brent goose, shelduck, teal, pintail, shoveler, oystercatcher, golden plover, grey plover, knot, sanderling, dunlin, black-tailed godwit, bar-tailed godwit, curlew redshank, turnstone and black-headed gull in North Bull Island SPA which is defined by the following list of attributes and targets:<br>▪ Population trend is maintained or increased.<br>▪ The distribution of the species is maintained.<br>To maintain the favourable conservation condition of the wetland habitat in North Bull Island SPA as a resource for the regularly occurring migratory waterbirds that utilise it, which is defined by the following list of attributes and targets:<br>▪ The permanent area occupied by the wetland habitat is stable and not less than 1,713 ha |

| European Sites | QIs within ZoI | Conservation Objectives |
|---|---|---|
| | 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>Wetland and Waterbirds [A999] | |
| North-West Irish Sea SPA (004236)<br>4.8km north east both direct distance and hydrological distance | 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 (*Gulosus aristotelis*) [A018]<br>Common Scoter (*Melanitta nigra*) [A065]<br>Little Gull (*Larus minutus*) [A177]<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]<br>Roseate Tern (*Sterna dougallii*) [A192]<br>Common Tern (*Sterna hirundo*) [A193]<br>Arctic Tern (*Sterna paradisaea*) [A194]<br>Little Tern (*Sterna albifrons*) [A195]<br>Guillemot (*Uria aalge*) [A199]<br>Razorbill (*Alca torda*) [A200] | To maintain the favourable conservation condition of red-throated diver, great northern diver, common scoter, black-headed gull, common gull, great black-backed gull and little gull at North-west Irish Sea SPA, which is defined by the following list of attributes and targets:<br>▪ Non-breeding population size does not decline.<br>▪ Spatial distribution of suitable habitat is maintained sufficient to support the species.<br>▪ Forage spatial distribution and available forage biomass are maintained sufficient to support the species.<br>▪ Disturbance is maintained at levels that do not impact on the species.<br>▪ Barriers to connectivity is maintained at levels that do not impact on the species' access to the SPA or to other ecologically important sites outside the SPA.<br>To maintain the favourable conservation condition of fulmar, herring gull, kittiwake, guillemot and razorbill at North-west Irish Sea SPA, which is defined by the following list of attributes and targets:<br>▪ Population size does not decline.<br>▪ Spatial distribution of suitable habitat is maintained sufficient to support the species.<br>▪ Forage spatial distribution and available forage biomass are maintained sufficient to support the species.<br>▪ Disturbance is maintained at levels that do not impact on the specie.<br>▪ Barriers to connectivity is maintained at levels that do not impact on the species' access to the SPA or to other ecologically important sites outside the SPA.<br>To maintain the favourable conservation condition of manx shearwater, cormorant, shag, lesser black-backed gull, roseate tern, common tern, Arctic tern, little tern and puffin at North-west Irish Sea SPA, which is defined by the following list of attributes and targets:<br>▪ Breeding population size does not decline.<br>▪ Spatial distribution of suitable habitat is maintained sufficient to support the species. |

| European Sites | QIs within ZoI | Conservation Objectives |
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| | Puffin (*Fratercula arctica*) [A204] | ▪ Forage spatial distribution and available forage biomass are maintained sufficient to support the species.<br>▪ Disturbance is maintained at levels that do not impact on the species.<br>▪ Barriers to connectivity is maintained at levels that do not impact on the species' access to the SPA or to other ecologically important sites outside the SPA. |
| Wicklow Mountains SPA (004040)<br>9.4km west direct distance, 11.8km upstream hydrological connection | Merlin (*Falco columbarius*) [A098]<br>Peregrine (*Falco peregrinus*) [A103] | To maintain the favourable conservation condition of merlin in Wicklow Mountains SPA, which is defined by the following list of attributes and targets:<br>▪ Breeding population is stable or increasing.<br>▪ Productivity rate is sufficient to meet the population size target.<br>▪ There is sufficient availability of suitable nesting sites throughout the SPA to maintain the population.<br>▪ There is sufficient availability of suitable foraging habitat across the SPA to support targets relating to population size, productivity rate and distribution.<br>▪ Disturbance is maintained at levels that do not impact on breeding population.<br>To maintain the favourable conservation condition of peregrine in Wicklow Mountains SPA, which is defined by the following list of attributes and targets:<br>▪ Productivity rate is sufficient to meet the population size target.<br>▪ There is sufficient availability of suitable nesting sites throughout the SPA to maintain the population.<br>▪ There is sufficient number of locations, area of suitable habitat, and available prey biomass to support the population target.<br>▪ Disturbance is maintained at levels that do not impact on breeding population. |
| Baldoyle Bay SPA (IE004016)<br>10.3km north direct distance and 17.5km hydrological distance | Light-bellied Brent Goose (*Branta bernicla hrota*) [A046]<br>Shelduck (*Tadorna tadorna*) [A048]<br>Ringed Plover (*Charadrius hiaticula*) [A137]<br>Golden Plover (*Pluvialis apricaria*) [A140]<br>Grey Plover (*Pluvialis squatarola*) [A141]<br>Bar-tailed Godwit (*Limosa lapponica*) [A157] | To maintain the favourable conservation condition of light-bellied brent goose, shelduck, ringed plover, golden plover, grey plover and bar-tailed godwit in Baldoyle Bay SPA which is defined by the following list of attributes and targets:<br>▪ Population trend is maintained or increased.<br>▪ The distribution of the species is maintained. |
| Malahide Estuary SPA (IE004025)<br>14.9km north direct distance and 20.7km hydrological distance | Great Crested Grebe (*Podiceps cristatus*) [A005]<br>Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] | To maintain the favourable conservation condition of great crested grebe, light-bellied brent goose, shelduck, pintail, goldeneye, red-breasted merganser, oystercatcher, golden |

| European Sites | QIs within ZoI | Conservation Objectives |
|---|---|---|
| | Shelduck (*Tadorna tadorna*) [A048]<br>Pintail (*Anas acuta*) [A054]<br>Goldeneye (*Bucephala clangula*) [A067]<br>Red-breasted Merganser (*Mergus serrator*) [A069]<br>Oystercatcher (*Haematopus ostralegus*) [A130]<br>Golden Plover (*Pluvialis apricaria*) [A140]<br>Grey Plover (*Pluvialis squatarola*) [A141]<br>Knot (*Calidris canutus*) [A143]<br>Dunlin (*Calidris alpina*) [A149]<br>Black-tailed Godwit (*Limosa limosa*) [A156]<br>Bar-tailed Godwit (*Limosa lapponica*) [A157]<br>Redshank (*Tringa totanus*) [A162] | plover, grey plover, knot, dunlin, black-tailed godwit, bar-tailed godwit and redshank in Malahide Estuary SPA, which is defined by the following list of attributes and targets:<br>▪ Population trend is maintained or increased.<br>▪ The distribution of the species is maintained. |
| Rogerstown Estuary SPA (IE004015) 20.5km north direct distance and 24.7km hydrological distance | Greylag Goose (*Anser anser*) [A043]<br>Light-bellied Brent Goose (*Branta bernicla hrota*) [A046]<br>Shelduck (*Tadorna tadorna*) [A048]<br>Shoveler (*Spatula clypeata*) [A056]<br>Oystercatcher (Haematopus ostralegus) [A130]<br>Ringed Plover (*Charadrius hiaticula*) [A137]<br>Grey Plover (*Pluvialis squatarola*) [A141]<br>Knot (*Calidris canutus*) [A143]<br>Dunlin (*Calidris alpina*) [A149]<br>Black-tailed Godwit (*Limosa limosa*) [A156]<br>Redshank (*Tringa totanus*) [A162] | To maintain the favourable conservation condition of greylag goose, light-bellied brent goose, shelduck, shoveler, oystercatcher, ringed plover, grey plover, knot, dunlin, black-tailed godwit and redshank in Rogerstown Estuary SPA, which is defined by the following list of attributes and targets:<br>▪ Long term population trend is maintained or increased.<br>▪ The distribution of the species does not decrease. |

### 4.2.1 Other European Sites

No ecological pathway, functional link or significant effect was identified between the Survey Works and other European sites other than those identified in Table 4.4 above.

# 5. Information for Appropriate Assessment

## 5.1 Receiving Environment

The results of the desk-based review and site visits is presented in the following sections. Photographs taken during the site visits are presented in Appendix C to give an overview of the habitats, species and waterbodies within the vicinity of the Survey Works. The Survey Works area and surrounding landscape is shown in Figure 6-1 below.

### 5.1.1 Survey Works Description

Surveys include ground investigation, geophysical surveys, archaeological surveys, bathymetric surveys, benthic ecology surveys and breeding bird and bat survey works. The Survey Works are required to inform the geotechnical and ecological baseline conditions and site conditions in general. Further details of each survey methodology are given in Section 3.2.

## 5.2 European Sites

As outlined in Section 4, 58 European sites screened in for Appropriate Assessment. These are described below.

1. South Dublin Bay SAC (IE000210): the site is designated for the following Annex I habitat of the E.U. Habitat Directive: Mudflats and sandflats not covered by seawater at low tide [1140], Annual vegetation of drift lines [1210], *Salicornia* and other annuals colonising mud and sand [1310], Embryonic shifting dunes [2110]. The site extends from the South Wall to Dun Laoghaire. The site includes the largest extent of dwarf eelgrass (*Zostera noltii*) and it includes beaches with incipient dune formation, sand and mudflats, and small areas of early stages of saltmarsh. The site is also important for waterfowl (NPWS, 2013a, 2015).

2. Bray Head SAC (IE000714): the site is designated for the following habitats listed in Annex I of the EU Habitat Directive: Vegetated Sea Cliffs [1230] and Dry Heath [4030]. The site lies between Bray and Greystones and comprises tall quartzite cliffs with shorter and less vegetated clay cliffs in the south. The site is also important for breeding seabirds and peregrine (NPWS, 2017a).

3. The Murrough Wetlands SAC (IE002249): the site is designated for the following habitats listed in Annex I of the EU Habitat Directive: Annual vegetation of drift lines [1210], Perennial vegetation of stony banks [1220], Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330], Mediterranean salt meadows (*Juncetalia maritimi*) [1410], Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* [7210]* and Alkaline fens [7230]. The site extends for 15km between Ballygannon to Wicklow town and is the largest coastal wetland complex on the east coast (NPWS, 2021).

4. North Dublin Bay SAC (IE000206): the site is designated for the following habitats and species listed in Annex I/Annex II habitat of the E.U. Habitat Directive: Mudflats and sandflats not covered by seawater at low tide [1140], Annual vegetation of drift lines [1210], Salicornia and other annuals colonising mud and sand [1310], Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330], Mediterranean salt meadows (Juncetalia maritimi) [1410], Embryonic shifting dunes [2110], Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120], Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130], Humid dune slacks [2190] and Petalwort (*Petalophyllum ralfsii*) [1395]. The site includes the habitats and seas around Bull Island in the North Dublin Bay (NPWS, 2013c).

5. Rockabill to Dalkey Island SAC (IE003000): the site is designated for the following habitats and species listed in Annex I/Annex II habitat of the E.U. Habitat Directive: reefs [1170] and Harbour Porpoise (*Phocoena phocoena*) [1351]. This site extends southwards, in a strip approximately 7 km wide and 40 km in length, from Rockabill to Howth Head, crossing Dublin Bay to Frazer Bank. The site includes inshore and coastal waters, sandy and muddy seabed, sandbanks, reefs and island (NPWS, 2013b).

6. Lambay Island SAC (IE000204): the site is designated for the following habitats and species listed in Annex I/Annex II habitat of the E.U. Habitat Directive: reefs [1170], vegetated sea cliffs of the Atlantic and Baltic coasts [1230], harbour porpoise (*Phocoena phocoena*) [1351], Grey Seal (*Halichoerus grypus*) [1364], Harbour Seal (*Phoca vitulina*) [1365]. The site is an island located 4km from Portrane (NPWS, 2013d).

7. Codling Fault Zone SAC (IE003015): the site is designated for the following habitats and species listed in Annex I/Annex II habitat of the E.U. Habitat Directive: submarine structures made by leaking gases [1180], harbour porpoise [1351]. The site is located at 24km of Howth Head within the Irish Sea and characterised by bubbling reefs and structures within pockmarks (NPWS, 2023c).

8. Slaney River Valley SAC (IE000781): the site is designated for the following habitats and species listed in Annex I/Annex II habitat of the E.U. Habitat Directive: Estuaries [1130], Mudflats and sandflats not covered by seawater at low tide [1140], Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410], Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260], Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0], Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*) [91E0], freshwater pearl mussel (*Margaritifera margaritifera*) [1029], sea lamprey (*Petromyzon marinus*) [1095], brook lamprey (*Lampetra planeri*) [1096], river lamprey (*Lampetra fluviatilis*) [1099], twaite shad *Alosa fallax fallax*) [1103], Atlantic salmon (*Salmo salar*) [1106], otter (Lutra lutra) [1355] and harbour seal [1365]. The site comprises the freshwater stretches of the River Slaney from the Wicklow Mountains to tidal areas of Wexford harbour. It also includes a number of tributaries (NPWS, 2011a).

9. Carnsore Point SAC (IE002269): the site is designated for the following habitats and species listed in Annex I/Annex II habitat of the E.U. Habitat Directive: Tidal Mudflats and Sandflats [1140], Reefs [1170] and harbour porpoise [1351]. The site is off Carnsore Point in south-east Co. Wexford (NPWS, 2024b).

10. Saltee Islands SAC (IE000781): the site is designated for the following habitats and species listed in Annex I/Annex II habitat of the E.U. Habitat Directive: Mudflats and sandflats not covered by seawater at low tide [1140], Large shallow inlets and bays [1160], Reefs [1170], Vegetated sea cliffs of the Atlantic and Baltic coasts [1230], Submerged or partially submerged sea caves [8330] and grey seal [1364]. The site comprises the Saltee Islands and the surrounding seas off Co. Wexford (NPWS, 2011b).

11. Hook Head SAC (IE000764): the site is designated for the following habitats and species listed in Annex I/Annex II habitat of the E.U. Habitat Directive: Large shallow inlets and bays [1160], Reefs [1170], Vegetated sea cliffs of the Atlantic and Baltic coasts [1230], common bottlenose dolphin (*Tursiops truncatus*) [1349] and harbour porpoise [1351]. The site comprises the sea cliffs of the Hook Head Peninsula as well as the seas to the east and south (NPWS, 2025a).

12. Roaringwater Bay and Islands SAC (IE000101): the site is designated for the following habitats and species listed in Annex I/Annex II habitat of the E.U. Habitat Directive: Large shallow inlets and bays [1160], Reefs [1170], Vegetated sea cliffs of the Atlantic and Baltic coasts [1230], European dry heaths [4030], Submerged or partially submerged sea caves [8330], harbour porpoise [1351], otter [1355] and grey seal [1364]. The site is a wide shallow bay in the south-west of Ireland in Co. Cork and includes a large number of large and small islands (NPWS, 2011c).

13. Kenmare River SAC (IE002158): the site is designated for the following habitats and species listed in Annex I/Annex II habitat of the E.U. Habitat Directive: Large shallow inlets and bays [1160], Reefs [1170], Perennial vegetation of stony banks [1220], Vegetated sea cliffs of the Atlantic and Baltic coasts [1230], Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330], Mediterranean salt meadows (*Juncetalia maritimi*) [1410], Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120], Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130], European dry heaths [4030], *Juniperus communis* formations on heaths or calcareous grasslands [5130], Calaminarian grasslands of the *Violetalia calaminariae* [6130], Submerged or partially submerged sea caves [8330], narrow-mouthed whorl snail *(Vertigo angustior)* [1014], lesser horseshoe bat (*Rhinolophus hipposideros*) [1303], harbour

porpoise [1351], otter [1355] and harbour seal [1365]. The site is a long narrow bay in south-west Ireland in Co. Kerry and includes a number of islands and inlets (NPWS, 2013h).

14. Blasket Islands SAC (IE0002172): the site is designated for the following habitats and species listed in Annex I/Annex II habitat of the E.U. Habitat Directive: Reefs [1170], Vegetated sea cliffs of the Atlantic and Baltic coasts [1230], European dry heaths [4030], Submerged or partially submerged sea caves [8330], harbour porpoise [1351] and grey seal [1364].The site is situated off the end of the Dingle Peninsula, Co. Kerry and includes six main islands as well as the surrounding seas (NPWS, 2014b).

15. Belgica Mound Province SAC (IE002327): the site is designated for the following habitats and species listed in Annex I/Annex II habitat of the E.U. Habitat Directive: Reefs [1170], common bottlenose dolphin [1349] and harbour porpoise [1351]. The site is located on the eastern edge of the Porcupine Seabight oceanic basin, approximately 100km south-west of the Co. Kerry coast (NPWS, 2025b).

16. Bunduff Lough and Machair/Trawalua/Mullaghmore SAC (IE000625): the site is designated for the following habitats and species listed in Annex I/Annex II habitat of the E.U. Habitat Directive: Mudflats and sandflats not covered by seawater at low tide [1140], Large shallow inlets and bays [1160], Reefs [1170], Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120], Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130], Humid dune slacks [2190], Machairs (* in Ireland) [21A0], *Juniperus communis* formations on heaths or calcareous grasslands [5130], Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) [6210], Alkaline fens [7230], marsh fritillary [1065], harbour porpoise [1351] and petalwort [1395] (NPWS, 2015c).

17. West Connacht Coast SAC (IE002998): the site is designated for the following species listed in Annex II habitat of the E.U. Habitat Directive: common bottlenose dolphin [1349] and harbour porpoise [1351]. The site comprises two large areas of shallow marine waters up to approximately 11km off the coasts of Co. Mayo and Co. Galway (NPWS, 2025c).

18. Inishmore Island SAC (IE000213): the site is designated for the following habitats and species listed in Annex I/Annex II habitat of the E.U. Habitat Directive: Coastal lagoons [1150], Reefs [1170], Perennial vegetation of stony banks [1220], Vegetated sea cliffs of the Atlantic and Baltic coasts [1230], Embryonic shifting dunes [2110], Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120], Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130], Dunes with Salix repens ssp. argentea (*Salicion arenariae*) [2170], Humid dune slacks [2190], Machairs (* in Ireland) [21A0], European dry heaths [4030], Alpine and Boreal heaths [4060], Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) [6210], Lowland hay meadows (*Alopecurus pratensis*, *Sanguisorba officinalis*) [6510], Limestone pavements [8240], Submerged or partially submerged sea caves [8330], narrow-mouthed whorl snail [1014] and harbour porpoise [1351]. The site is the largest of three islands located approximately 8km off the south coast of Co. Galway and also includes the surrounding seas (NPWS, 2024f).

19. Kilkieran Bay and Islands SAC (IE002111): the site is designated for the following habitats and species listed in Annex I/Annex II habitat of the E.U. Habitat Directive: Mudflats and sandflats not covered by seawater at low tide [1140], Coastal lagoons [1150], Large shallow inlets and bays [1160], Reefs [1170], Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330], Mediterranean salt meadows (*Juncetalia maritimi*) [1410], Machairs (* in Ireland) [21A0], Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoeto-Nanojuncetea* [3130], Lowland hay meadows (*Alopecurus pratensis*, *Sanguisorba officinalis*) [6510], harbour porpoise [1351], otter [1355] harbour seal [1364] and slender naiad [1833]. The site is a large area of marine water with lots of islands, islets, bays and inlets north of Galway Bay (NPWS, 2014c).

20. North Anglesey Marine SAC (UK0030398): the site is designated for the following habitats and species listed in Annex I/Annex II habitat of the E.U. Habitat Directive: harbour porpoise [1351]. The site is 3249km$^2$ and located off the north coast of Anglesey and into the Irish Sea (NRW, 2016b).

21. Lleyn Peninsula and the Sarnau SAC (UK0013117): the site is designated for the following habitats and species listed in Annex I/Annex II habitat of the E.U. Habitat Directive: Sandbanks which are slightly covered by seawater all the time [1110], Estuaries [1130], Mudflats and sandflats not covered by seawater at low tide [1140], Coastal lagoon [1150], Large shallow inlets and bays [1160], Reefs [1170], *Salicornia* and other annuals colonizing mud and sand [1310], Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330], Submerged or partially submerged sea caves [8330], common bottlenose dolphin [1349], otter [1355] and grey seal [1364]. The site includes the coastal waters around the Lleyn Peninsula in north-west Wales (NRW, 2018a).

22. West Wales Marine SAC (UK0030397): the site is designated for the following habitats and species listed in Annex I/Annex II habitat of the E.U. Habitat Directive: harbour porpoise [1351]. The site is 7376km$^2$ and located off the west coast of Wales between the Lleyn Peninsula and Pembrokeshire (NRW, 2016a).

23. Murlough SAC (UK0016612): the site is designated for the following habitats and species listed in Annex I/Annex II habitat of the E.U. Habitat Directive: Sandbanks which are slightly covered by seawater all the time [1110], Mudflats and sandflats not covered by seawater at low tide [1140], Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330], Embryonic shifting dunes [2110], Shifting dunes along the shoreline with *Ammophila arenaria* ('white dunes') [2120], Fixed coastal dunes with herbaceous vegetation ('grey dunes') [2130], Atlantic decalcified fixed dunes (*Calluno-Ulicetea*) [2150], Dunes with *Salix repens* ssp. *argentea* (*Salicion arenariae*) [2170], marsh fritillary (*Euphydryas aurinia*) [1065] and harbour seal [1365]. The site includes the largest dune complexes in Northern Ireland and is located on the east coast of County Down (DAERA, 2018a).

24. Strangford Lough SAC (UK0016608): the site is designated for the following habitats and species listed in Annex I/Annex II habitat of the E.U. Habitat Directive: Mudflats and sandflats not covered by seawater at low tide [1140], Coastal lagoons [1150], Large shallow inlets and bays [1160], Reefs [1170], Annual vegetation of drift lines [1210], Perennial vegetation of stony banks [1220], *Salicornia* and other annuals colonizing mud and sand [1310], Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] and harbour seal [1365]. The site comprises a large, enclosed sea lough with numerous islands and islets on the east coast of Northern Ireland (DAERA, 2018b).

25. Cardigan Bay SAC (UK0013117): the site is designated for the following habitats and species listed in Annex I/Annex II habitat of the E.U. Habitat Directive: Sandbanks which are slightly covered by seawater all the time [1110], Reefs [1170], Submerged or partially submerged sea caves [8330], sea lamprey [1095], river lamprey [1099], common bottlenose dolphin [1349] and grey seal [1364]. The site is an area of approximately 1000km$^2$ off Pembrokeshire, Wales (NRW, 2018b).

26. North Channel SAC (UK0030399): the site is designated for the following species listed in Annex II habitat of the E.U. Habitat Directive: harbour porpoise [1351]. The site is approximately 1600km$^2$ and located along the east coast of Northern Ireland (DAERA, 2019).

27. Bristol Channel Approaches SAC (UK0030396): the site is designated for the following habitats and species listed in Annex I/Annex II habitat of the E.U. Habitat Directive: harbour porpoise [1351]. The site is 5850km$^2$ and located at the entrance to the Bristol Channel between Pembrokeshire and Cornwall (NE, 2019).

28. The Maidens SAC (UK0030384): the site is designated for the following habitats and species listed in Annex I/Annex II habitat of the E.U. Habitat Directive: Sandbanks which are slightly covered by seawater all the time [1110], Reefs [1170] and grey seal [1364]. The site comprises a group of reefs and two small islands off the north-east of Northern Ireland (DAERA, 2017).

29. Mers Celtiques – Talus du golfe de Gascogne SAC (UK0030396): the site is designated for the following habitats and species listed in Annex I/Annex II habitat of the E.U. Habitat Directive: Reefs [1170], common bottlenose dolphin [1349] and harbour porpoise [1351]. The site comprises a large area of marine habitats off the west coast of France (EEA, 2021).

30. Nord Bretagne DH SAC (UK0030396): the site is designated for the following species listed in Annex II habitat of the E.U. Habitat Directive: common bottlenose dolphin [1349] and harbour porpoise [1351]. The site comprises a large marine area west of Guernsey (EEA, 2021).

31. Ouessant-Molène SAC (UK0030396): the site is designated for the following habitats and species listed in Annex I/Annex II habitat of the E.U. Habitat Directive: Sandbanks which are slightly covered by seawater all the time [1110], Coastal lagoons [1150], Reefs [1170], Annual vegetation of drift lines [1210], Vegetated sea cliffs of the Atlantic and Baltic coasts [1230], greater horseshoe bat [1304], common bottlenose dolphin [1349], harbour porpoise [1351], grey seal [1364], shore dock [1441] and *Vandenboschia speciosa* [6985]. The site includes the coast, islands and marine habitats west of Plouarzel in north west France (EEA, 2021).

32. Abers - Côte des légendes SAC (UK0030396): the site is designated for the following habitats and species listed in Annex I/Annex II habitat of the E.U. Habitat Directive: Sandbanks which are slightly covered by seawater all the time [1110], Estuaries [1130], Mudflats and sandflats not covered by seawater at low tide [1140], Reefs [1170], Annual vegetation of drift lines [1210], Perennial vegetation of stony banks [1220], Vegetated sea cliffs of the Atlantic and Baltic coasts [1230], *Salicornia* and other annuals colonizing mud and sand [1310], Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330], Embryonic shifting dunes [2110], Shifting dunes along the shoreline with *Ammophila arenaria* ('white dunes') [2120], Fixed coastal dunes with herbaceous vegetation ('grey dunes') [2130], Humid dune slacks [2190], European dry heaths [4030], Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430], Siliceous rocky slopes with chasmophytic vegetation [8220], Atlantic acidophilous beech forests with *Ilex* and sometimes also *Taxus* in the shrublayer (*Quercion robori-petraeae* or *Ilici-Fagenion*) [9120], *Asperulo-Fagetum* beech forests [9130], *Elona quimperiana* [1007], Southern damselfly [1044], Atlantic salmon [1106], greater horseshoe bat [1304], common bottlenose dolphin [1349], harbour porpoise [1351], otter [1355], grey seal [1364] and *Liparis loeselii* [1903]. The site includes the estuaries of the Aber Benoît and L'Aber Wrac'h as well as the coastal and marine habitats to the north (EEA, 2021).

33. Côte de Granit rose-Sept-Iles SAC (UK0030396): the site is designated for the following habitats and species listed in Annex I/Annex II habitat of the E.U. Habitat Directive: Sandbanks which are slightly covered by seawater all the time [1110], Mudflats and sandflats not covered by seawater at low tide [1140], Coastal lagoons [1150], Large shallow inlets and bays [1160], Reefs [1170], Perennial vegetation of stony banks [1220], Vegetated sea cliffs of the Atlantic and Baltic coasts [1230], Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330], Fixed coastal dunes with herbaceous vegetation ('grey dunes') [2130], European dry heaths [4030], *Elona quimperiana* [1007], sea lamprey [1095], allis shad (*Alosa alosa*) [1102], twaite shad [1103], Atlantic salmon [1106], common bottlenose dolphin [1349], harbour porpoise [1351], grey seal [1364], shore dock [1441] and *Vandenboschia speciosa* [6985]. The site includes the coast and marine habitats off Trégastel in north west France (EEA, 2021).

34. Baie de Morlaix SAC (UK0030396): the site is designated for the following habitats and species listed in Annex I/Annex II habitat of the E.U. Habitat Directive: which are slightly covered by seawater all the time [1110], Estuaries [1130], Mudflats and sandflats not covered by seawater at low tide [1140], Large shallow inlets and bays [1160], Reefs [1170], Annual vegetation of drift lines [1210], Perennial vegetation of stony banks [1220], Vegetated sea cliffs of the Atlantic and Baltic coasts [1230], Halo-nitrophilous scrubs (*Pegano-Salsoletea*) [1430], European dry heaths [4030], Atlantic acidophilous beech forests with *Ilex* and sometimes also *Taxus* in the shrublayer (*Quercion robori-petraeae* or *Ilici-Fagenion*) [9120], barbastelle bat [1308], harbour porpoise [1351], otter [1355] and grey seal [1364]. The site comprises Morlaix estuary and bay and extends into the marine habitats to the north (EEA, 2021).

35. Tregor Goëlo SAC (UK0030396): the site is designated for the following habitats and species listed in Annex I/Annex II habitat of the E.U. Habitat Directive: Sandbanks which are slightly covered by seawater all the time [1110], Estuaries [1130], Mudflats and sandflats not covered by seawater at low tide [1140], Coastal lagoon [1150], Large shallow inlets and bays [1160], Reefs [1170], Perennial vegetation of stony banks [1220], Vegetated sea cliffs of the Atlantic and Baltic coasts [1230], *Salicornia* and other annuals colonizing mud and sand [1310], Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330],

Embryonic shifting dunes [2110], Shifting dunes along the shoreline with *Ammophila arenaria* ('white dunes') [2120], Humid dune slacks [2190], Oligotrophic waters containing very few minerals generally on sandy soils of the West Mediterranean, with *Isoetes* spp [3120], Temperate Atlantic wet heaths with *Erica ciliaris* and *Erica tetralix* [4020], European dry heaths [4030], Species-rich *Nardus* grasslands, on silicious substrates in mountain areas (and submountain areas in Continental Europe) [6230], *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410], Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430], Siliceous rocky slopes with chasmophytic vegetation [8220], Siliceous rock with pioneer vegetation of the *Sedo-Scleranthion* or of the *Sedo albi-Veronicion dillenii* [8230], Atlantic acidophilous beech forests with *Ilex* and sometimes also *Taxus* in the shrublayer (*Quercion robori-petraeae* or *Ilici-Fagenion*) [9120], *Asperulo-Fagetum* beech forests [9130], *Tilio-Acerion* forests of slopes, screes and ravines [9180], Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*) [91E0], *Elona quimperiana* [1007], Southern damselfly (*Coenagrion mercuriale*) [1044], sea lamprey [1095], brook lamprey [1096], allis shad (*Alosa alosa*) [1102], twaite shad [1103], Atlantic salmon [1106], greater horseshoe bat [1304], Geoffroy's bat [1321], common bottlenose dolphin [1349], harbour porpoise [1351], otter [1355], grey seal [1364] and *Vandenboschia speciosa* [6985]. The site includes the estuaries of Le Trieux and Le Jaudy, island of Bréhat and marine habitats to the north (EEA, 2021).

36. Côtes de Crozon SAC (UK0030396): the site is designated for the following habitats and species listed in Annex I/Annex II habitat of the E.U. Habitat Directive: Sandbanks which are slightly covered by seawater all the time [1110], Reefs [1170], Submerged or partially submerged sea caves [8330], greater horseshoe bat [1304], common bottlenose dolphin [1349] and grey seal [1364]. Harbour porpoise is present within this SAC but is not specifically designated as a QI. The site includes the coast and marine habitats to the west of Crozon in north west France (EEA, 2021).

37. Riviére Leguer, forêts de Beffou, Coat an Noz et Coat an Hay SAC (UK0030396): the site is designated for the following habitats and species listed in Annex I/Annex II habitat of the E.U. Habitat Directive: Mudflats and sandflats not covered by seawater at low tide [1140], Reefs [1170], Vegetated sea cliffs of the Atlantic and Baltic coasts [1230], Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330], Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260], European dry heaths [4030], *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410], Siliceous rocky slopes with chasmophytic vegetation [8220], Atlantic acidophilous beech forests with *Ilex* and sometimes also *Taxus* in the shrublayer (*Quercion robori-petraeae* or *Ilici-Fagenion*) [9120], *Asperulo-Fagetum* beech forests [9130], Bog woodland [91D0], Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*) [91E0], *Elona quimperiana* [1007], marsh fritillary [1065], sea lamprey [1095], brook lamprey [1096], allis shad (*Alosa alosa*) [1102], twaite shad [1103], Atlantic salmon [1106], sculpin [1163], lesser horseshoe bat [1303], greater horseshoe bat [1304], otter [1355], harbour seal [1365], *Cottus perifreum* [5315] and *Vandenboschia speciosa* [6985].Harbour porpoise is present within this SAC but is not specifically designated as a QI. The site comprises the Léguer River and surrounding habitats (EEA, 2021).

38. Chaussée de Sein SAC (UK0030396): the site is designated for the following habitats and species listed in Annex I/Annex II habitat of the E.U. Habitat Directive: Sandbanks which are slightly covered by seawater all the time [1110], Reefs [1170], common bottlenose dolphin [1349], harbour porpoise [1351], grey seal [1364] and shore dock [1441]. The site includes the island of Sein and the surrounding marine habitats (EEA, 2021).

39. Récifs du talus du golfe de Gascogne SAC (UK0030396): the site is designated for the following habitats and species listed in Annex I/Annex II habitat of the E.U. Habitat Directive: Reefs [1170], common bottlenose dolphin [1349] and harbour porpoise [1351]. The site comprises a series of reefs off the west coast of France (EEA, 2021).

40. Récifs et landes de la Hague SAC (FR2500084): the site is designated for the following habitats and species listed in Annex I/Annex II habitat of the E.U. Habitat Directive: Sandbanks which are slightly covered by seawater all the time [1110], Mudflats and sandflats not covered by seawater at low tide [1140], Reefs

[1170], Annual vegetation of drift lines [1210], Perennial vegetation of stony banks [1220], Vegetated sea cliffs of the Atlantic and Baltic coasts [1230], Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330], Humid dune slacks [2190], Northern Atlantic wet heaths with *Erica tetalix* [4010], European dry heaths [4030], *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410], Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430], Lowland hay meadows (*Alopecurus pratensis*, *Sanguisorba officinalis*) [6510], Active raised bogs [7110], Degraded raised bogs still capable of natural regeneration [7120], *Asperulo-Fegetum* beech forests [9130], *Tilio-Acerion* forests of slopes, screes and ravines [9180], Bechstein's bat (*Myotis bechsteinii*) [1323], common bottlenose dolphin [1349], shore dock (Rumex rupestris) [1441] and *Vandenboschia speciosa* [6985]. Harbour porpoise is present within this SAC but is not specifically designated as a QI. The site includes the coastal areas and habitats around the north of La Hague Peninsula in north west France (EEA, 2021).

41. Anse de Vauville SAC (FR2502019): the site is designated for the following habitats and species listed in Annex I/Annex II habitat of the E.U. Habitat Directive: Sandbanks which are slightly covered by seawater all the time [1110], Reefs [1170] and common bottlenose dolphin [1349]. Harbour porpoise is present within this SAC but is not specifically designated as a QI. The site includes the coastal areas off the west of La Hague Peninsula in north west France (EEA, 2021).

42. Cap d'Erquy-Cap Fréhel SAC (FR5300011): the site is designated for the following habitats and species listed in Annex I/Annex II habitat of the E.U. Habitat Directive: Sandbanks which are slightly covered by seawater all the time [1110], Estuaries [1130], Mudflats and sandflats not covered by seawater at low tide [1140], Large shallow inlets and bays [1160], Reefs [1170], Vegetated sea cliffs of the Atlantic and Baltic coasts [1230], Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330], Shifting dunes along the shoreline with *Ammophila arenaria* ('white dunes') [2120], Fixed coastal dunes with herbaceous vegetation ('grey dunes') [2130], Humid dune slacks [2190], Temperate Atlantic wet heaths with *Erica ciliaris* and *Erica tetralix* [4020], European dry heaths [4030], Submerged or partially submerged sea caves [8330], *Tilio-Acerion* forests of slopes, screes and ravines [9180], lesser horseshoe bat [1303], greater horseshoe bat [1304], greater mouse-eared bat [1324], common bottlenose dolphin [1349], harbour porpoise [1351], otter [1355] and shore dock [1441]. The site includes Cap d'Erquy, Cap Fréhel, la Fresnay Bay and a large area of marine habitat to the north (EEA, 2021).

43. Banc et récifs de Surtainville SAC (FR2502018): the site is designated for the following habitats and species listed in Annex I/Annex II habitat of the E.U. Habitat Directive: Sandbanks which are slightly covered by seawater all the time [1110], Reefs [1170] and common bottlenose dolphin [1349]. Harbour porpoise is present within this SAC but is not specifically designated as a QI. The site includes the coastal areas off the west of Surtainville in north west France (EEA, 2021).

44. Baie de Saint-Brieuc SAC (FR5300066): the site is designated for the following habitats and species listed in Annex I/Annex II habitat of the E.U. Habitat Directive: which are slightly covered by seawater all the time [1110], Estuaries [1130], Mudflats and sandflats not covered by seawater at low tide [1140], Large shallow inlets and bays [1160], Reefs [1170], Annual vegetation of drift lines [1210], Perennial vegetation of stony banks [1220], Vegetated sea cliffs of the Atlantic and Baltic coasts [1230], *Salicornia* and other annuals colonizing mud and sand [1310], *Spartina* swards (Spartinion maritimae) [1320], Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330], Mediterranean and thermos-Atlantic halophilous scrubs (*Sarcocornetea fruticosi*) [1420], Shifting dunes along the shoreline with *Ammophila arenaria* ('white dunes') [2120], Fixed coastal dunes with herbaceous vegetation ('grey dunes') [2130], Wooded dunes of the Atlantic, Continental and Boreal region [2180], Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoeto-Nanojuncetea* [3130], European dry heaths [4030], Atlantic acidophilous beech forests with *Ilex* and sometimes also *Taxus* in the shrublayer (*Quercion robori-petraeae* or *Ilici-Fagenion*) [9120], *Tilio-Acerion* forests of slopes, screes and ravines [9180], allis shad [1102], twaite shad [1103], lesser horseshoe bat [1303], greater horseshoe bat [1304], barbastelle bat (*Barbastella barbastellus*) [1308], otter [1355], shore dock [1441] and *Coleanthus subtillis* [1887]. Harbour porpoise is present within this SAC but is not specifically designated as a QI. The site includes Saint-Brieuc Bay and a large shallow marine area along the coast to the east to Cap d'Erquy (EEA, 2021).

45. Baie de Lancieux, Baie de l'Arguenon, Archipel de Saint Malo et Dinard SAC (FR5300012): the site is designated for the following habitats and species listed in Annex I/Annex II habitat of the E.U. Habitat Directive: Mudflats and sandflats not covered by seawater at low tide [1140], Large shallow inlets and bays [1160], Reefs [1170], Annual vegetation of drift lines [1210], Vegetated sea cliffs of the Atlantic and Baltic coasts [1230], *Salicornia* and other annuals colonizing mud and sand [1310], *Spartina* swards (Spartinion maritimae) [1320], Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330], Embryonic shifting dunes [2110], Shifting dunes along the shoreline with *Ammophila arenaria* ('white dunes') [2120], Fixed coastal dunes with herbaceous vegetation ('grey dunes') [2130], Humid dune slacks [2190], Natural eutrophic lakes with *Magnopoamion* or *Hydrocharition* type vegetation [3150], European dry heaths [4030], Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430], Lowland hay meadows (*Alopecurus pratensis*, *Sanguisorba officinalis*) [6510], Alkaline fens [7230], Siliceous rock with pioneer vegetation of the *Sedo-Scleranthion* or of the *Sedo albi-Veronicion dilleniid* [8230], Atlantic acidophilous beech forests with *Ilex* and sometimes also *Taxus* in the shrublayer (*Quercion robori-petraeae* or *Ilici-Fagenion*) [9120], *Tilio-Acerion* forests of slopes, screes and ravines [9180], allis shad [1102], lesser horseshoe bat [1303], greater horseshoe bat [1304], greater mouse-eared bat [1324] and Geoffroy's bat [1321], shore dock [1441] and *Vandenboschia speciosa* [6985]. Harbour porpoise is present within this SAC but is not specifically designated as a QI. The site includes the Ébihens archipelago, surrounding marine habitats as well as the estuary of the Arguenon River and adjacent habitats in north west France (EEA, 2021).

46. Chausey SAC (FR2500079): the site is designated for the following habitats and species listed in Annex I/Annex II habitat of the E.U. Habitat Directive: Sandbanks which are slightly covered by seawater all the time [1110], Mudflats and sandflats not covered by seawater at low tide [1140], Reefs [1170], Annual vegetation of drift lines [1210], Vegetated sea cliffs of the Atlantic and Baltic coasts [1230], Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330], Shifting dunes along the shoreline with *Ammophila arenaria* ('white dunes') [2120], European dry heaths [4030], common bottlenose dolphin [1349], grey seal [1364] and shore dock [1441]. Harbour porpoise is present within this SAC but is not specifically designated as a QI. The site includes the coastal waters and islands off the coast of Granville in north west France (EEA, 2021).

47. Estuaire de la Rance SAC (FR5300061): the site is designated for the following habitats and species listed in Annex I/Annex II habitat of the E.U. Habitat Directive: Estuaries [1130], Mudflats and sandflats not covered by seawater at low tide [1140], Coastal lagoons [1150], Large shallow inlets and bays [1160], Reefs [1170], Annual vegetation of drift lines [1210], Vegetated sea cliffs of the Atlantic and Baltic coasts [1230], *Salicornia* and other annuals colonizing mud and sand [1310], Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330], Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430], Siliceous rocky slopes with chasmophytic vegetation [8220], Siliceous rock with pioneer vegetation of the *Sedo-Scleranthion* or of the *Sedo albi-Veronicion dilleniid* [8230], Atlantic acidophilous beech forests with *Ilex* and sometimes also *Taxus* in the shrublayer (*Quercion robori-petraeae* or *Ilici-Fagenion*) [9120], *Asperulo-Fagetum* beech forests [9130], *Tilio-Acerion* forests of slopes, screes and ravines [9180], Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*) [91E0], allis shad [1102], twaite shad [1103], lesser horseshoe bat [1303], greater horseshoe bat (*Rhinolophus ferrumequinum*) [1304], greater mouse-eared bat (*Myotis myotis*) [1324] and Geoffroy's bat (*Myotis emarginatus*) [1321]. Harbour porpoise is present within this SAC but is not specifically designated as a QI. The site includes the islands and habitats adjacent to La Rance estuary in north west France (EEA, 2021).

48. Baie du Mont Saint-Michel SAC (FR2500077): the site is designated for the following habitats and species listed in Annex I/Annex II habitat of the E.U. Habitat Directive: Sandbanks which are slightly covered by seawater all the time [1110], Estuaries [1130], Mudflats and sandflats not covered by seawater at low tide [1140], Large shallow inlets and bays [1160], Reefs [1170], Annual vegetation of drift lines [1210], Vegetated sea cliffs of the Atlantic and Baltic coasts [1230], *Salicornia* and other annuals colonizing mud and sand [1310], Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330], Embryonic shifting dunes [2110], Shifting dunes along the shoreline with *Ammophila arenaria* ('white dunes') [2120], Fixed coastal dunes with herbaceous vegetation ('grey dunes') [2130], Dunes with *Salix repens* ssp. A*rgentea*

(*Salicion arenariae*) [2170], Humid dune slacks [2190], Natural eutrophic lakes with *Magnopoamion* or *Hydrocharition* type vegetation [3150], Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260], Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*) [91E0], Stag Beetle (*Lucanus cervus*) [1083], sea lamprey [1095], brook lamprey [1096], allis shad (*Alosa alosa*) [1102], twaite shad [1103], Atlantic salmon [1106], Sculpin (*Cottus gobio*) [1163], warty newt (*Triturus cristatus*) [1166], common bottlenose dolphin [1349], grey seal [1364], harbour seal [1365], shore dock [1441] and Jersey tiger (*Euplagia quadripunctaria*) [6199]. Harbour porpoise is present within this SAC but is not specifically designated as a QI. The site includes the habitats within Mont Saint-Michel Bay and the estuaries of La Sélune and La Sée (EEA, 2021).

49. South Dublin Bay and River Tolka Estuary SPA (IE004024): the site is designated under the E.U. Birds Directive, of special conservation interest for the following species: light-bellied brent goose (*Branta bernicla hrota*) [A046], oystercatcher (*Haematopus ostralegus*) [A130], ringed plover (*Charadrius hiaticula*) [A137], grey plover (*Pluvialis squatarola*) [A141], knot (*Calidris canutus*) [A143], sanderling (*Calidris alba*) [A144], dunlin (*Calidris alpina*) [A149], bar-tailed godwit (*Limosa lapponica*) [A157], redshank (*Tringa totanus*) [A162], black-headed gull (*Chroicocephalus ridibundus*) [A179], roseate tern (*Sterna dougallii*) [A192], common tern (*Sterna hirundo*) [A193], Arctic tern (*Sterna paradisaea*) [A194], wetland and waterbirds [A999]. The site includes part of Dublin Bay and includes the intertidal area between the River Liffey and Dun Laoghaire, the estuary of the River Tolka and Booterstown Marsh, and areas of marine waters of the bay (NPWS, 2015a).

50. The Murrough SPA (IE004186): the site is designated under the E.U. Birds Directive, of special conservation interest for the following species: red-throated diver (*Gavia stellata*) [A001], greylag goose (*Anser anser*) [A043], light-bellied brent goose [A046], wigeon (*Mareca Penelope*) [A050], teal (*Anas crecca*) [A052],black-headed gull [A179], herring gull (*Larus argentatus*) [A184], little tern (*Sterna albifrons*) [A195], wetland and waterbirds [A999]. The site extends for 13km from Kilcoole to Wicklow Town and it includes an area of marine water (NPWS, 2024a)

51. Dalkey Island SPA (IE004172): the site is designated under the E.U. Birds Directive, of special conservation interest for the following species: roseate tern [A192], common tern [A193] and Arctic tern [A194]. The site includes Dalkey Island, Lamb Island and Maiden Rock, the intervening rocks and reefs, and the surrounding sea to a distance of 200 m. The site is located 0.5km north east of the Survey Works and hydrologically linked over the same distance (NPWS, 2024c).

52. Wicklow Head SPA (IE004127): the site is designated under the E.U. Birds Directive, of special conservation interest for the following species: kittiwake (*Rissa tridactyla*) [A188]. The site is located 3km south of Wicklow Town and is characterised by a rocky headland with exposure of mica-schist (NPWS, 2024d).

53. North Bull Island SPA (IE004006): the site is designated under the E.U. Birds Directive, of special conservation interest for the following species: light-bellied brent goose [A046], shelduck (*Tadorna tadorna*) [A048], teal [A052], pintail (*Anas acuta*) [A054], shoveler (*Spatula clypeata*) [A056], oystercatcher [A130], golden plover (*Pluvialis apricaria*) [A140], grey plover [A141], knot [A143], sanderling [A144], dunlin [A149], black-tailed godwit (*Limosa limosa*) [A156], bar-tailed godwit [A157], curlew (*Numenius arquata*) [A160], redshank [A162], turnstone (*Arenaria interpres*) [A169], black-headed gull [A179], wetland and waterbirds [A999]. This site extends along the inner part of north Dublin Bay, from the Bull Wall lighthouse to Howth Head (NPWS, 2015b).

54. North-West Irish Sea SPA (IE004236): the site is designated under the E.U. Birds Directive, of special conservation interest for the following species: red-throated diver [A001], great northern diver (*Gavia immer*) [A003], fulmar (*Fulmarus glacialis*) [A009], Manx shearwater (*Puffinus puffinus*) [A013], cormorant (*Phalacrocorax carbo*) [A017], shag (*Phalacrocorax aristotelis*) [A018], common scoter (*Melanitta nigra*) [A065], little gull (*Larus minutus*) [A177], black-headed gull [A179], common gull (*Larus canus*) [A182], lesser black-backed gull (*Larus fuscus*) [A183], herring gull [A184], great black-backed gull (*Larus marinus*) [A187], kittiwake [A188], roseate tern [A192], common tern [A193], Arctic tern [A194], little tern [A195], guillemot (*Uria aalge*) [A199], razorbill (*Alca torda*) [A200], puffin (*Fratercula*

*arctica*) [A204]. It includes estuaries, bays, intertidal and shallow subtidal habitats and pelagic and marine waters (NPWS, 2023d).

55. Wicklow Mountains SPA (IE004040): the site is designated under the E.U. Birds Directive, of special conservation interest for the following species: merlin (*Falco columbarius*) [A098], peregrine (*Falco peregrinus*) [A103]. The site comprised an extended area of the Wicklow Mountains (NPWS, 2024e).

56. Baldoyle Bay SPA (IE004016): the site is designated under the E.U. Birds Directive, of special conservation interest for the following species: light-bellied brent goose [A046] shelduck [A048], ringed plover [A137], golden plover [A140], grey plover [A141], bar-tailed godwit [A157] and Wetland and Waterbirds [A999]. The site includes the estuary and outer bay of the River Mayne (NPWS, 2013e).

57. Malahide Estuary SPA (IE004025): the site is designated under the E.U. Birds Directive, of special conservation interest for the following species: great crested grebe (Podiceps cristatus) [A005], light-bellied brent goose [A046] shelduck [A048], pintail [A054], goldeneye (*Bucephala clangula*) [A067], red-breasted merganser (*Mergus serrator*) [A069], oystercatcher [A130], golden plover [A140], grey plover [A141], knot [A143], dunlin [A149], black-tailed godwit [A156], bar-tailed godwit [A157], redshank [A162] and Wetland and Waterbirds [A999]. The site includes the estuary and outer bay north of Malahide (NPWS, 2013f).

58. Rogerstown Estuary SPA (IE004015): the site is designated under the E.U. Birds Directive, of special conservation interest for the following species: greylag goose [A043], light-bellied brent goose [A046] shelduck [A048], shoveler [A056], oystercatcher [A130], ringed plover [A137], grey plover [A141], knot [A143], dunlin [A149], black-tailed godwit [A156], redshank [A162] and Wetland and Waterbirds [A999]. The site includes the estuary and outer bay north of Donabate (NPWS, 2013g).

## 5.3 Qualifying Interests Potentially Exposed to Risk

### 5.3.1 Qualifying Interest Habitats

#### 5.3.1.1 South Dublin Bay SAC

GI surveys, licenced metal detection surveys, bathymetric surveys and intertidal benthic ecology transects will be undertaken within Licence Area A. The GI locations within Licence Area A are shown in Appendix A, Figure 2. **Error! Reference source not found.** summarises the GI surveys being undertaken in each QI habitat within South Dublin Bay SAC. The majority of the surveys, including GI, will be taking place within mudflats and sandflats not covered by seawater at low tide. No floral species were present within this habitat. No GI surveys are being undertaken within annual vegetation of drift lines [1210], however this habitat may be impacted by the rig travelling across embryonic dunes and at the high-water line.

**Table 5.1: Geotechnical Investigation works occurring within Qualifying Interest habitats**

| QI Habitat | Activity | Count |
|---|---|---|
| Mudflats and sandflats not covered by seawater at low tide [1140] | Windowless sample | 16 |
| | Hand-dug trial pit | 1 |
| | Slit trench works | 14 |
| | Dynamic Core Penetrometer test | 1 |
| | Sediment sampling | 3 |
| *Salicornia* and other annuals colonizing mud and sand [1310] | Windowless sample | 2 |
| | Slit trench works | 2 |
| Embryonic shifting dunes [2110] | Slit trench works | 1 |

#### 5.3.1.1.1 Appraisal of Potential Impacts

Survey Works, including GI works will be undertaken within the SAC, resulting in temporary habitat loss and degradation. Temporary habitat loss will occur through both the digging of the investigation works and the transport of required equipment and vehicles across the SAC. The transport of equipment and surveyors across QI habitats also has the potential to cause temporary degradation and spread invasive species. The bathymetric surveys occurring within Licence Area A have the potential to spread invasive species, which could impact all QI habitats. Mitigation measures to avoid potential impacts are detailed in Section 6.1.

### 5.3.1.2 The Murrough Wetlands SAC

Licenced metal detection surveys, bathymetric surveys and intertidal benthic ecology transects will be undertaken within Licence Area D. The majority of these works will be undertaken outside of QI habitats, however QI habitats may be impacted by surveyors travelling within the SAC.

#### 5.3.1.2.1 Appraisal of Potential Impacts

Surveyors travelling within the intertidal area of Licence Area D have the potential to cause temporary degradation to QI habitats. Surveyors travelling between sites could spread invasive species which could affect all QI habitats. The bathymetric surveys occurring within Licence Area D have the potential to spread invasive species, which could impact all QI habitats. Mitigation measures to avoid potential impacts are detailed in Section 6.1.

### 5.3.1.3 South Dublin Bay and River Tolka SPA

GI surveys, licenced metal detection surveys, bathymetric surveys and intertidal benthic ecology transects will be undertaken within Licence Area A. The majority of the surveys, including GI, will be taking place within mudflats and sandflats not covered by seawater at low tide, which is the favoured foraging habitat for the majority of QI species.

#### 5.3.1.3.1 Appraisal of Potential Impacts

Survey Works, including GI works will be undertaken within the SPA, resulting in temporary habitat loss and degradation. Temporary habitat loss will occur through both the digging of the investigation works and the transport of required equipment and vehicles across the SPA. These works will temporarily reduce the area of QI wetland habitat that can be utilised by QI species.

The transport of equipment and surveyors across the SPA also has the potential to cause temporary degradation and spread invasive species. The bathymetric surveys occurring within Licence Area A have the potential to spread invasive species, which could impact QI species. Mitigation measures to avoid potential impacts are detailed in Section 6.1.

### 5.3.1.4 The Murrough SPA

Licenced metal detection surveys, bathymetric surveys and intertidal benthic ecology transects will be undertaken within Licence Area D. The majority of these works will be undertaken outside of QI habitats, however QI habitats may be impacted by surveyors travelling within the SAC.

#### 5.3.1.4.1 Appraisal of Potential Impacts

Surveyors travelling within the intertidal area of Licence Area D have the potential to cause temporary degradation to QI wetland habitat reducing suitable areas for QI species. Surveyors travelling between sites could spread invasive species which could reduce habitat suitability for QI species.

The bathymetric surveys occurring within Licence Area D have the potential to spread invasive species, which could impact QI species red-throated diver [A001], black-headed gull [A179] and herring gull [A184] by reducing prey availability through competition or reducing the area of suitable habitat.

### 5.3.2 Qualifying Interest Species – Marine Mammals

Three SACs were screened in for potential LSEs on bottlenose dolphin.

- Hook Head SAC
- Lleyn Peninsula and the Sarnau SAC
- Cardigan Bay SAC

Thirty-eight SACs were screened in for potential LSEs on harbour porpoise:

- North Dublin Bay SAC
- Rockabill to Dalkey SAC
- Lambay Island SAC
- Codling Fault Zone SAC
- Carnsore Point SAC
- Hook Head SAC
- Roaringwater Bay and Islands SAC
- Kenmare River SAC
- Blasket Islands SAC
- Belgica Mound Province SAC
- Bunduff Lough and Machair/Trawalua/Mullaghmore SAC
- West Connacht Coast SAC
- Inishmore Island SAC
- Kilkieran Bay and Islands SAC
- North Anglesey Marine SAC
- West Wales Marine SAC
- North Channel SAC
- Bristol Channel Approaches SAC
- Mers Celtiques – Talus du golfe de Gascogne SAC
- Nord Bretagne DH SAC
- Ouessant-Molène SAC
- Abers - Côte des légendes SAC
- Côte de Granit rose-Sept-Iles SAC
- Baie de Morlaix SAC
- Tregor Goëlo SAC
- Côtes de Crozon SAC
- Riviére Leguer, forêts de Beffou, Coat an Noz et Coat an Hay SAC
- Chaussée de Sein SAC

- Récifs du talus du golfe de Gascogne SAC
- Récifs et landes de la Hague SAC
- Anse de Vauville SAC
- Cap d'Erquy-Cap Fréhel SAC
- Banc et récifs de Surtainville SAC
- Baie de Saint-Brieuc SAC
- Baie de Lancieux, Baie de l'Arguenon, Archipel de Saint Malo et Dinard SAC
- Chausey SAC
- Estuaire de la Rance SAC
- Baie du Mont Saint-Michel SAC

Five SACs were screened in for potential LSEs on grey seal:

- Lambay Island SAC
- Saltee Islands SAC
- Lleyn Peninsula and the Sarnau SAC
- Cardigan Bay SAC
- The Maidens SAC

Four SACs were screened in for potential LSEs on harbour seal.

- Lambay Island SAC
- Slaney River Valley SAC
- Murlough SAC
- Strangford Lough SAC

Bathymetric survey works will be undertaken within functionally linked habitat for bottlenose dolphin and harbour porpoise within all Licence Areas.

Bathymetric survey works will be undertaken within functionally linked habitat for grey seal and harbour seal within all Licence Areas. Boat-based ecology surveys will be undertaken within functionally linked habitat for grey seal and harbour seal within Licence Area C.

A desk-based review of the NBDC on the 23 May 2024 found a number of records from the last 20 years of QI species located within 1km of the Licence Areas. These records are outlined in Table 5.2. Harbour porpoise and grey seal were recorded within or from all Licence Areas. Common Seal was less frequent with only four records across all licence areas.

**Table 5.2: Results of the NBDC desk-based review of QI species of a European Site within the ZoI.**

| Species | Designation | Licence Area | Number of Records | Most Recent Record |
|---|---|---|---|---|
| Harbour Porpoise (*Phocoena phocoena*) | EU Habitats Directive: Annex II & Annex IV<br>Protected Species: Wildlife Acts | Licence Area A | 7 | 2018 |
| | | Licence Area B | 193 | 2020 |
| | | Licence Area C | 88 | 2020 |
| | | Licence Area D | 44 | 2021 |
| | | Licence Area A | - | - |

| Species | Designation | Licence Area | Number of Records | Most Recent Record |
|---|---|---|---|---|
| Common Seal (*Phoca vitulina*) | EU Habitats Directive: Annex II & Annex IV<br>Protected Species: Wildlife Acts | Licence Area B | 2 | 2018 |
| | | Licence Area C | - | - |
| | | Licence Area D | 2 | 2018 |
| Grey Seal (*Halichoerus grypus*) | EU Habitats Directive: Annex II & Annex IV<br>Protected Species: Wildlife Acts | Licence Area A | 7 | 2021 |
| | | Licence Area B | 21 | 2021 |
| | | Licence Area C | 34 | 2021 |
| | | Licence Area D | 39 | 2022 |

During walkover surveys in May 2023 a peak count of 90 grey seals were recorded on rocks around Dalkey Island, in the vicinity of Licence Area B. Lone grey and common seals were recorded at sea within Licence Areas C and D. A single harbour porpoise was recorded within Licence Area B.

#### 5.3.2.1 Appraisal of Potential Impacts

Bathymetric survey works will be undertaken within functionally linked habitat for harbour porpoise and bottlenose dolphin. Bathymetric survey works and boat-based ecology surveys will be undertaken within functionally linked habitat for grey and harbour seal. Disturbance could occur through movement and presence of the survey vessels and high frequency waves created by survey equipment. Mitigation measures to avoid potential impacts are detailed in Section 6.3.

Grey and harbour seals are more likely to be impacted at haul out locations. Survey vessels will remain a agreed distance from all haul out locations. Intertidal surveys will not be undertaken within suitable seal haul out locations.

### 5.3.3 Qualifying Interest Species – Wintering Bird Species

Eight SPAs were screened in for potential LSEs on wintering birds.

- South Dublin Bay and River Tolka SPA
  - Light-bellied brent goose, oystercatcher, ringed plover, grey plover, knot, sanderling, dunlin, bar-tailed godwit, redshank and black-headed gull.
- The Murrough SPA
  - Red-throated diver, greylag goose, light-bellied brent goose, wigeon, teal, black-headed gull and herring gull.
- North Bull Island SPA
  - Light-bellied brent goose, shelduck, teal, pintail, shoveler, oystercatcher, golden plover, grey plover, knot, sanderling, dunlin, black-tailed godwit, bar-tailed godwit, curlew, redshank, turnstone and black-headed gull.
- North West Irish Sea SPA
  - Red-throated diver, great northern diver, fulmar, cormorant, shag, common scoter, little gull, black-headed gull, common gull, great black-backed gull, herring gull, kittiwake, razorbill and guillemot.
- Wicklow Mountains. SPA
  - Merlin and peregrine
- Baldoyle Bay SPA

- Light-bellied brent goose, shelduck, ringed plover, golden plover, grey plover and bar-tailed godwit.

- Malahide Estuary SPA
  - Great crested grebe, light-bellied brent goose, shelduck, pintail, goldeneye, red-breasted merganser, oystercatcher, golden plover, grey plover, knot, dunlin, black-tailed godwit, bar-tailed godwit and redshank.
- Rogerstown Estuary SPA
  - Greylag goose, light-bellied brent goose, shelduck, shoveler, oystercatcher, ringed plover, grey plover, knot, dunlin, black-tailed godwit and redshank.

A desk-based review of the NBDC on the 2 February 2023 found a number of records from the last 20 years of protected bird species within 1km of the Survey Works. Records for all designated qualifying interest bird species (QIs) were returned. A 1km buffer was chosen to capture all flora and fauna species which occur or frequently use habitats under the footprint of the Survey Works. A 1km buffer reflects the typical species array for both mobile and sessile species in the vicinity of the Survey Works. Results are included at Appendix C.

Records from Irish Wetland Bird Surveys (I-WeBS) were received from BirdWatch Ireland. I-WeBS collects data on wintering wildfowl and waders each year at a number of sites across Ireland. Each licence area has a corresponding I-WeBS survey site and subsites, as shown in Table 5.3. Peak counts of Annex I and QI bird species during the 2022/23 season are shown in Appendix B, Table 1.

**Table 5.3: Licence areas and corresponding I-WeBS sites and subsites.**

| Licence Area | I-WeBS sites | I-WeBS subsites |
|---|---|---|
| **A** | Dublin Bay (OU404) | Merrion Gates – Sydney Parade Ave (OU473)<br>Booterstown – Merrion Gates (OU462)<br>Booterstown Reserve (OU461)<br>Dun Laoghaire – Seapoint (OU460) |
| **B** | South Dublin Coastline (OU915) | Killiney Beach and Bay (OU916) |
| **C** | Bray Harbour (OT907)<br>Bray Beach (OT913)<br>Greystones (OT905) | Bray Harbour (OT907)<br>Bray Beach (OT913)<br>Greystones (OT905) |
| **D** | North Wicklow Coastal Marshes (OT401) | Kilcoole – north fields (OT501)<br>Kilcoole – Newcastle (OT903)<br>Kilcoole - Webbs (OT502)<br>Kilcoole – west fields (OT503)<br>Five Mile Point – Newcastle (OT902)<br>Five Mile Point – Newcastle (offshore) (OT914)<br>Killoughter- Newcastle (Beach & offshore) (OT910)<br>Killoughter – Newcastle (Inland: Marsh & Farmland) (OT911)<br>Broad Lough (OT001) |

During the winter bird surveys a total of 36 QI bird species were recorded within the Licence Areas. The majority of activity was within Licence Areas A and D with 26 and 32 QI bird species respectively. The number and location of QI bird species recorded during the survey are summarized in Appendix B, Table 2. The QI species pintail was not recorded during the wintering bird surveys. Puffin, Manx shearwater, roseate tern, common tern,

Arctic tern and little tern were not recorded during the wintering bird surveys, however they are unlikely to present during the survey period due to their migration patterns.

#### 5.3.3.1 Appraisal of Potential Impacts

GI survey works, geotechnical survey works, benthic ecology surveys and archaeology survey works will be undertaken within Licence Area A, which includes South Dublin Bay and River Tolka SPA, as well as supporting and functionally linked habitats for wintering QI species. Benthic ecology surveys and archaeology survey works will be undertaken within Licence Areas B and C which contain functionally linked habitats for wintering QI species. Benthic ecology surveys and archaeology survey works will be undertaken within Licence Area D which includes The Murrough SPA, as well as supporting and functionally linked habitats for wintering QI species.

The species most susceptible to disturbance within the intertidal zone, namely light-bellied brent goose, shelduck, oystercatcher, ringed plover, golden plover, grey plover, knot, sanderling, dunlin, black-tailed godwit, bar-tailed godwit, curlew, redshank, turnstone, black-headed gull, great black-backed gull and herring gull are present in significant numbers between October and April. Disturbance could occur through presence of surveyors within suitable habitat and noise from surveys. Mitigation measures to avoid potential impacts are detailed in Section 6.4.

Greylag goose, wigeon, teal, pintail and shoveler are less likely to be present within the intertidal zone and are present within lagoons, estuaries and flooded fields in significant numbers between October and April. Disturbance could occur through noise from surveys. Mitigation measures to avoid potential impacts are detailed in Section 6.4.

Merlin has been recorded within Licence Area D and will most likely be present between September and March. Peregrine have been recorded in Licence Areas A and D between October and March. Disturbance could occur through the presence of surveyors within suitable foraging areas, which includes intertidal areas, lagoons, estuaries and flooded fields, and noise from surveys. Mitigation measures to avoid potential impacts are detailed in Section 6.4.

Bathymetric survey works are being undertaken within all Licence Areas. South Dublin Bay and River Tolka SPA is present within works area in Licence Area A and The Murrough SPA is present within the works area in Licence Area D. Supporting and functionally linked habitats for wintering QI species are present in all Licence Areas. Boat-based ecology surveys are being undertaken during the breeding bird season and so will not impact these QI species.

The species most susceptible to disturbance within inshore waters, namely red-throated diver, great northern diver, great crested grebe, common scoter, goldeneye, red-breasted merganser, little gull, black-headed gull, common gull, herring gull, great black-backed gull, kittiwake, razorbill and guillemot, are present in significant numbers between October and March. Disturbance could occur where survey vessels are present within suitable foraging areas for prolonged periods. Mitigation measures to avoid potential impacts are detailed in Section 6.4.

### 5.3.4 Qualifying Interest Species – Breeding Bird Species

Five **SPAs were screened in for potential LSEs on breeding birds.**

- South Dublin Bay and River Tolka SPA
  - Roseate tern, Arctic tern and common tern
- The Murrough SPA
  - Little tern
- Dalkey Island SPA
  - Roseate tern, Arctic tern and common tern
- Wicklow Head SPA

  - Kittiwake
- North West Irish Sea SPA
  - Cormorant, shag, fulmar, guillemot, razorbill, puffin, Manx shearwater, lesser black-backed gull, herring gull, kittiwake, roseate tern, common tern, Arctic tern and little tern

During the breeding bird surveys a total of 23 QI bird species were recorded within the Licence Areas. Of these 18 were confirmed or probably breeding within or in the vicinity of the Licence Areas. The number and location of QI bird species recorded during the surveys are summarized in Appendix B, Table 3. The QI species roseate tern was not recorded during the surveys but possibly breeds in small numbers in the vicinity of Licence Area B. A number of QI species, including bar-tailed godwit and black-tailed godwit, recorded in April are considered to have been on migration.

#### 5.3.4.1 Appraisal of Potential Impacts

GI survey works, geotechnical survey works, benthic ecology surveys and archaeology survey works will be undertaken within Licence Area A, which contains South Dublin Bay and River Tolka SPA and contains supporting and functionally linked low tide roosting habitat and foraging habitat for breeding QI species. Benthic ecology surveys and archaeology survey works will be undertaken within Licence Areas B and C which contain functionally linked low tide roosting habitat and foraging habitat for breeding QI species. Benthic ecology surveys and archaeology survey works will be undertaken within Licence Area D, which includes The Murrough SPA, and contains suitable habitat for nesting, roosting and foraging breeding QI species.

The species most susceptible to disturbance within the intertidal zone, namely roseate tern, common tern, Arctic tern and little tern, are present in significant numbers between April and August. Disturbance could occur through presence of surveyors within the vicinity of the breeding colony in Licence Area D, presence of surveyors within the vicinity of low tide roosts and noise from surveys. Mitigation measures to avoid potential impacts are detailed in Section 6.5.

Bathymetric survey works and boat-based ecology surveys are being undertaken within all Licence Areas. South Dublin Bay and River Tolka SPA is present within works area in Licence Area A and The Murrough SPA is present within the works area in Licence Area D. Supporting and functionally linked habitats for all breeding QI species are present in all Licence Areas.

The species most susceptible to disturbance within inshore waters, namely cormorant, shag, black-headed gull, common gull, herring gull, kittiwake, roseate tern, common tern, Arctic tern and little tern, razorbill and guillemot, are present in significant numbers between May and September. Disturbance could occur where survey vessels are present within suitable foraging areas for prolonged periods. Mitigation measures to avoid potential impacts are detailed in Section 6.5.

# 6. Mitigation Measures

Mitigation measures to be put in place to avoid potential impacts are detailed below. A summary is provided in Table 7.1.

## 6.1 Temporary Habitat Loss / Habitat Degradation from Changes in Land Quality

These mitigation measures will be put in place to avoid potential impacts on South Dublin Bay SAC, Bray Head SAC, The Murrough Wetlands SAC, South Dublin Bay and River Tolka SPA and The Murrough SPA.

### 6.1.1 Ecological Clerk of Works

An on-site Ecological Clerk of Works (ECoW) will be on site for any works deemed sensitive i.e. within European sites. The ECoW will be at sensitive locations where there is potential for disturbance to QI habitats and implement mitigation measures as described below. Prior to the GI works the ECoW will deliver a toolbox talk to all personnel to highlight the environmental sensitivities and the boundaries of sensitive habitats.

### 6.1.2 Windowless Samples

A total of 18 windowless samples will be undertaken within the South Dublin Bay SAC and South Dublin Bay and River Tolka SPA. Two samples will be taken within the habitat, *Salicornia* and other annuals colonizing mud and sand and sixteen within mudflats and sandflats visible at low tide. To avoid damage to flora in these sensitive areas and when tracking across the intertidal areas the drilling rig will be mounted onto rubber tracks and, following guidance by the ECoW, avoid any vegetated areas, where possible. Backfilling will be made using extracted soil horizons on the same day. Due to their small size and location, the extraction points will be naturally reprofiled by the incoming tide.

### 6.1.3 Slit Trenches

A total of 17 slit trenches will be undertaken within the South Dublin Bay SAC and South Dublin Bay and River Tolka SPA. These will be backfilled in the order it was excavated on the same day. In order to achieve this, any soil risings / beach sediment will be placed adjacent to the pit on a tarpaulin or similar material. Fourteen of the slit trenches will be undertaken within the mudflats and sandflats visible at low tide. Due to their location within the intertidal area, the trenches will then be reprofiled by the incoming tide. In addition, two slit trenches will be within *Salicornia* and other annuals colonizing mud and sand and another one within embryonic dunes. To avoid damage to flora in these sensitive areas and when tracking across the intertidal areas the drilling rig will be mounted onto rubber tracks and, following guidance by the ECoW, avoid any vegetated areas, where possible.

### 6.1.4 Benthic Surveys

Benthic surveys will be undertaken within South Dublin Bay SAC, Bray Head SAC, The Murrough Wetlands SAC, South Dublin Bay and River Tolka SPA and The Murrough SPA. To avoid damage to flora in sensitive areas, surveyors will avoid walking across and sampling within vegetated areas, where possible. The samples taken will be small and the sample area will be naturally reprofiled by the incoming tide.

## 6.2 Habitat Degradation from Spread of Invasive Species

These mitigation measures will be put in place to avoid potential impacts on South Dublin Bay SAC, Bray Head SAC, The Murrough Wetlands SAC, South Dublin Bay and River Tolka SPA and The Murrough SPA.

### 6.2.1 GI, Geophysical and Benthic Surveys

There is the potential for the introduction and / or spread of invasive non-native species into and between survey locations. To prevent spread of invasive species on vehicle tracks and surveyors shoes, these will be cleaned using suitable methods prior to entering a survey area. Existing stands of invasive species will be avoided, where possible, to avoid spread within the site.

### 6.2.2 Bathymetric and Ecology Boat Surveys

There is the potential for the introduction and / or spread of invasive non-native species into and between survey locations. To prevent spread of invasive aquatic species any survey vessels will be cleaned using suitable methods as soon as possible before entering a European designated site. Survey vessels will not travel between European designated sites without having been cleaned using a suitable method.

## 6.3 Disturbance to QI Marine Mammals

### 6.3.1 Bathymetric Surveys

These mitigation measures will be put in place to avoid and minimise potential impacts on North Dublin Bay SAC, Rockabill to Dalkey Island SAC, Lambay Island SAC, Codling Fault Zone SAC, Slaney River Valley SAC, Carnsore Point SAC, Saltee Islands SAC, Hook Head SAC, Roaringwater Bay SAC, Kenmare River SAC, Blasket Islands SAC, Belgica Mound Province SAC, Bunduff Lough and Machair/Trawalua/Mullaghmore SAC, West Connacht Coast SAC, Inishmore Island SAC, Kilkieran Bay and Islands SAC, North Anglesey Marine SAC, Lleyn Peninsula and the Sarnau SAC, West Wales Marine SAC, Murlough SAC, Strangford Lough SAC, Cardigan Bay SAC, North Channel SAC, Bristol Channel Approaches SAC, The Maidens SAC, Mers Celtiques – Talus du golfe de Gascogne SAC, Nord Bretagne DH SAC, Ouessant-Molène SAC, Abers - Côte des légendes SAC, Côte de Granit rose-Sept-Iles SAC, Baie de Morlaix SAC, Tregor Goëlo SAC, Côtes de Crozon SAC, Riviére Leguer, forêts de Beffou, Coat an Noz et Coat an Hay SAC, Chaussée de Sein SAC, Récifs du talus du golfe de Gascogne SAC, Récifs et landes de la Hague SAC, Anse de Vauville SAC, Cap d'Erquy-Cap Fréhel SAC, Banc et récifs de Surtainville SAC, Baie de Saint-Brieuc SAC, Baie de Lancieux, Baie de l'Arguenon, Archipel de Saint Malo et Dinard SAC, Chausey SAC, Estuaire de la Rance SAC and Baie du Mont Saint-Michel SAC.

A qualified Marine Mammal Observer (MMO) will be present to monitor for marine mammals following NPWS guidelines, where relevant (NPWS, 2006). All relevant events will be logged using standardised data forms. Monitoring will be conducted prior to commencement of operations for 60 minutes to ensure no marine mammals are present within the 2000m disturbance area. Should any marine mammals be detected any surveys will be delayed until the species have left the relevant zone of disturbance with an additional 30-minute buffer period from the last sighting.

At the beginning of the survey period there will be a gradual increase to peak frequency output over 20 minutes. This will provide any undetected marine mammals time to leave the disturbance area. If a marine mammal is detected during this start-up period, the frequency will not be increased until it has left the 2000m disturbance zone. If there is a break in the output over 5-minutes than pre-commencement checks and gradual start-up should be repeated.

### 6.3.2 Ecology Boat Surveys

These mitigation measures will be put in place to avoid potential impacts on Lambay Island SAC, Slaney River Valley SAC, Saltee Islands SAC, Lleyn Peninsula and the Sarnau SAC, The Maidens SAC, Murlough SAC, Strangford Lough SAC and Cardigan Bay SAC.

These surveys will be closer to shore and not creating major noise, however there is the possibility to disturb grey seals and harbour seals at haul out locations. To minimise disturbance the small vessel will not exceed 5 knots within the survey area. Where a haul out is identified the distance from the area will be increased from

100m up to 400m to minimise the potential to flush seals off land. The experienced helmsman will also slow the boat or steer away from any seals that are present within the water during the surveys.

## 6.4 Disturbance to QI Wintering Bird Species

### 6.4.1 Intertidal Surveys

These mitigation measures will be put in place to avoid potential impacts on South Dublin Bay and Tolka Estuary SPA, The Murrough SPA, North Bull Island SPA, North West Irish Sea SPA, Wicklow Mountains SPA, Baldoyle Bay SPA, Malahide Estuary SPA and Rogerstown Estuary SPA.

GI, Geophysical, metal detector surveys and benthic ecology surveys are being undertaken within intertidal areas within the Licence Area A. Metal detector surveys and benthic surveys will be undertaken in Licence Areas B, C and D.

GI and geophysical surveys will be more likely to cause disturbance at a greater distance due to the creation of noise from machinery and the use of a drop weight. Disturbance will be minimised by conducting surveys outside of the peak wintering bird period (October-April). In addition, these surveys will be temporary and localised in a small area to allow bird species to utilise other habitat within the South Dublin Bay and Tolka Estuary SPA for roosting and foraging.

Metal detector and benthic surveys will take place within the intertidal areas. These surveys will not produce a high noise disturbance, will be temporary and localised within a small area. To minimise disturbance to wintering birds in Licence Areas A, B and C, these surveys will be undertaken outside of the peak wintering bird season (October-April) and independently from other surveys, including GI and geophysical surveys, therefore producing a lower level of disturbance and increasing the additional areas available for roosting and foraging bird species. The majority of wintering birds present in Licence Area D do not utilise the area within the Survey Works and therefore work can be undertaken within October to March if required.

### 6.4.2 Bathymetric Surveys

These mitigation measures will be put in place to avoid potential impacts on South Dublin Bay and Tolka Estuary SPA, The Murrough SPA, North Bull Island SPA, North West Irish Sea SPA and Malahide Estuary SPA.

To minimise disturbance to seabirds and species foraging offshore, the surveys will be undertaken outside of the peak wintering bird season (December-February). Where large feeding flocks are present within the survey path, these will be approached under 5 knots or avoided, where possible.

## 6.5 Disturbance to QI Breeding Bird Species

### 6.5.1 Intertidal Surveys

These mitigation measures will be put in place to avoid potential impacts on South Dublin Bay and Tolka Estuary SPA, The Murrough SPA, Dalkey Island SPA and North West Irish Sea SPA.

GI and geophysical surveys will be more likely to cause disturbance at a greater distance due to the creation of noise from machinery and the use of a drop weight. Due to the importance of Licence Area A for wintering bird species, GI surveys will be undertaken during the breeding bird period (May-September). These surveys will be temporary and localised in a small area to allow bird species to utilise other habitat within the South Dublin Bay and Tolka Estuary SPA for roosting and foraging.

Metal detector and benthic surveys will take place within the intertidal areas. These surveys will not produce a high noise disturbance, will be temporary and localised within a small area. To minimise disturbance to wintering birds in Licence Areas A, B and C, these surveys will be undertaken during the breeding bird period (May-September) and independently from other surveys, including GI and geophysical surveys, therefore

producing a lower level of disturbance and increasing the additional areas available for roosting and foraging bird species.

Due to the presence of breeding QI bird species on the foreshore in Licence Area D, surveys will take place outside of April – August. The majority of wintering birds present in Licence Area D do not utilise the area within the Survey Works and therefore work can be undertaken within October to March if required.

### 6.5.2 Bathymetric Surveys

These mitigation measures will be put in place to avoid potential impacts on South Dublin Bay and Tolka Estuary SPA, The Murrough SPA, Dalkey Island SPA, Wicklow Head SPA and North West Irish Sea SPA.

To minimise disturbance to seabirds and species foraging offshore, the surveys will be undertaken outside of the important breeding season (April-August). Where large feeding flocks are present within the survey path, these will be approached under 5 knots or avoided, where possible.

### 6.5.3 Ecology Boat Surveys

These mitigation measures will be put in place to avoid potential impacts on South Dublin Bay and Tolka Estuary SPA, The Murrough SPA, Dalkey Island SPA, Wicklow Head SPA and North West Irish Sea SPA.

Surveys are required to be undertaken during the peak breeding season of QI species (April to August). To minimise disturbance from these surveys the small boat will be kept at a speed below 5 knots and a minimum distance of 100m from the cliff. This will be increased up to 400m dependant on any visual signs of disturbance amongst the breeding seabirds. The boat will only stop in locations for long enough to complete the surveys before moving on. Human noise within the boat will be kept to a minimum. Where large feeding flocks are present within the survey path, these will be approached under 5 knots or avoided, where possible.

# 7. Residual Impact Assessment

Based on the best available scientific information and professional judgement, it is considered that with the mitigation measures detailed above, the LSEs identified are considered to be avoided or minimised to such an extent that there will be no adverse effects on the integrity of any European sites. Table 7.1 below summarises the LSEs, the relevant mitigation and assessment against any residual impacts.

**Table 7.1: Summary of European sites and relevant mitigation methods.**

| European sites | LSEs | Mitigation measures | Residual effects? |
|---|---|---|---|
| **Special Areas of Conservation (SACs)** | | | |
| South Dublin Bay SAC (IE000210) | Habitat loss – temporary, change in land quality and spread of invasive species | ECoW - toolbox talk and oversee GI works.<br>Avoid sensitive areas of flora as guided by ECoW.<br>Rubber tracking on vehicles.<br>Backfilling using extracted soil and beach sediment.<br>Clean vehicles and shoes before entering site. | None. Following these measures any adverse effects will be minimised to ecological inconsequence. |
| Bray Head SAC (IE000714) | Change in land quality and spread of invasive species | Avoid sensitive areas of flora.<br>Clean vehicles and shoes before entering site. | None. Following these measures any adverse effects will be minimised to ecological inconsequence. |
| The Murrough Wetlands SAC (IE002249) | Change in land quality and spread of invasive species | Avoid sensitive areas of flora.<br>Clean vehicles and shoes before entering site. | None. Following these measures any adverse effects will be minimised to ecological inconsequence. |
| North Dublin Bay SAC (IE000206) | Disturbance of species during bathymetric surveys | MMO present.<br>Checks prior to commencement.<br>Gradual increase to peak frequency. | None. Following these measures any adverse effects will be minimised to ecological inconsequence. |
| Rockabill to Dalkey Island SAC (IE003000) | Disturbance of species during bathymetric surveys | MMO present.<br>Checks prior to commencement<br>Gradual increase to peak frequency. | None. Following these measures any adverse effects will be minimised to ecological inconsequence. |
| Lambay Island SAC (IE000204) | Disturbance of species during bathymetric surveys and ecology boat surveys | MMO present for bathymetric surveys.<br>Checks prior to commencement.<br>Gradual increase to peak frequency.<br>Slow speed for ecology boat surveys.<br>Avoidance of seal haul out areas. | None. Following these measures any adverse effects will be minimised to ecological inconsequence. |
| Codling Fault Zone SAC (IE003015) | Disturbance of species during bathymetric surveys | MMO present. | None. Following these measures any adverse |

| European sites | LSEs | Mitigation measures | Residual effects? |
|---|---|---|---|
| | | Checks prior to commencement<br>Gradual increase to peak frequency. | effects will be minimised to ecological inconsequence. |
| Slaney River Valley SAC (IE000781) | Disturbance of species during bathymetric surveys and ecology boat surveys | MMO present for bathymetric surveys.<br>Checks prior to commencement.<br>Gradual in.crease to peak frequency.<br>Slow speed for ecology boat surveys<br>Avoidance of seal haul out areas. | None. Following these measures any adverse effects will be minimised to ecological inconsequence. |
| Carnsore Point SAC (IE002269) | Disturbance of species during bathymetric surveys | MMO present.<br>Checks prior to commencement.<br>Gradual increase to peak frequency. | None. Following these measures any adverse effects will be minimised to ecological inconsequence. |
| Saltee Islands SAC (IE000781) | Disturbance of species during bathymetric surveys and ecology boat surveys | MMO present for bathymetric surveys.<br>Checks prior to commencement.<br>Gradual increase to peak frequency.<br>Slow speed for ecology boat surveys.<br>Avoidance of seal haul out areas. | None. Following these measures any adverse effects will be minimised to ecological inconsequence. |
| Hook Head SAC (IE000764) | Disturbance of species during bathymetric surveys | MMO present.<br>Checks prior to commencement.<br>Gradual increase to peak frequency. | None. Following these measures any adverse effects will be minimised to ecological inconsequence. |
| Roaringwater Bay and Islands SAC (IE000101) | Disturbance of species during bathymetric surveys | MMO present.<br>Checks prior to commencement.<br>Gradual increase to peak frequency. | None. Following these measures any adverse effects will be minimised to ecological inconsequence. |
| Kenmare River SAC (IE002158) | Disturbance of species during bathymetric surveys | MMO present.<br>Checks prior to commencement.<br>Gradual increase to peak frequency. | None. Following these measures any adverse effects will be minimised to ecological inconsequence. |
| Blasket Islands SAC (IE0002172) | Disturbance of species during bathymetric surveys | MMO present.<br>Checks prior to commencement. | None. Following these measures any adverse |

| European sites | LSEs | Mitigation measures | Residual effects? |
|---|---|---|---|
| | | Gradual increase to peak frequency. | effects will be minimised to ecological inconsequence. |
| Belgica Mound Province SAC (IE002327) | Disturbance of species during bathymetric surveys | MMO present.<br>Checks prior to commencement.<br>Gradual increase to peak frequency. | None. Following these measures any adverse effects will be minimised to ecological inconsequence. |
| Bunduff Lough and Machair/Trawalua/Mullagh more SAC (IE000625) | Disturbance of species during bathymetric surveys | MMO present.<br>Checks prior to commencement.<br>Gradual increase to peak frequency. | None. Following these measures any adverse effects will be minimised to ecological inconsequence. |
| West Connacht Coast SAC (IE002998) | Disturbance of species during bathymetric surveys | MMO present.<br>Checks prior to commencement.<br>Gradual increase to peak frequency. | None. Following these measures any adverse effects will be minimised to ecological inconsequence. |
| Inishmore Island SAC (IE000213) | Disturbance of species during bathymetric surveys | MMO present.<br>Checks prior to commencement.<br>Gradual increase to peak frequency. | None. Following these measures any adverse effects will be minimised to ecological inconsequence. |
| Kilkieran Bay and Islands SAC (IE002111) | Disturbance of species during bathymetric surveys | MMO present.<br>Checks prior to commencement.<br>Gradual increase to peak frequency. | None. Following these measures any adverse effects will be minimised to ecological inconsequence. |
| North Anglesey Marine SAC (UK0030398) | Disturbance of species during bathymetric surveys | MMO present.<br>Checks prior to commencement.<br>Gradual increase to peak frequency. | None. Following these measures any adverse effects will be minimised to ecological inconsequence. |
| Lleyn Peninsula and the Sarnau SAC (UK0013117) | Disturbance of species during bathymetric surveys and ecology boat surveys | MMO present for bathymetric surveys.<br>Checks prior to commencement.<br>Gradual incr.ease to peak frequency.<br>Slow speed for ecology boat surveys.<br>Avoidance of seal haul out areas. | None. Following these measures any adverse effects will be minimised to ecological inconsequence. |
| West Wales Marine SAC (UK0030397) | Disturbance of species during bathymetric surveys | MMO present.<br>Checks prior to commencement.<br>Gradual increase to peak frequency. | None. Following these measures any adverse effects will be minimised to ecological inconsequence. |

| European sites | LSEs | Mitigation measures | Residual effects? |
|---|---|---|---|
| Murlough SAC (UK0016612) | Disturbance of species during bathymetric surveys and ecology boat surveys | MMO present for bathymetric surveys.<br>Checks prior to commencement.<br>Gradual increase to peak frequency.<br>Slow speed for ecology boat surveys.<br>Avoidance of seal haul out areas. | None. Following these measures any adverse effects will be minimised to ecological inconsequence. |
| Strangford Lough SAC (UK0016608) | Disturbance of species during bathymetric surveys and ecology boat surveys | MMO present for bathymetric surveys.<br>Checks prior to commencement.<br>Gradual increase to peak frequency.<br>Slow speed for ecology boat surveys.<br>Avoidance of seal haul out areas. | None. Following these measures any adverse effects will be minimised to ecological inconsequence. |
| Cardigan Bay SAC (UK0013117) | Disturbance of species during bathymetric surveys and ecology boat surveys | MMO present for bathymetric surveys.<br>Checks prior to commencement.<br>Gradual increase to peak frequency.<br>Slow speed for ecology boat surveys.<br>Avoidance of seal haul out areas. | None. Following these measures any adverse effects will be minimised to ecological inconsequence. |
| North Channel SAC (UK0030399) | Disturbance of species during bathymetric surveys | MMO present<br>Checks prior to commencement<br>Gradual increase to peak frequency | None. Following these measures any adverse effects will be minimised to ecological inconsequence. |
| Bristol Channel Approaches SAC (UK0030396) | Disturbance of species during bathymetric surveys | MMO present.<br>Checks prior to commencement.<br>Gradual increase to peak frequency. | None. Following these measures any adverse effects will be minimised to ecological inconsequence. |
| The Maidens SAC (UK0030384) | Disturbance of species during bathymetric surveys and ecology boat surveys | MMO present for bathymetric surveys.<br>Checks prior to commencement.<br>Gradual increase to peak frequency.<br>Slow speed for ecology boat surveys. | None. Following these measures any adverse effects will be minimised to ecological inconsequence. |

| European sites | LSEs | Mitigation measures | Residual effects? |
|---|---|---|---|
| | | Avoidance of seal haul out areas. | |
| Mers Celtiques – Talus du golfe de Gascogne SAC (FR5302015) | Disturbance of species during bathymetric surveys | MMO present.<br>Checks prior to commencement.<br>Gradual increase to peak frequency. | None. Following these measures any adverse effects will be minimised to ecological inconsequence. |
| Nord Bretagne DH SAC (FR2502022) | Disturbance of species during bathymetric surveys | MMO present.<br>Checks prior to commencement.<br>Gradual increase to peak frequency. | None. Following these measures any adverse effects will be minimised to ecological inconsequence. |
| Ouessant-Molène SAC (FR5300018) | Disturbance of species during bathymetric surveys | MMO present.<br>Checks prior to commencement.<br>Gradual increase to peak frequency. | None. Following these measures any adverse effects will be minimised to ecological inconsequence. |
| Abers - Côte des légendes SAC (FR5300017) | Disturbance of species during bathymetric surveys | MMO present<br>Checks prior to commencement<br>Gradual increase to peak frequency | None. Following these measures any adverse effects will be minimised to ecological inconsequence. |
| Côte de Granit rose-Sept-Iles SAC (FR5300009) | Disturbance of species during bathymetric surveys | MMO present.<br>Checks prior to commencement.<br>Gradual increase to peak frequency. | None. Following these measures any adverse effects will be minimised to ecological inconsequence. |
| Baie de Morlaix SAC (FR5300015) | Disturbance of species during bathymetric surveys | MMO present.<br>Checks prior to commencement.<br>Gradual increase to peak frequency. | None. Following these measures any adverse effects will be minimised to ecological inconsequence. |
| Tregor Goëlo SAC (FR5310070) | Disturbance of species during bathymetric surveys | MMO present.<br>Checks prior to commencement.<br>Gradual increase to peak frequency. | None. Following these measures any adverse effects will be minimised to ecological inconsequence. |
| Côtes de Crozon SAC (FR5302006) | Disturbance of species during bathymetric surveys | MMO present.<br>Checks prior to commencement.<br>Gradual increase to peak frequency. | None. Following these measures any adverse effects will be minimised to ecological inconsequence. |
| Baie de Saint-Brieuc (FR5300066) | Disturbance of species during bathymetric surveys | MMO present.<br>Checks prior to commencement. | None. Following these measures any adverse effects will be minimised to ecological inconsequence. |

| European sites | LSEs | Mitigation measures | Residual effects? |
|---|---|---|---|
| | | Gradual increase to peak frequency. | |
| Riviére Leguer, forêts de Beffou, Coat an Noz et Coat an Hay SAC( FR5300008) | Disturbance of species during bathymetric surveys | MMO present.<br>Checks prior to commencement.<br>Gradual increase to peak frequency. | None. Following these measures any adverse effects will be minimised to ecological inconsequence. |
| Chaussée de Sein SAC (FR5302007) | Disturbance of species during bathymetric surveys | MMO present.<br>Checks prior to commencement.<br>Gradual increase to peak frequency. | None. Following these measures any adverse effects will be minimised to ecological inconsequence. |
| Récifs du talus du golfe de Gascogne SAC (FR5302016) | Disturbance of species during bathymetric surveys | MMO present.<br>Checks prior to commencement.<br>Gradual increase to peak frequency. | None. Following these measures any adverse effects will be minimised to ecological inconsequence. |
| Récifs et landes de la Hague SAC (FR2500084) | Disturbance of species during bathymetric surveys | MMO present.<br>Checks prior to commencement.<br>Gradual increase to peak frequency. | None. Following these measures any adverse effects will be minimised to ecological inconsequence. |
| Anse de Vauville SAC (FR2502019) | Disturbance of species during bathymetric surveys | MMO present.<br>Checks prior to commencement.<br>Gradual increase to peak frequency. | None. Following these measures any adverse effects will be minimised to ecological inconsequence. |
| Cap d'Erquy-Cap Fréhel SAC (FR5300011) | Disturbance of species during bathymetric surveys | MMO present.<br>Checks prior to commencement.<br>Gradual increase to peak frequency. | None. Following these measures any adverse effects will be minimised to ecological inconsequence. |
| Banc et récifs de Surtainville SAC (FR2502018) | Disturbance of species during bathymetric surveys | MMO present.<br>Checks prior to commencement.<br>Gradual increase to peak frequency. | None. Following these measures any adverse effects will be minimised to ecological inconsequence. |
| Baie de Lancieux, Baie de l'Arguenon, Archipel de Saint Malo et Dinard SAC (FR5300012) | Disturbance of species during bathymetric surveys | MMO present.<br>Checks prior to commencement.<br>Gradual increase to peak frequency. | None. Following these measures any adverse effects will be minimised to ecological inconsequence. |
| Chausey (FR2500079) | Disturbance of species during bathymetric surveys | MMO present.<br>Checks prior to commencement. | None. Following these measures any adverse effects will be minimised to ecological inconsequence. |

| European sites | LSEs | Mitigation measures | Residual effects? |
|---|---|---|---|
| | | Gradual increase to peak frequency. | |
| Estuaire de la Rance SAC (FR5300061) | Disturbance of species during bathymetric surveys | MMO present.<br>Checks prior to commencement.<br>Gradual increase to peak frequency. | None. Following these measures any adverse effects will be minimised to ecological inconsequence. |
| Baie du Mont Saint-Michel (FR2500077) | Disturbance of species during bathymetric surveys | MMO present.<br>Checks prior to commencement.<br>Gradual increase to peak frequency. | None. Following these measures any adverse effects will be minimised to ecological inconsequence. |
| **Special Protection Areas (SPAs)** | | | |
| South Dublin Bay and River Tolka Estuary SPA (IE004024) | Disturbance of species during all Survey Works within intertidal and subtidal zones | Intertidal surveys undertaken outside peak wintering bird season in Licence Areas A, B and C and outside breeding bird season in Licence Area D.<br>Bathymetric surveys undertaken outside breeding bird season.<br>Minimise disturbance by only working in localised areas at one time and limiting noise.<br>Clean vehicles and shoes before entering site | None. Following these measures any adverse effects will be minimised to ecological inconsequence. |
| The Murrough SPA (IE004186) | Disturbance of species during all Survey Works within intertidal and subtidal zones | Intertidal surveys undertaken outside peak wintering bird season in Licence Areas A, B and C and outside breeding bird season in Licence Area D.<br>Bathymetric surveys undertaken outside breeding bird season.<br>Minimise disturbance by only working in localised areas at one time and limiting noise.<br>Clean vehicles and shoes before entering site | None. Following these measures any adverse effects will be minimised to ecological inconsequence. |
| Dalkey Islands SPA (IE004172) | Disturbance of species during all Survey Works within intertidal and subtidal zones | Bathymetric surveys undertaken outside breeding bird season.<br>Minimise disturbance by only working in localised | None. Following these measures any adverse effects will be minimised to ecological inconsequence. |

| European sites | LSEs | Mitigation measures | Residual effects? |
|---|---|---|---|
| | | areas at one time and limiting noise. | |
| Wicklow Head SPA (IE004127) | Disturbance of species during all Survey Works within intertidal and subtidal zones | Bathymetric surveys undertaken outside breeding bird season.<br>Minimise disturbance by only working in localised areas at one time and limiting noise. | None. Following these measures any adverse effects will be minimised to ecological inconsequence. |
| North Bull Island SPA (IE004006) | Disturbance of species during all Survey Works within intertidal and subtidal zones | Intertidal surveys undertaken outside peak wintering bird season in Licence Areas A, B and C and outside breeding bird season in Licence Area D.<br>Minimise disturbance by only working in localised areas at one time and limiting noise. | None. Following these measures any adverse effects will be minimised to ecological inconsequence. |
| North-West Irish Sea SPA (IE004236) | Disturbance of species during all Survey Works within intertidal and subtidal zones | Bathymetric surveys undertaken outside breeding bird season.<br>Minimise disturbance by only working in localised areas at one time and limiting noise. | None. Following these measures any adverse effects will be minimised to ecological inconsequence. |
| Wicklow Mountains SPA (IE004040) | Disturbance of species during all Survey Works within foreshore and intertidal zones | Intertidal surveys undertaken outside peak wintering bird season in Licence Areas A, B and C. | None. Following these measures any adverse effects will be minimised to ecological inconsequence. |
| Baldoyle Bay SPA (IE004016) | Disturbance of species during all Survey Works within foreshore and intertidal zones | Intertidal surveys undertaken outside peak wintering bird season in Licence Areas A, B and C | None. Following these measures any adverse effects will be minimised to ecological inconsequence. |
| Malahide Estuary SPA (IE004025) | Disturbance of species during all Survey Works within foreshore and intertidal zones | Intertidal surveys undertaken outside peak wintering bird season in Licence Areas A, B and C. | None. Following these measures any adverse effects will be minimised to ecological inconsequence. |
| Rogerstown Estuary SPA (IE004015) | Disturbance of species during all Survey Works within foreshore and intertidal zones | Intertidal surveys undertaken outside peak wintering bird season in Licence Areas A, B and C. | None. Following these measures any adverse effects will be minimised to ecological inconsequence. |

# 8. In-Combination Assessment

In order to take account of in-combination effects, plans and projects that are completed, approved but uncompleted, or proposed (but not yet approved) should be considered in this context (European Commission 2021a).

A search of the National Planning Application Database (NPAD) (DHLGH, accessed February 2025), Dun Laoghaire and Rathdown County Council (accessed February 2025), Fingal and Wicklow County Council planning portals (accessed February 2025), Dublin City Council planning portal (accessed February 2025), An Bord Pleanála planning portal (accessed February 2025), foreshore licence application search (gov.ie and maritimeregulator.ie, accessed February 2025) and general web searches for major infrastructure projects and plans in the vicinity of the Survey Works has been undertaken as part of the Screening Assessment to identify other plans and projects that may contribute to in-combination effects.

For GI works, plans and projects from up to 5km and within three years of the GI works have been included. For all other proposed works, plans and projects within the works area and within10 years (licence validity) have been included.

## 8.1 Assessment of In-Combination Effects

The search identified four plans and 16 projects which were considered to have the potential for in-combination effects with GI works on habitat loss- temporary, habitat degradation - changes in land quality, habitat degradation – spread of invasive species and disturbance of species. These are assessed in Table 8.1 below.

The search identified two plans and four projects which were considered to have the potential for in-combination effects with bathymetric surveys, benthic surveys, ecology boat surveys and intertidal archaeology surveys on habitat loss- temporary, habitat degradation - changes in land quality habitat degradation – spread of invasive species and disturbance of species. These are assessed in Table 8.2 below.

#### 8.1.1.1 Assessment of In-Combination Effects

**Table 8.1: Assessment of in-combination effects of geophysical and geotechnical works**

| Name and Application Reference | Planning Authority | Description | Pathways potentially acting in combination | Assessment of LSE in-combination | LSE in-combination ? |
|---|---|---|---|---|---|
| Climate Action Plan 2024 | Department of the Environment, Climate and Communications | This Plan sets out the actions, measures and pathways to achieve a 51% reduction in overall greenhouse gas emissions by 2030, relative to 2018 levels, and to reach net-zero emissions by no later than 2050. | Habitat degradation – spread of invasive species<br>Disturbance of species | It is acknowledged that the draft Plan is a high-level plan and as such prediction of effects at individual European sites is not practical as the draft Plan lacks the necessary spatial detail to give context to the extent or significance of any potential effects. As such, the potential for effects is raised within the confines of the draft Plan with a view to appropriately informing lower levels of planning where the necessary spatial detail is available and identifying the mitigation measures that must be in place for lower tier plans and projects to ensure the protection of the European sites.<br>Due to the localised and temporary nature of the Survey Works and mitigation provide in Section 6 of this NIS, no significant in-combination effects are considered. | No |
| National Water Action Plan – River Basin Management Plan | Department of Housing, Local Government and Heritage | This Plan sets out the objectives and recommendations to be pursued until 2027 and beyond in order to improve the management of water in Ireland and to achieve the objectives of the Water Framework Directive (WFD) | Habitat loss – temporary<br>Habitat degradation – spread of invasive species<br>Disturbance of species | It is acknowledged that the daft RBMP is a high-level Plan and as such prediction of effects at individual European sites is not practical as the draft plan lacks the necessary spatial detail to give context to the extent or significance of any potential effects. As such, the potential for effects is raised within the confines of the draft RBMP with a view to appropriately informing lower levels of planning where the necessary spatial detail is available and identifying the mitigation measures that must be in place for lower tier plans, programmes and projects to ensure the protection of the European sites. | No |

| Name and Application Reference | Planning Authority | Description | Pathways potentially acting in combination | Assessment of LSE in-combination | LSE in-combination ? |
|---|---|---|---|---|---|
| | | | | Due to the localised and temporary nature of the Survey Works and mitigation provide in Section 6 of this NIS, no significant in-combination effects are considered. | |
| National Marine Planning Framework | The Department of Housing, Planning, and Local Government | The NMPF will sit at the top of the hierarchy of plans and sectoral policies for the maritime area. The plan will be informed by existing sectoral plans and will, in turn, be used to inform future cycles of those plans. It will provide a coherent framework in which those sectoral policies and objectives can be realised. | Habitat loss – temporary<br>Habitat degradation – spread of invasive species<br>Disturbance of species | It is acknowledged that the daft NMPF is a high-level framework document and as such prediction of effects at individual European sites is not practical as the framework lacks the necessary spatial detail to give context to the extent or significance of any potential effects. As such, the potential for effects is raised within the confines of the draft NMPF with a view to appropriately informing lower levels of planning where the necessary spatial detail is available and identifying the mitigation measures that must be in place for lower tier plans and projects to ensure the protection of the European sites.<br>Due to the localised and temporary nature of the Survey Works and mitigation provide in Section 6 of this NIS, no significant in-combination effects are considered. | No |
| Dublin City Development Plan 2022-2028 | Dublin City Council | This plan aims to support the sustainable long-term development within Dublin. | Disturbance of species | A Natura Impact Report has been completed and concluded that with mitigation measures there will be no impact on European sites alone or in-combination. | No |
| Tech Works Marine Ltd (FS007180) | - | Data buoy deployment off Dun Laoghaire, Dublin. Foreshore licence applied. | Disturbance of species | There is a possible temporal overlap in terms of disturbance and displacement, however due to the localised and temporary nature of the Survey Works and mitigation provide in Section 6 of this NIS, no significant in-combination effects are considered. | No |

| Name and Application Reference | Planning Authority | Description | Pathways potentially acting in combination | Assessment of LSE in-combination | LSE in-combination ? |
|---|---|---|---|---|---|
| Mac Lir Offshore Wind Array (FS007472) | - | Site investigations for proposed offshore wind farm off Dublin, Wicklow and Wexford. Foreshore licence applied. | Disturbance of species | There is a possible temporal overlap in terms of disturbance and displacement, however due to the localised and temporary nature of the Survey Works and mitigation provide in Section 6 of this NIS, no significant in-combination effects are considered. | No |
| Mac Lir Offshore Wind Array (FS007472) | - | Site investigations and benthic surveys within a potential offshore export cable corridor. Foreshore licence applied. | Disturbance of species | There is a possible temporal overlap in terms of disturbance and displacement, however due to the localised and temporary nature of the Survey Works and mitigation provide in Section 6 of this NIS, no significant in-combination effects are considered. | No |
| Leinster Offshore Wind Array (FS007162) | - | Site investigations for proposed offshore wind farm off Dublin. Foreshore licence applied. | Disturbance of species | There is a possible temporal overlap in terms of disturbance and displacement, however due to the localised and temporary nature of the Survey Works and mitigation provide in Section 6 of this NIS, no significant in-combination effects are considered.<br>A Natura Impact Report has been completed and concluded that with mitigation measures there will be no impact on European sites alone or in-combination. | No |
| Greystones OWL Windfarm Limited proposed wind farm (FS007367) | Dublin County Council and Wicklow County Council | Greystones OWL Windfarm Limited plans to develop an offshore wind farm at a site of Wicklow/Dublin coast. Seeking to undertake a variety of marine surveys to inform specific location, design and layout of the proposed offshore wind farm and export cable route to shore. A foreshore | Disturbance of species | There is a possible temporal overlap in terms of disturbance and displacement, however due to the localised and temporary nature of the Survey Works and mitigation provide in Section 6 of this NIS, no significant in-combination effects are considered.<br>A Natura Impact Report has been completed and concluded that with mitigation measures there | No |

| Name and Application Reference | Planning Authority | Description | Pathways potentially acting in combination | Assessment of LSE in-combination | LSE in-combination ? |
|---|---|---|---|---|---|
| | | licence application has been submitted. | | will be no impact on European sites alone or in-combination. | |
| Réalt na Mara Offshore Wind Array (FS007330) | - | Site investigations for proposed offshore wind farm off Wicklow and Dublin. Foreshore licence applied. | Disturbance of species | There is a possible temporal overlap in terms of disturbance and displacement, however due to the localised and temporary nature of the Survey Works and mitigation provide in Section 6 of this NIS, no significant in-combination effects are considered.<br>A Natura Impact Report has been completed and concluded that with mitigation measures there will be no impact on European sites alone or in-combination. | No |
| Irish Water Greater Dublin Drainage Outfall (FS006843) | City of Dublin | Construction of a 5.3km marine section of outfall pipe. Foreshore licence applied. | Disturbance of species | There is a possible temporal overlap in terms of disturbance and displacement, however due to the localised and temporary nature of the Survey Works and mitigation provide in Section 6 of this NIS, no significant in-combination effects are considered.<br>A Natura Impact Report has been completed and concluded that with mitigation measures there will be no impact on European sites alone or in-combination. | No |
| Sunrise Offshore Wind Array (FS007151) | Fingal County Council | Foreshore licence application for site investigation activities to undertake a variety of marine surveys at the proposed site in order to inform the specific location, design and layout of the proposed offshore wind farm and export cable route to shore. The surveys will include geophysical, geotechnical, environmental and metocean | Disturbance of species | There is a possible temporal overlap in terms of disturbance and displacement, however due to the localised and temporary nature of the Survey Works and mitigation provide in Section 6 of this NIS, no significant in-combination effects are considered.<br>A Natura Impact Report has been completed and concluded that with mitigation measures there | No |

| Name and Application Reference | Planning Authority | Description | Pathways potentially acting in combination | Assessment of LSE in-combination | LSE in-combination ? |
|---|---|---|---|---|---|
| | | campaigns. The site investigation surveys in the proposed Foreshore Licence Application Area will support the development of the proposed Sunrise Offshore Wind Farm. | | will be no impact on European sites alone or in-combination. | |
| Microsoft Ireland Operations (LIC230018) | - | Site investigations for a proposed subsea fibre optic cable from Dublin Port to Angelsey, Wales | Disturbance of species | There is a possible temporal overlap in terms of disturbance and displacement, however due to the localised and temporary nature of the Survey Works and mitigation provide in Section 6 of this NIS, no significant in-combination effects are considered.<br>A Natura Impact Report has been completed and concluded that with mitigation measures there will be no impact on European sites alone or in-combination. | No |
| Poolbeg GIS Substation | Dublin City Council | A proposed electricity transmission development that primarily comprises the replacement and/or enhancement, and expansion of existing substation infrastructure. Includes associated GI and survey works. | Disturbance of species | There is a possible temporal overlap in terms of disturbance and displacement, however due to the localised and temporary nature of the Survey Works and mitigation provide in Section 6 of this NIS, no significant in-combination effects are considered.<br>A Natura Impact Report has been completed and concluded that with mitigation measures there will be no impact on European sites alone or in-combination. | No |
| Kish Bank Offshore Windfarm (FS006462) | Dun Laoghaire-Rathdown County Council | 500MW offshore wind farm 11km off Dublin coast. Includes associated survey works. currently in consultation. | Disturbance of species | Given the early stage of the application, this will have no effect in-combination with the Survey Works | No |
| Codling Wind Park (FS007546) | Wicklow County Council | Proposed Development of wind farm (ongoing since 1999). Proposed site investigation including bathymetric | Disturbance of species | There is a possible temporal overlap in terms of disturbance and displacement, however due to the localised and temporary nature of the Survey | No |

| Name and Application Reference | Planning Authority | Description | Pathways potentially acting in combination | Assessment of LSE in-combination | LSE in-combination ? |
|---|---|---|---|---|---|
| | Dublin City Council<br>Dún Laoghaire - Rathdown County Council | mapping of seabed, provide information on soil stability and morphology of the seabed, provide details of ground conditions and geology, obtain up to date information on wind resource and metocean data, generate environmental and ecological data. This will be done through a variety of different surveys. | | Works and mitigation provide in Section 6 of this NIS, no significant in-combination effects are considered.<br>A NIS has been completed and concluded that with mitigation measures there will be no impact on European sites alone or in-combination. | |
| Dublin Array (FS007188) | Dublin City Council<br>Fingal County Council<br>Dún Laoghaire - Rathdown County Council<br>Wicklow County Council | Foreshore Licence to undertake geotechnical and geophysical site investigations and ecological, wind, wave and current monitoring to provide further data to refine wind farm design, cable routing, landfall design and associated installation methodologies for the proposed Dublin Array offshore wind farm. | Disturbance of species | There is a possible temporal overlap in terms of disturbance and displacement, however due to the localised and temporary nature of the Survey Works and mitigation provide in Section 6 of this NIS, no significant in-combination effects are considered.<br>A NIS has been completed and concluded that with mitigation measures there will be no impact on European sites alone or in-combination. | No |
| Banba Offshore Wind Farm (FS007283) | Wicklow City Council | Banba Wind Limited is proposing to develop an offshore wind farm at a site off the Wicklow and Dublin Coasts.<br>Banba Wind Limited is seeking to undertake a variety of marine surveys at the Foreshore Licence Application Area in order to inform the specific location, design and layout of the proposed offshore wind farm and export cable route to shore. The surveys will include geophysical, geotechnical, environmental, metocean campaigns. | Disturbance of species | There is a possible temporal overlap in terms of disturbance and displacement, however due to the localised and temporary nature of the Survey Works and mitigation provide in Section 6 of this NIS, no significant in-combination effects are considered.<br>A NIS has been completed and concluded that with mitigation measures there will be no impact on European sites alone or in-combination. | No |
| MUL230034 | Codling Offshore Windfarm | Proposed Survey activities are:<br>Metocean surveys. | Disturbance of species | There is a possible temporal overlap in terms of disturbance and displacement, however due to | No |

| Name and Application Reference | Planning Authority | Description | Pathways potentially acting in combination | Assessment of LSE in-combination | LSE in-combination ? |
|---|---|---|---|---|---|
| | | Geophysical and unexploded ordinance surveys.<br>Geotechnical campaign(s) and trial pits at landfall.<br>Fish & Shellfish surveys.<br>Benthic & Intertidal surveys.<br>Marine Mammal passive acoustic monitoring (PAM) survey.<br>Archaeological surveys.<br>The MUL Application is for site investigation and survey activities only. | | the localised and temporary nature of the Survey Works and mitigation provide in Section 6 of this NIS, no significant in-combination effects are considered.<br>A NIS has been completed and concluded that with mitigation measures there will be no impact on European sites alone or in-combination. | |

**Table 8.2: Assessment of in-combination effects of bathymetric surveys, benthic surveys, ecology boat surveys and intertidal archaeology surveys**

| Name and Application Reference | Planning Authority | Description | Pathways potentially acting in combination | Assessment of LSE in-combination | LSE in-combination? |
|---|---|---|---|---|---|
| Dublin City Development Plan 2022-2028 | Dublin City Council | This plan aims to support the sustainable long-term development within Dublin. | Disturbance of species | A Natura Impact Report has been completed and concluded that with mitigation measures there will be no impact on European sites alone or in-combination. | No |
| Wicklow County Development Plan | Wicklow County Council | This plan aims to support the sustainable long-term development within Wicklow | Disturbance of species | A Natura Impact Report has been completed and concluded that with mitigation measures there will be no impact on European sites alone or in-combination. | No |
| Dublin Array (FS007188 | Dublin City Council<br>Fingal County Council | Foreshore Licence to undertake geotechnical and geophysical site investigations and | Disturbance of species | There is a possible temporal overlap in terms of disturbance and displacement, | No |

| Name and Application Reference | Planning Authority | Description | Pathways potentially acting in combination | Assessment of LSE in-combination | LSE in-combination? |
|---|---|---|---|---|---|
| | Dún Laoghaire - Rathdown County Council<br>Wicklow County Council | ecological, wind, wave and current monitoring to provide further data to refine wind farm design, cable routing, landfall design and associated installation methodologies for the proposed Dublin Array offshore wind farm. | | however due to the localised and temporary nature of the GI works, no significant in-combination effects are considered.<br>A NIS has been completed and concluded that with mitigation measures there will be no impact on European sites alone or in-combination. | |
| Codling Wind Park (FS007546) | Wicklow County Council<br>Dublin City Council<br>Dún Laoghaire - Rathdown County Council | Proposed Development of wind farm (ongoing since 1999). Proposed site investigation including bathymetric mapping of seabed, provide information on soil stability and morphology of the seabed, provide details of ground conditions and geology, obtain up to date information on wind resource and metocean data, generate environmental and ecological data. This will be done through a variety of different surveys. | Disturbance of species | There is a possible temporal overlap in terms of disturbance and displacement, however due to the localised and temporary nature of the GI works, no significant in-combination effects are considered.<br>A NIS has been completed and concluded that with mitigation measures there will be no impact on European sites alone or in-combination. | No |
| Wicklow Sea Wind Ltd (FS007588) | Wicklow County Council | The foreshore license application for Wicklow Sea Wind Limited is to survey an area suitable for the installation of an export cable corridor to connect a proposed fixed foundation offshore wind project in the Celtic Sea (approximately 8km off the east coast of Wicklow) to the grid. | Disturbance of species | There is a possible temporal overlap in terms of disturbance and displacement, however due to the localised and temporary nature of the GI works, no significant in-combination effects are considered. | |

| Name and Application Reference | Planning Authority | Description | Pathways potentially acting in combination | Assessment of LSE in-combination | LSE in-combination? |
|---|---|---|---|---|---|
| | | | | A NIS has been completed and concluded that with mitigation measures there will be no impact on European sites alone or in-combination. | |
| Seagull Cottage, Clonmannon<br>2360091 | Wicklow County Council | The construction of a storey-and-a-half extension to the side and alterations to existing cottage including: the removal of pitched roofs to porches and replacement with single mono-pitch roof, new entrance to rear with new mono-pitch canopy, alterations to existing elevations, new Velux window to northern roof, new lime render; and all associated site works<br>100m west of Survey Works area. Conditionally granted 29/11/2023 | Disturbance of species | Given the small scale of the development and location beyond the railway, there will be no significant effect on water quality in combination with the Survey Works. | No |

## 8.2 Conclusions of In-Combination Effects

It can be concluded on the basis of objective information from the assessments in **Error! Reference source not found.** and Table 8.2 that there is no potential for in-combination effects from the Survey Works with other plans or projects that could undermine the integrity of any European sites.

# 9. Conclusion

This NIS examined the potential for changes in the baseline conditions as a result of the Survey Works against the conservation objectives for the following European sites:

- South Dublin Bay SAC
- Bray Head SAC
- The Murrough SAC
- North Dublin Bay SAC
- Rockabill to Dalkey Island SAC
- Wicklow Mountains SAC
- Lambay Island SAC
- Codling Fault Zone SAC
- Slaney River Valley SAC
- Carnsore Point SAC
- Saltee Islands SAC
- Hook Head SAC
- Roaringwater Bay and Islands SAC
- Kenmare River SAC
- Blasket Islands SAC
- Belgica Mound Province SAC
- Bunduff Lough and Machair / Trawalua / Mullaghmore SAC
- West Connacht Coast SAC
- Inishmore Island SAC
- Kilkieran Bay and Islands SAC
- North Anglesey Marine SAC
- Lleyn Peninsula and the Sarnau SAC
- West Wales Marine SAC
- Murlough SAC
- Strangford Lough SAC
- Cardigan Bay SAC
- North Channel SAC
- Bristol Channel Approaches SAC
- The Maidens SAC
- Mers Celtiques – Talus du golfe de Gascogne SAC
- Nord Bretagne DH SAC
- Ouessant-Molène SAC
- Abers - Côte des légendes SAC
- Côte de Granit rose-Sept-Iles SAC
- Baie de Morlaix SAC
- Tregor Goëlo SAC
- Côtes de Crozon SAC
- Riviére Leguer, forêts de Beffou, Coat an Noz et Coat an Hay SAC
- Chaussée de Sein SAC
- Récifs du talus du golfe de Gascogne SAC
- Récifs et landes de la Hague SAC
- Anse de Vauville SAC
- Cap d'Erquy-Cap Fréhel SAC
- Banc et récifs de Surtainville SAC
- Baie de Saint-Brieuc SAC Baie de Lancieux, Baie de l'Arguenon, Archipel de Saint Malo et Dinard SAC
- Chausey SAC
- Estuaire de la Rance SAC
- Baie du Mont Saint-Michel SAC
- South Dublin Bay and River Tolka Estuary SPA
- The Murrough SPA
- Dalkey Islands SPA
- Wicklow Head SPA
- North Bull Island SPA
- North-West Irish Sea SPA
- Wicklow Mountains SPA
- Baldoyle Bay SPA
- Malahide Estuary SPA
- Rogerstown Estuary SPA

The NIS details mitigation measures which have been prescribed to ensure the Survey Works will not result in adverse effects on Natura 2000 site integrity either alone or in-combination with other plans or projects.

Based on the best available scientific information and professional judgement, it is considered that with the mitigation measures detailed above, there will be no adverse effects on the integrity of those European sites, alone or in-combination with other plans or projects in light of those site's conservation objectives. The NIS contains information which the competent authorities, may consider in making its own complete, precise and definitive findings and conclusions and upon which it is capable of determining that all reasonable scientific doubt has been removed as to the effects of the Survey Works, alone or in-combination with any other plan or project, on the integrity of the relevant European sites.

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# Appendix A. Figures

# Appendix B. Wintering Bird Survey Results

**Table 1: I-WeBS peak counts of QI species during the 2022/23 winter season. A dash (-) has been used where no data was returned.**

| Species | Designation | I-WeBS sites | 2022/23 Peak Count |
|---|---|---|---|
| Bar-tailed godwit (*Limosa lapponica*) | EU Birds Directive: Annex I species<br>Protected Species: Wildlife Acts | Dublin Bay (Licence Area A) | 612 |
| | | South Dublin Coastline (Licence Area B) | - |
| | | Bray Beach and Greystones (Licence Area C) | - |
| | | North Wicklow Coastal Marshes (Licence Area D) | - |
| Common tern (*Sterna hirundo*) | EU Birds Directive: Annex I species<br>Protected Species: Wildlife Acts | Dublin Bay (Licence Area A) | 6 |
| | | South Dublin Coastline (Licence Area B) | - |
| | | Bray Beach and Greystones (Licence Area C) | - |
| | | North Wicklow Coastal Marshes (Licence Area D) | - |
| Dunlin (*Calidris alpina*) | EU Birds Directive: Annex I species<br>Protected Species: Wildlife Acts | Dublin Bay (Licence Area A) | 1386 |
| | | South Dublin Coastline (Licence Area B) | - |
| | | Bray Beach and Greystones (Licence Area C) | - |
| | | North Wicklow Coastal Marshes (Licence Area D) | 13 |
| Great northern Diver (*Gavia immer*) | EU Birds Directive: Annex I species<br>Protected Species: Wildlife Acts | Dublin Bay (Licence Area A) | - |
| | | South Dublin Coastline (Licence Area B) | 1 |
| | | Bray Beach and Greystones (Licence Area C) | 1 |
| | | North Wicklow Coastal Marshes (Licence Area D) | 1 |
| Little Gull (*Larus minutus*) | EU Birds Directive: Annex I, Annex II & Annex III species<br>Protected Species: Wildlife Acts | Dublin Bay (Licence Area A) | - |
| | | South Dublin Coastline (Licence Area B) | 3 |
| | | Bray Beach and Greystones (Licence Area C) | - |
| | | North Wicklow Coastal Marshes (Licence Area D) | - |
| Red-throated diver (*Gavia stellata*) | EU Birds Directive: Annex I species<br>Protected Species: Wildlife Acts | Dublin Bay (Licence Area A) | 1 |
| | | South Dublin Coastline (Licence Area B) | 1 |
| | | Bray Beach and Greystones (Licence Area C) | 2 |
| | | North Wicklow Coastal Marshes (Licence Area D) | 116 |
| Eurasian curlew (*Numenius arquata*) | EU Birds Directive: Annex II species<br>Protected Species: Wildlife Acts | Dublin Bay (Licence Area A) | 33 |
| | | South Dublin Coastline (Licence Area B) | - |
| | | Bray Beach and Greystones (Licence Area C) | - |
| | | North Wicklow Coastal Marshes (Licence Area D) | 115 |

| Species | Designation | I-WeBS sites | 2022/23 Peak Count |
|---|---|---|---|
| Eurasian teal (*Anas crecca*) | EU Birds Directive: Annex II & Annex III species<br>Protected Species: Wildlife Acts | Dublin Bay (Licence Area A) | 77 |
| | | South Dublin Coastline (Licence Area B) | - |
| | | Bray Beach and Greystones (Licence Area C) | - |
| | | North Wicklow Coastal Marshes (Licence Area D) | 72 |
| Eurasian wigeon (*Mareca penelope*) | EU Birds Directive: Annex II & Annex III species<br>Protected Species: Wildlife Acts | Dublin Bay (Licence Area A) | - |
| | | South Dublin Coastline (Licence Area B) | - |
| | | Bray Beach and Greystones (Licence Area C) | - |
| | | North Wicklow Coastal Marshes (Licence Area D) | 714 |
| Greylag goose (*Anser anser*) | EU Birds Directive: Annex II & Annex III species<br>Protected Species: Wildlife Acts | Dublin Bay (Licence Area A) | - |
| | | South Dublin Coastline (Licence Area B) | - |
| | | Bray Beach and Greystones (Licence Area C) | - |
| | | North Wicklow Coastal Marshes (Licence Area D) | 91 |
| Northern shoveler (*Spatula clypeata*) | EU Birds Directive: Annex II & Annex III species<br>Protected Species: Wildlife Acts | Dublin Bay (Licence Area A) | - |
| | | South Dublin Coastline (Licence Area B) | - |
| | | Bray Beach and Greystones (Licence Area C) | - |
| | | North Wicklow Coastal Marshes (Licence Area D) | 30 |
| Red-breasted merganser (*Mergus serrator*) | EU Habitats Directive: Annex II species<br>Protected Species: Wildlife Acts | Dublin Bay (Licence Area A) | 19 |
| | | South Dublin Coastline (Licence Area B) | - |
| | | Bray Beach and Greystones (Licence Area C) | - |
| | | North Wicklow Coastal Marshes (Licence Area D) | - |
| Black-headed gull (*Chroicocephalus ridibundus*) | Protected Species: Wildlife Acts | Dublin Bay (Licence Area A) | 627 |
| | | South Dublin Coastline (Licence Area B) | 16 |
| | | Bray Beach and Greystones (Licence Area C) | 191 |
| | | North Wicklow Coastal Marshes (Licence Area D) | 54 |
| Black-legged kittiwake (*Rissa tridactyla*) | Protected Species: Wildlife Acts | Dublin Bay (Licence Area A) | - |
| | | South Dublin Coastline (Licence Area B) | 1 |
| | | Bray Beach and Greystones (Licence Area C) | - |
| | | North Wicklow Coastal Marshes (Licence Area D) | - |
| Black-tailed godwit (*Limosa limosa*) | Protected Species: Wildlife Acts | Dublin Bay (Licence Area A) | 680 |
| | | South Dublin Coastline (Licence Area B) | - |
| | | Bray Beach and Greystones (Licence Area C) | - |

| Species | Designation | I-WeBS sites | 2022/23 Peak Count |
|---|---|---|---|
| | | North Wicklow Coastal Marshes (Licence Area D) | 14 |
| Brent goose (*Branta bernicla*) | Protected Species: Wildlife Acts | Dublin Bay (Licence Area A) | 312 |
| | | South Dublin Coastline (Licence Area B) | 12 |
| | | Bray Beach and Greystones (Licence Area C) | 88 |
| | | North Wicklow Coastal Marshes (Licence Area D) | 45 |
| Common gull (*Larus canus*) | Protected Species: Wildlife Acts | Dublin Bay (Licence Area A) | 53 |
| | | South Dublin Coastline (Licence Area B) | 2 |
| | | Bray Beach and Greystones (Licence Area C) | 2 |
| | | North Wicklow Coastal Marshes (Licence Area D) | 5 |
| Common redshank (*Tringa totanus*) | Protected Species: Wildlife Acts | Dublin Bay (Licence Area A) | 246 |
| | | South Dublin Coastline (Licence Area B) | 2 |
| | | Bray Beach and Greystones (Licence Area C) | 2 |
| | | North Wicklow Coastal Marshes (Licence Area D) | 25 |
| Common scoter (*Melanitta nigra*) | Protected Species: Wildlife Acts | Dublin Bay (Licence Area A) | - |
| | | South Dublin Coastline (Licence Area B) | 1 |
| | | Bray Beach and Greystones (Licence Area C) | - |
| | | North Wicklow Coastal Marshes (Licence Area D) | 2 |
| Common shelduck (*Tadorna tadorna*) | Protected Species: Wildlife Acts | Dublin Bay (Licence Area A) | 9 |
| | | South Dublin Coastline (Licence Area B) | 4 |
| | | Bray Beach and Greystones (Licence Area C) | - |
| | | North Wicklow Coastal Marshes (Licence Area D) | 5 |
| Eurasian oystercatcher (*Haematopus ostralegus*) | Protected Species: Wildlife Acts | Dublin Bay (Licence Area A) | 676 |
| | | South Dublin Coastline (Licence Area B) | 2 |
| | | Bray Beach and Greystones (Licence Area C) | 110 |
| | | North Wicklow Coastal Marshes (Licence Area D) | 8 |
| European shag (*Gulosus aristotelis*) | Protected Species: Wildlife Acts | Dublin Bay (Licence Area A) | - |
| | | South Dublin Coastline (Licence Area B) | 7 |
| | | Bray Beach and Greystones (Licence Area C) | 74 |
| | | North Wicklow Coastal Marshes (Licence Area D) | 58 |
| | | Dublin Bay (Licence Area A) | 6 |

| Species | Designation | I-WeBS sites | 2022/23 Peak Count |
|---|---|---|---|
| Great black-backed gull (*Larus marinus*) | Protected Species: Wildlife Acts | South Dublin Coastline (Licence Area B) | 3 |
| | | Bray Beach and Greystones (Licence Area C) | 12 |
| | | North Wicklow Coastal Marshes (Licence Area D) | 7 |
| Great cormorant (*Phalacrocorax carbo*) | Protected Species: Wildlife Acts | Dublin Bay (Licence Area A) | 54 |
| | | South Dublin Coastline (Licence Area B) | 17 |
| | | Bray Beach and Greystones (Licence Area C) | 4 |
| | | North Wicklow Coastal Marshes (Licence Area D) | 55 |
| Grey plover (*Pluvialis squatarola*) | Protected Species: Wildlife Acts | Dublin Bay (Licence Area A) | 8 |
| | | South Dublin Coastline (Licence Area B) | - |
| | | Bray Beach and Greystones (Licence Area C) | - |
| | | North Wicklow Coastal Marshes (Licence Area D) | 3 |
| Herring gull (*Larus argentatus*) | Protected Species: Wildlife Acts | Dublin Bay (Licence Area A) | 89 |
| | | South Dublin Coastline (Licence Area B) | - |
| | | Bray Beach and Greystones (Licence Area C) | 68 |
| | | North Wicklow Coastal Marshes (Licence Area D) | 73 |
| Lesser black-backed gull (*Larus fuscus*) | Protected Species: Wildlife Acts | Dublin Bay (Licence Area A) | 3 |
| | | South Dublin Coastline (Licence Area B) | - |
| | | Bray Beach and Greystones (Licence Area C) | 2 |
| | | North Wicklow Coastal Marshes (Licence Area D) | 2 |
| Red knot (*Calidris canutus*) | Protected Species: Wildlife Acts | Dublin Bay (Licence Area A) | 1250 |
| | | South Dublin Coastline (Licence Area B) | - |
| | | Bray Beach and Greystones (Licence Area C) | - |
| | | North Wicklow Coastal Marshes (Licence Area D) | - |
| Ringed plover (*Charadrius hiaticula*) | Protected Species: Wildlife Acts | Dublin Bay (Licence Area A) | 18 |
| | | South Dublin Coastline (Licence Area B) | - |
| | | Bray Beach and Greystones (Licence Area C) | 11 |
| | | North Wicklow Coastal Marshes (Licence Area D) | 1 |
| Sanderling (*Calidris alba)* | N/A | Dublin Bay (Licence Area A) | 23 |
| | | South Dublin Coastline (Licence Area B) | - |
| | | Bray Beach and Greystones (Licence Area C) | - |

| Species | Designation | I-WeBS sites | 2022/23 Peak Count |
|---|---|---|---|
| | | North Wicklow Coastal Marshes (Licence Area D) | - |
| Turnstone (*Arenaria interpres*) | N/A | Dublin Bay (Licence Area A) | 7 |
| | | South Dublin Coastline (Licence Area B) | - |
| | | Bray Beach and Greystones (Licence Area C) | 24 |
| | | North Wicklow Coastal Marshes (Licence Area D) | - |

**Table 2 : Jacobs wintering bird survey peak counts of QI bird species for each Licence Area. A dash (-) has been used where the species was not recorded.**

| Species | Licence Area | Peak Count | Month of Peak Count |
|---|---|---|---|
| Bar-tailed godwit (*Limosa lapponica*) | Licence Area A | 10000 | March |
| | Licence Area B | - | - |
| | Licence Area C | - | - |
| | Licence Area D | - | - |
| Dunlin (*Calidris alpina*) | Licence Area A | 30000 | March |
| | Licence Area B | - | - |
| | Licence Area C | - | - |
| | Licence Area D | 60 | December |
| Great northern Diver (*Gavia immer*) | Licence Area A | - | - |
| | Licence Area B | 1 | February |
| | Licence Area C | - | - |
| | Licence Area D | 2 | December |
| Little Gull (*Larus minutus*) | Licence Area A | - | - |
| | Licence Area B | - | - |
| | Licence Area C | - | - |
| | Licence Area D | 3 | October |
| Red-throated diver (*Gavia stellata*) | Licence Area A | 1 | November |
| | Licence Area B | 1 | February |
| | Licence Area C | 5 | November |
| | Licence Area D | 205 | January |
| Eurasian curlew (*Numenius arquata*) | Licence Area A | 99 | December |
| | Licence Area B | - | - |
| | Licence Area C | - | - |
| | Licence Area D | 140 | January |
| Eurasian teal (*Anas crecca*) | Licence Area A | 115 | January |
| | Licence Area B | - | - |

| Species | Licence Area | Peak Count | Month of Peak Count |
|---|---|---|---|
| | Licence Area C | - | - |
| | Licence Area D | 235 | November |
| Eurasian wigeon (*Mareca penelope*) | Licence Area A | - | - |
| | Licence Area B | - | - |
| | Licence Area C | - | - |
| | Licence Area D | 2000 | January |
| Greylag goose (*Anser anser*) | Licence Area A | - | - |
| | Licence Area B | - | - |
| | Licence Area C | 5 | November |
| | Licence Area D | 150 | January |
| Northern shoveler (*Spatula clypeata*) | Licence Area A | - | - |
| | Licence Area B | - | - |
| | Licence Area C | - | - |
| | Licence Area D | 52 | January |
| Red-breasted merganser (*Mergus serrator*) | Licence Area A | 25 | March |
| | Licence Area B | - | - |
| | Licence Area C | - | - |
| | Licence Area D | - | - |
| Black-headed gull (*Chroicocephalus ridibundus*) | Licence Area A | 1000 | January |
| | Licence Area B | 60 | March |
| | Licence Area C | 236 | January |
| | Licence Area D | 500 | February |
| Black-legged kittiwake (*Rissa tridactyla*) | Licence Area A | - | - |
| | Licence Area B | 1 | March |
| | Licence Area C | - | - |
| | Licence Area D | 1 | February |
| Black-tailed godwit (*Limosa limosa*) | Licence Area A | 1500 | March |
| | Licence Area B | - | - |
| | Licence Area C | - | - |
| | Licence Area D | 170 | March |
| Brent goose (*Branta bernicla*) | Licence Area A | 400 | February |
| | Licence Area B | 18 | March |
| | Licence Area C | 20 | December |
| | Licence Area D | 142 | February |
| Common gull (*Larus canus*) | Licence Area A | 100 | January |
| | Licence Area B | 1 | March |

| Species | Licence Area | Peak Count | Month of Peak Count |
|---|---|---|---|
| | Licence Area C | 42 | February |
| | Licence Area D | 20 | November |
| Common redshank (*Tringa totanus*) | Licence Area A | 335 | December |
| | Licence Area B | - | - |
| | Licence Area C | - | - |
| | Licence Area D | 50 | November |
| Common scoter (*Melanitta nigra*) | Licence Area A | 22 | January |
| | Licence Area B | - | - |
| | Licence Area C | - | - |
| | Licence Area D | 25 | November |
| Common shelduck (*Tadorna tadorna*) | Licence Area A | 5 | February |
| | Licence Area B | - | - |
| | Licence Area C | - | - |
| | Licence Area D | 10 | November |
| Eurasian oystercatcher (*Haematopus ostralegus*) | Licence Area A | 1500 | February |
| | Licence Area B | 18 | February |
| | Licence Area C | 3 | December |
| | Licence Area D | 125 | December |
| European shag (*Gulosus aristotelis*) | Licence Area A | 1 | November |
| | Licence Area B | 15 | February |
| | Licence Area C | 87 | February |
| | Licence Area D | 80 | January |
| Great black-backed gull (*Larus marinus*) | Licence Area A | 6 | November |
| | Licence Area B | 6 | February |
| | Licence Area C | 5 | December |
| | Licence Area D | 90 | March |
| Great cormorant (*Phalacrocorax carbo*) | Licence Area A | 10 | November |
| | Licence Area B | 6 | February |
| | Licence Area C | 110 | November |
| | Licence Area D | 36 | November |
| Fulmar (*Fulmarus glacialis)* | Licence Area A | - | - |
| | Licence Area B | - | - |
| | Licence Area C | 2 | February |
| | Licence Area D | - | - |
| Grey plover (*Pluvialis squatarola*) | Licence Area A | 50 | March |
| | Licence Area B | - | - |

| Species | Licence Area | Peak Count | Month of Peak Count |
|---|---|---|---|
| | Licence Area C | - | - |
| | Licence Area D | 2 | October |
| Herring gull (*Larus argentatus*) | Licence Area A | 250 | November |
| | Licence Area B | 60 | February |
| | Licence Area C | 90 | November |
| | Licence Area D | 64 | March |
| Golden Plover (*Pluvialis apricaria)* | Licence Area A | 50 | October |
| | Licence Area B | - | - |
| | Licence Area C | - | - |
| | Licence Area D | 400 | March |
| Lesser black-backed gull (*Larus fuscus*) | Licence Area A | 1 | December |
| | Licence Area B | 1 | February |
| | Licence Area C | 1 | October |
| | Licence Area D | 6 | March |
| Red knot (*Calidris canutus*) | Licence Area A | 20000 | March |
| | Licence Area B | - | - |
| | Licence Area C | - | - |
| | Licence Area D | - | - |
| Ringed plover (*Charadrius hiaticula*) | Licence Area A | 120 | December |
| | Licence Area B | - | - |
| | Licence Area C | 15 | January |
| | Licence Area D | 24 | October |
| Sanderling (*Calidris alba)* | Licence Area A | 80 | March |
| | Licence Area B | - | - |
| | Licence Area C | - | - |
| | Licence Area D | 1 | January |
| Turnstone (*Arenaria interpres*) | Licence Area A | 25 | November |
| | Licence Area B | - | - |
| | Licence Area C | 4 | February |
| | Licence Area D | 9 | March |
| Guillemot (*Uria aalge*) | Licence Area A | - | - |
| | Licence Area B | 100 | February |
| | Licence Area C | - | - |
| | Licence Area D | 6 | March |
| Razorbill (*Alca torda*) | Licence Area A | 5 | March |
| | Licence Area B | 4 | March |

| Species | Licence Area | Peak Count | Month of Peak Count |
|---|---|---|---|
| | Licence Area C | 5 | March |
| | Licence Area D | 17 | October |
| Merlin (*Falco columbarius*) | Licence Area A | - | - |
| | Licence Area B | - | - |
| | Licence Area C | - | - |
| | Licence Area D | 1 | October |
| Peregrine (*Falco peregrinus*) | Licence Area A | - | - |
| | Licence Area B | - | - |
| | Licence Area C | - | - |
| | Licence Area D | 1 | October |

**Table 3: Jacobs breeding bird survey peak counts of QI bird species for each Licence Area. A dash (-) has been used where the species was not recorded.**

| Species | Licence Area | Peak Count | Month of Peak Count | Highest Breeding Status |
|---|---|---|---|---|
| Bar-tailed godwit (*Limosa lapponica*) | Licence Area B | - | - | - |
| | Licence Area C | - | - | - |
| | Licence Area D | 2 | June | Non-breeding |
| Dunlin (*Calidris alpina*) | Licence Area B | - | - | - |
| | Licence Area C | - | - | - |
| | Licence Area D | 11 | April | Possible |
| Eurasian teal (*Anas crecca* | Licence Area B | - | - | - |
| | Licence Area C | - | - | - |
| | Licence Area D | 4 | April | Probable |
| Northern shoveler (*Spatula clypeata*) | Licence Area B | - | - | - |
| | Licence Area C | - | - | - |
| | Licence Area D | 7 | April | Probable |
| Black-headed gull (*Chroicocephalus ridibundus*) | Licence Area B | - | - | - |
| | Licence Area C | - | - | - |
| | Licence Area D | 9 | June | Probable |
| Black-legged kittiwake (*Rissa tridactyla*) | Licence Area B | 2 | June | Possible |
| | Licence Area C | 40 | May | Confirmed |
| | Licence Area D | - | - | - |
| Black-tailed godwit (*Limosa limosa*) | Licence Area B | - | - | - |
| | Licence Area C | - | - | - |
| | Licence Area D | 2 | June | Possible |
| Common redshank (*Tringa totanus*) | Licence Area B | - | - | - |
| | Licence Area C | - | - | - |

| Species | Licence Area | Peak Count | Month of Peak Count | Highest Breeding Status |
|---|---|---|---|---|
| | Licence Area D | 3 | June | Probable |
| Common shelduck (*Tadorna tadorna*) | Licence Area B | 7 | April | Probable |
| | Licence Area C | - | - | - |
| | Licence Area D | 4 | April | Probable |
| Eurasian oystercatcher (*Haematopus ostralegus*) | Licence Area B | 6 | April | Probable |
| | Licence Area C | - | - | - |
| | Licence Area D | 12 | April | Confirmed |
| European shag (*Gulosus aristotelis*) | Licence Area B | 4 | June | Probable |
| | Licence Area C | 75 | April | Confirmed |
| | Licence Area D | 11 | April | Possible |
| Great black-backed gull (*Larus marinus*) | Licence Area B | 9 | June | Confirmed |
| | Licence Area C | 5 | May | Probable |
| | Licence Area D | 4 | June | Possible |
| Great cormorant (*Phalacrocorax carbo*) | Licence Area B | 17 | June | Confirmed |
| | Licence Area C | 120 | April | Confirmed |
| | Licence Area D | 1 | June | Possible |
| Fulmar (*Fulmarus glacialis)* | Licence Area B | 1 | June | Possible |
| | Licence Area C | 8 | June | Confirmed |
| | Licence Area D | - | - | - |
| Herring gull (*Larus argentatus*) | Licence Area B | 70 | June | Confirmed |
| | Licence Area C | 30 | May | Confirmed |
| | Licence Area D | 14 | April | Probable |
| Lesser black-backed gull (*Larus fuscus*) | Licence Area B | 6 | April | Probable |
| | Licence Area C | - | - | - |
| | Licence Area D | - | - | - |
| Common tern | Licence Area B | 80 | June | Probable |
| | Licence Area C | 1 | June | Possible |
| | Licence Area D | - | - | - |
| Arctic tern | Licence Area B | 20 | June | Probable |
| | Licence Area C | - | - | - |
| | Licence Area D | - | - | - |
| Little tern | Licence Area B | - | - | - |
| | Licence Area C | - | - | - |
| | Licence Area D | 600 | June | Confirmed |
| | Licence Area B | - | - | - |
| | Licence Area C | - | - | - |

| Species | Licence Area | Peak Count | Month of Peak Count | Highest Breeding Status |
|---|---|---|---|---|
| Ringed plover (*Charadrius hiaticula*) | Licence Area D | 14 | May | Confirmed |
| Guillemot (*Uria aalge*) | Licence Area B | - | - | - |
| | Licence Area C | 3000 | June | Confirmed |
| | Licence Area D | - | - | - |
| Razorbill (*Alca torda*) | Licence Area B | - | - | - |
| | Licence Area C | 100 | June | Confirmed |
| | Licence Area D | - | - | - |
| Peregrine (*Falco peregrinus*) | Licence Area B | 1 | April | Possible |
| | Licence Area C | - | - | - |
| | Licence Area D | - | - | - |

# Appendix C. Supporting Information for Screening Appropriate Assessment Report