



Investigative Foreshore Licence Application - Floating Cork Offshore Wind Farm

Supporting Information for Screening for
Appropriate Assessment

Prepared for: Floating Cork Offshore Wind Ltd
(a subsidiary company of Source Galileo Limited)



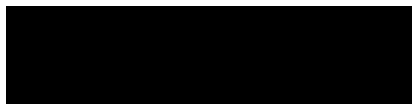
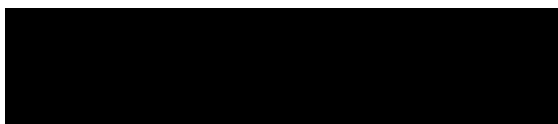
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Document Preparation

Floating Cork Offshore Wind Ltd (FCOWL) commissioned Gavin and Doherty Geosolutions (GDG) to prepare a Foreshore Licence Application (FLA) under Section 3 (3) of the Foreshore Act 1933 (as amended) for the acquisition of benthic ecology surveys within the Floating Cork Offshore Wind Farm (FCOWF) export cable corridor. This Report forms one of a suite of documents initially prepared by GDG that made up the FLA.

Prior to submission of the FLA, FCOWL commissioned Collaborative Environmental Advisers (CEA) Ltd to review and update all documents prepared by GDG, in light of changes made to the extent of the FCOWF export cable corridor. The documents were subsequently further revised in November 2022 on receipt of the Department of Housing, Local Government and Heritage's opinion that the proposed surveys do not constitute trivial works and that a Foreshore Licence under Section 3.1 of the Foreshore Act 1933 (as amended) should be sought. The content of this report is based on the information initially prepared by GDG and checked by CEA, information received from the client, and publicly available data sources.

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This document has been checked in line with internal quality control requirements.

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Abbreviations/Glossary

AA	Appropriate Assessment
ADCP	Acoustic Doppler Current Profiler
CEA	Collaborative Environmental Advisers Ltd.
CIS	Celtic and Irish Seas (MU)
CPT	Cone Penetrometer Test
DAFM	Department of Agriculture, Food and the Marine
DAHG	Department of Arts, Heritage and the Gaeltacht
DEHLG	Department of Environment, Heritage and Local Government
DHPLG	Department of Housing, Planning and Local Government
DHLGH	Department of Housing, Local Government and Heritage
DTTAS	Department of Transport, Tourism and Sport
EC	European Commission
EIAR	Environmental Impact Assessment Report
EPA	Environmental Protection Agency
EU	European Union
EUNIS	European Nature Information System
FCOWF	Floating Cork Offshore Wind Farm
FCOWL	Floating Cork Offshore Wind Ltd.
FLA	Foreshore Licence Application
FCS	Favourable Conservation Status
GDG	Gavin and Doherty Geosolutions
GPS	Global Positioning System
HWM	High Water Mark
IMO	International Maritime Organization
IROPI	Imperative Reasons of Overriding Public Interest
JNCC	Joint Nature Conservation Committee
JUB	Jack-up Barge
LSE	Likely Significant Effects
MARPOL	The International Convention for the Prevention of Pollution from Ships
MBES	Multi-beam Echo-sounder
MINNS	Marine Invasive Non-Native Species
MNCR	Marine Nature Conservation Review
MU	Management Unit
NIS	Natura Impact Statement
NM	Nautical Mile
NPWS	National Parks and Wildlife Service
OECC	Offshore Export Cable Corridor
OPR	Office of the Planning Regulator
OSCW	Offshore Channel, Celtic Sea & South West England (MU)
QI	Qualifying Interest
ROV	Remotely Operated Vehicle
SAC	Special Areas of Conservation



SBP	Sub-bottom Profiler
SCI	Special Conservation Interest
SOSW	Schedule of Survey Works
SPA	Special Protection Areas
SSS	Side Scan Sonar
UAV	Unmanned Aerial Vehicle
UK	United Kingdom
VC	Vibrocore
WCI	West Coast of Ireland (MU)



Glossary of Terms

Application Area	Area for which an application for a Foreshore Licence under Section 3.1 of the Foreshore Act 1933, as amended is sought to undertake site investigations to determine its suitability for both the offshore wind farm and the route for the export cable from the wind farm to shore.
Appropriate Assessment (AA)	An Appropriate Assessment (AA) is an assessment of the potential adverse effects of a plan or project (in combination with other plans or projects) on Special Areas of Conservation (SAC) and Special Protection Areas (SPA). These SACs and SPAs are protected by both National and European Law.
Benthic Ecology	Benthic ecology is the study of organisms that make up bottom communities (sediments, seagrass communities and rock outcrops) in lakes, streams, estuaries and oceans, to determine environmental health and conduct environmental appraisals.
Coastal Lagoons	Lagoons are expanses of coastal salt water, of varying salinity, which are wholly or partially separated from the sea by sand banks or shingle, or less frequently, by rocks.
Drift Lines	Drift lines occur on sandy or shingle substrate at the upper part of the strand, around the high tide mark. Water-borne material including organic matter is deposited on the shore and provides nutrients and a seed source for vegetation.
Ecology	Ecology is a branch of biology concerning the spatial and temporal patterns of the distribution and abundance of organisms, including the causes and consequences.
Environmental Receptors	Environmental receptors are any organism, habitat or natural resource which could be adversely affected by an activity.
Estuaries	Estuaries are coastal inlets with a significant freshwater influence. They are diverse, dynamic habitats that help maintain the health of coastal ecosystems. They are a significant resource for bird and mammal species for feeding, breeding, and resting, and depending on their geomorphology and hydrology support a mosaic of other habitats, including Annex I habitats such as mudflats.
Favourable Conservation Status	The EU Habitats Directive requires EU Member States to achieve FCS of natural habitats and species, defined with respect to species by Article 1 (i) of the Directive as below: "conservation status will be taken as 'favourable' when: population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis."
Foreshore	The foreshore of Ireland is classed as the land and seabed between the high water of ordinary or medium tides (shown HWM on Ordnance Survey maps) and the twelve-mile limit (12 NM = 22.224 km). The foreshore also covers the tidal reaches of rivers.
Foreshore Licence Application Area	Within this report: the area within the 12 NM limit of the high-water mark of ordinary tides for which a Foreshore Licence Application is submitted to the Department of Housing, Local Government and Heritage for a licence under Section 3.1 of the Foreshore Act to undertake site investigations.
Grab Samples	A grab sample is a sample of sediment taken from the seabed.
MARPOL	MARPOL is the main international convention aimed at the prevention of pollution from ships caused by operational or accidental causes. It was adopted at the International Maritime Organization (IMO) in 1973. The Protocol of 1978 was adopted in response to a number of tanker accidents in 1976–1977.
Mudflats	Tidal mudflat habitat is comprised of the intertidal section of the coastline where muds dominate.
Natura Impact Statement	A Natura Impact Statement (NIS) is the statement prepared following Appropriate Assessment (AA) of Natura 2000 sites as required under the EU Habitats Directive which presents information on the assessment and the process of collating data on a project and its potential significant impacts on Natura 2000 site(s).



Pollution Event	A 'pollution incident' includes a leak, spill or escape of a substance, or circumstances in which this is likely to occur.
Qualifying Interests (QI)	The habitats and species for which each SAC is selected.
Receiving Environment	The receiving environment is the environment upon which a proposed activity might have effects.
Reefs	Reefs are marine features with hard substrate available for colonisation by plants and animals. In Irish waters they range from the intertidal to depths of 4,500 m and more than 400 km from the coast.
Sandbanks	Sandbanks are distinct banks that arise from horizontal or sloping plains of sediment that ranges from gravel to fine sand. They are primarily composed of sandy sediments permanently covered by water, at depths of less than 20 m below chart datum.
Sandflats	Tidal sandflat habitat is comprised of the intertidal section of the coastline where sands dominate.
Special Areas of Conservation (SAC)	These are prime wildlife conservation areas considered to be important on a European as well as national level. The EU Habitats Directive lists certain habitats and species that must be protected within SACs.
Special Protection Areas (SPA)	Ireland is required under the terms of the EU Birds Directive (2009/147/EC) to designate Special Protection Areas (SPAs) for the protection of: Listed rare and vulnerable species; regularly occurring migratory species and wetlands, especially those of international importance.



1. Introduction

1.1. Introduction

Floating Cork Offshore Wind Ltd (FCOWL), a subsidiary company of Source Galileo Limited, propose to investigate the feasibility of developing an offshore wind farm, Floating Cork Offshore Wind Farm (FCOWF), in the Celtic Sea outside the 12 nautical mile (NM) boundary off the coast of County Cork, but within the maritime area as defined in the Maritime Planning Act 2021.

FCOWL intends to undertake a site investigation survey campaign of the potential offshore export cable corridor area (the 'Application Area') for the FCOWF, to include geophysical, geotechnical and environmental surveys. All survey activities will be completed on the Foreshore i.e., within 12 NM of the coastline.

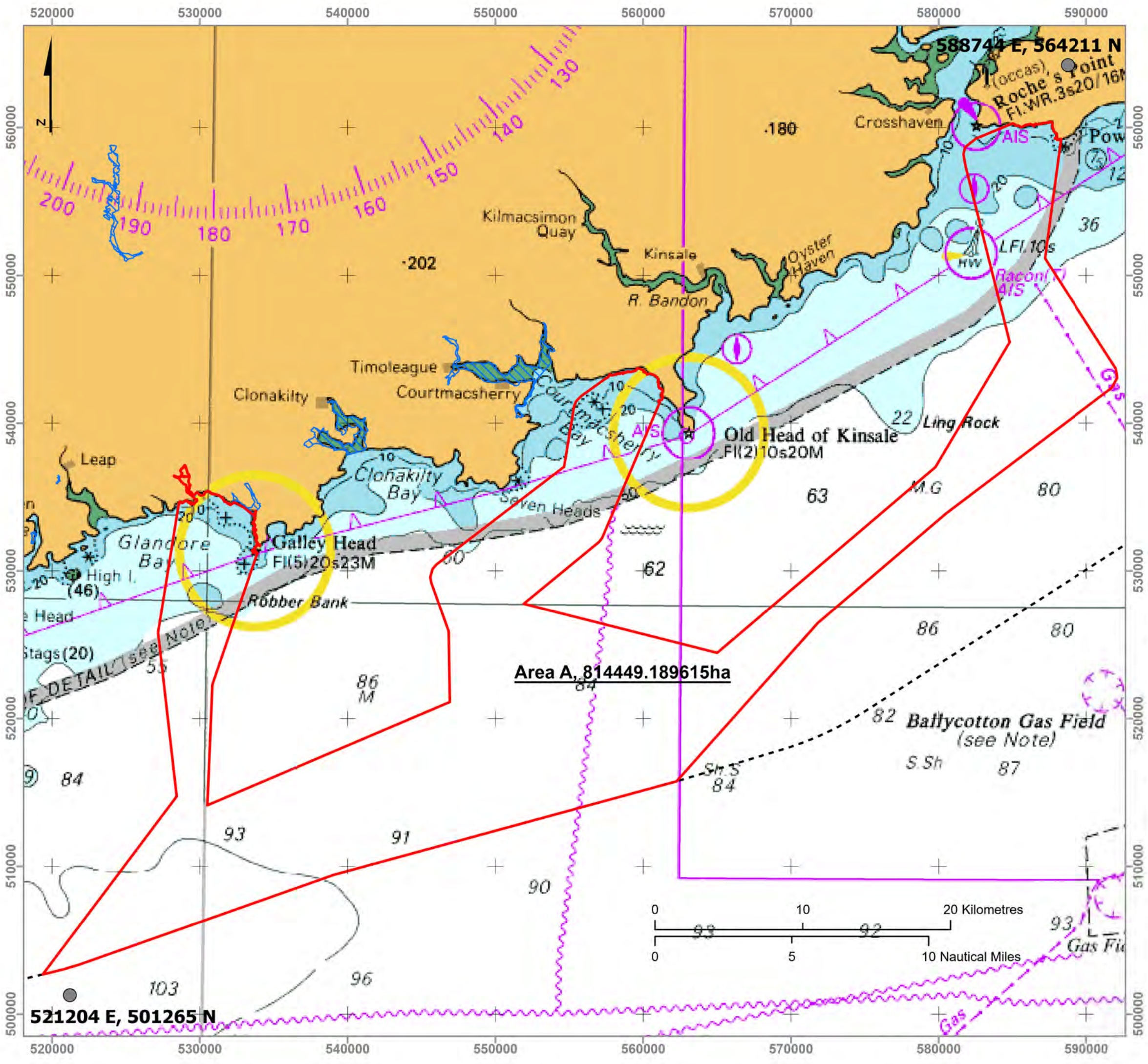
The objective of the site investigation campaign is to obtain baseline data that will contribute to determining the physical and ecological conditions within the Application Area and the location and design of the proposed cable route to shore within the Application Area. The proposed scope of geophysical, geotechnical, benthic, wind resource and metocean surveys to be undertaken are described in the Schedule of Survey Works (SOSW) document submitted in support of this Application (document reference: C01477_Floating Cork_SOSW).

1.2. Licence Application Area

The Application Area is situated off the coast of County Cork and measures 814.45 km² in total (Figure 1-1). The Application Area is adjoined at its southern boundary by the 12 NM limit and extends to the High-Water Mark (HWM) in parts along the coast from Rosscarbery Pier to Galley Head, from Garretstown to Lispatrick and from Trabolgan Bay to Power Head.

The Application Area consists of the FCOWF Offshore Export Cable Corridor (OECC) area within 12 NM only. The FCOWF area, as well as a portion of the OECC, are located outside the 12 NM boundary to the south of the OECC but within the maritime area as defined in the Maritime Planning Act 2021. FCOWL acknowledges that it is only possible at this time to obtain an Investigative Foreshore Licence for that area situated within the 12 NM boundary.

The Application Area (symbolised in red) is shown in Figure 1-1. The coordinates of the site extent are set out in the accompanying Foreshore Licence application form.



Foreshore Licence Map



- 12nm territorial sea limit
- Licence area

Notes:
Where the licence area adjoins or abuts the land the High Water Mark as defined on the OSI 25 Inch Mapping is the boundary of the licence area.

Data sources;
data.gov.ie (Maritime Limits)
High Water Mark- Ordnance Survey Ireland (Creative Commons Licence)
© British Crown and OceanWise, 2023. All rights reserved. License No. EMS-EK001-808936. Not to be used for Navigation (Admiralty Charts).

Drawing Title: Foreshore Licence Map
Drawing Number: C01477-FC-LOC-001-3
Coordinate Reference System; EPSG 2157
Date: 03/03/2023
Created by: [Redacted]
RPM Ltd- Ivy Cottage, Main Street, Grendon Underwood, Bucks HP18 0SH (on behalf of CEA Ltd)
Review by: [Redacted] (CEA Ltd)

Scale	Plot Size	Datum	Projection
1:250000	A3	IRENET95	ITM



1.3. Aim of this Report

This report is part of the Licence Application to the Foreshore Unit of the Department of Housing, Planning and Local Government (DHPLG) and includes information in support of Stage 1 (Screening for Appropriate Assessment) of the Appropriate Assessment process as required under the EU Habitats Directive (92/43/EEC).

The proposed site investigations are not directly connected with or necessary to the management of a European site, however, there will be interactions with these sites, therefore it is regarded as necessary that the project should be subject to the Appropriate Assessment process in accordance with the provisions of Article 6(3) of the EU Habitats Directive as transposed into national law by the European Communities (Birds and Natural Habitats) Regulations 2011 (as amended).

Screening is the process that addresses and records the reasoning and conclusions in relation to the first two tests of Article 6(3):

- Whether a plan or project is directly connected to or necessary for the management of the site, and
- Whether a plan or project, alone or in combination with other plans and projects, is likely to have significant effects on a Natura 2000 site in view of its conservation objectives.

This report aims to support the application process and provide the necessary information to the competent authorities to assist them in making an informed decision on the likely impact of this project on European sites (Special Protection Areas (SPAs), Special Areas of Conservation (SACs)) and their designated Annex I habitats and Annex II species. This document includes Stage 1 of the Appropriate Assessment (AA) process.

Where the information to support Screening for Appropriate Assessment has identified that a significant or potentially significant effect will occur as a result of the project either alone or in combination with other projects, or it remains uncertain as to whether a likely significant effect can be excluded then a Nature Impact Statement has been provided to support the competent authorities in undertaking the Appropriate Assessment.

This report has been prepared in accordance with the following guidance:

- Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities (Department of Environment, Heritage and Local Government, 2010 revision)
- Appropriate Assessment under Article 6 of the Habitats Directive; Guidance for Planning Authorities. Circular NPW 1/10 and PSSP 2/10
- 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 (European Commission, 2021).
- Guidelines for Good Practice: Appropriate Assessment of Plans under Article 6(3) Habitats Directive (International Workshop on Assessment of Plans under the Habitats Directive, 2011).
- Marine Natura Impact Statements in Irish Special Areas of Conservation: A working document. Prepared by National Parks and Wildlife Service, DAHG (2012).
- Managing Natura 2000 Sites - The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (European Commission - 21 November 2018)
- Office of the Planning Regulator – Practice Note 01 – PN01 (March 2021)

The methodology followed in this Appropriate Assessment Screening has also had regard to recent Irish and European case law on the Habitats Directive.

1.4. Structure of the Report

This report is structured into the following chapters to include information relating to the receiving environment, SACs, SPAs, Qualifying Interests (QIs), the potential impacts and Appropriate Assessment (AA) process and other environmental receptors. Specifically, the chapters of this report are as follows:

- Chapter 1 (this chapter): Introduction to the report
- Chapter 2: Project Description (Outlines the keys aspects of the project)
- Chapter 3: Legislative Context (outlines key aspects of the process)
- Chapter 4: Stage 1 Screening for Appropriate Assessment
- Chapter 5: Screening Statement



1.5. Project Team

This report was initially prepared by [REDACTED] MSc of GDG. [REDACTED] holds a Master of Science in Marine Biology, specialising in Ecology and Marine Conservation, and has undertaken multiple environmental assessments under both the Habitats and Environmental Impact Assessment Directives as a regulator with Marine Scotland, and for multiple applicants for licences in Ireland under the Foreshore Act 1933, as amended, with a particular focus on marine renewable projects.

This report was revised by [REDACTED] of CEA Ltd. in light of changes made to the extent of the FCOWF export cable corridor and the addition of geophysical survey. [REDACTED] holds a BSc in Marine Geography and over a career spanning 18 years+ has undertaken multiple environmental assessments in the UK and Ireland under the Habitats and Environmental Impact Assessment Directives for marine cable and offshore wind projects.



2. Description of the Proposed Site Investigations

2.1. Summary of Survey Activities

Table 2-1 summarises the proposed site investigation activities to be undertaken within the Application Area. For further detail on the proposed survey methodologies and indicative sampling locations please see the Schedule of Survey Works (SOSW) document submitted in support of this Application (document reference: C01477_Floating Cork_SOSW).

All efforts will be made to follow survey recommendations outlined in the Guidance on Marine Baseline Ecological Assessments & Monitoring Activities for Offshore Renewable Energy Projects Part 1 and 2 (DCCAE, 2018), where the specific timeframes are indicated for the survey provision.

Table 2-1 : Summary of proposed site investigation methodologies

Survey	Methods	Description
Geophysical Survey	Multi beam echo sounder (MBES), side scan sonar (SSS), magnetometer, sub-bottom profiling (SBP) and unmanned aerial vehicle (UAV)	<p>The objectives of the proposed geophysical survey are to:</p> <ul style="list-style-type: none"> ▪ Map the intertidal area, seabed and sub-surface to optimise cable routing within the application area and to enable assessment of cable burial depth. ▪ Plan the scope and position of the geotechnical sampling programme in the application area. ▪ Identify marine habitat areas from which the benthic survey can be undertaken. ▪ Identify sensitive marine habitats which will need to be avoided during geotechnical and environmental sampling and cable installation. ▪ Provide the geophysical data from which a marine archaeological assessment can be undertaken as part of the consenting process. <p>To meet these objectives, the geophysical survey will undertake the following tasks:</p> <ul style="list-style-type: none"> ▪ Measure intertidal topography and seabed bathymetry, surface morphology and identify the nature of the seabed sediments - in particular the height, length and slopes of sand waves (UAV, MBES, SSS). ▪ Identify the distribution and thickness of superficial sediments and rock head where possible (SBP). ▪ Identify the distribution of subsea geological features such as areas of exposed bedrock (MBES, SSS). ▪ Identify the location, extent and nature of any impediments to laying or burial of the cables such as wrecks, debris on seafloor, rock outcrop, other cables, pipelines etc. (magnetometer, MBES, SSS). <p>The interpretation of the geophysical survey forms the basis of the scope of work for geotechnical and benthic surveys.</p>
Geotechnical Survey	Vibrocore (VC), cone penetrometer tests (CPT) and boreholes	<p>Following review of geophysical data, typically one export cable corridor and one landfall will be selected for geotechnical sampling. The purpose of the geotechnical survey is to evaluate the nature and mechanical properties of the superficial intertidal and seabed sediments in the Application Area. The techniques to be used include:</p> <ul style="list-style-type: none"> ▪ Vibrocores (VCs) - core samples of sediments down to 3-6m depth, acquired to allow ground truthing of the geophysical interpretation. ▪ Cone penetrometer tests (CPTs) - measure the resistance of sediments, allowing information to be ascertained about the types of sediments present and their structure. ▪ Boreholes - typically used at the chosen export cable landfall if horizontal directional drilling (HDD) is being considered as a technique to make the shore crossing. Boreholes acquire deep core samples of sediments (typically 20-30m).



Survey	Methods	Description
		<ul style="list-style-type: none"> VC and CPTs are typically acquired at the same sample station and will be positioned along the proposed centreline of the cable within the selected cable corridor Application Area. Sample positions will be determined by review of SBP data interpretation but are typically sited at least every 1km along the route. <p>The exact location, quantity and penetration depth of the geotechnical samples will be determined following interpretation of geophysical survey but indicatively may comprise of the following:</p> <ul style="list-style-type: none"> 140 VCs 140 CPTs 2 boreholes
Benthic Ecology	Subtidal benthic survey and Intertidal walkover survey	<p>This survey is designed to identify the expected benthic communities and habitats within the Application Area.</p> <p>An intertidal walkover survey is planned to include a biotope mapping exercise of the intertidal part of the Application Area and its proposed landfalls with identification of the existing habitats. Where appropriate, core/quadrat sampling and hard substrate quadrat sampling will be carried out.</p> <p>Subtidal sample locations will be identified based on review of geophysical data. Locations may be subject to drop down video in advance of sampling. Grab sampling will be undertaken to acquire samples for faunal and physio-chemical testing. In the subtidal area features of conservation importance such as reefs will be identified by means of visual inspection.</p> <p>In the intertidal area features of conservation importance such as reefs will be identified by means of visual inspection and mapped. Where the Annex I Habitat reef is a QI for a SAC, Marine Nature Conservation Review (MNCR) Phase II surveys will be used to survey pre-selected sites within the SAC. MNCR Phase I surveys will be used for all other intertidal reef.</p> <p>There will be up to 205 sampling locations within the Application Area. Up to four samples will be taken at each location</p>
Wind Resource and Metocean Survey	LiDAR Buoys, Waverider Buoys and Acoustic Doppler Current Profilers (ADCP)	<p>The purpose of the proposed wind resource and metocean survey is to investigate wind, wave and tidal conditions within the Application Area.</p> <p>The exact location of buoys is still to be determined but there will be the following deployed within the Application Area:</p> <ul style="list-style-type: none"> 1 LiDAR buoy 1 Waverider Buoy 1 ADCP

2.2. Acoustic Characteristics of Survey Activities

The specific equipment to be used during the site investigations is unknown. Table 2-2 presents the characteristic acoustic parameters for a reasonable range of geophysical and geotechnical equipment that could be used.

Table 2-2 : Acoustic parameters

Equipment Type	Frequency (kHz)	Sound Pressure Level SPL (peak) in dB re 1 μ Pa	Sound Exposure Level SEL (dB re1 μ P a2s)	Source
MBES	200 - 500	210 - 245	169.5	Danson (2005), Hopkins (2007), Lurton and DeReutier (2011), BEIS (2020a)
SSS	300 - 900	200 - 240	163	BOEM (2016), BEIS (2020a), DAHG (2014)



Equipment Type	Frequency (kHz)	Sound Pressure Level SPL (peak) in dB re 1 μ Pa	Sound Exposure Level SEL (dB re 1 μ P a ² s)	Source
SBP	Pinger: 2 – 12 Boomer: 0.5 - 5 Chirp: 2 - 40 Sparker: 1 - 2	178 - 225	174 - 241	Danson (2005), BEIS (2020a), BOEM (2016), BEIS (2020b)
Ultrashort baseline (USBL)	14-50	194 - 207	200	IOOA (2020)
Vibrocure	<1	Up to 180-190	N/A	BOEM (2019)
Cone Penetration Test	No sound emitted	No sound emitted	N/A	BOEM (2019)
Borehole	0.002 – 50	142-190	N/A	BEIS (2020a), DAHG (2014), Erbe and McPherson (2017)

2.3. Survey Schedule

The intention is to begin survey activities as soon as feasible following Foreshore Licence award. It is assumed that the site investigation could be undertaken at any time of the year, although typically surveys take place during April to October to make the best use of the weather.

The survey works are expected to take 3 to 6 months to complete and will be undertaken in more than one campaign. The geophysical survey will take place first. The expected timeline for the geophysical survey is in the region of a number of weeks, this may be subject to change should adverse weather conditions arise and/or further detailed surveys be required following initial investigative surveys.

It is likely there will be a gap before further surveys so the collected data can be interpreted, and permission sought from the National Monuments Service – Underwater Archaeology Unit for geotechnical sample positions. Typically, the geotechnical and environmental (benthic) campaign are run concurrently, but they could also be undertaken from different vessels.

The borehole drilling will be independent from the other surveys as it requires the use of a different vessel. It would be undertaken after the inshore geophysical campaign. The jack-up barge or vessel for the boreholes may be on site for 2-3 weeks.



3. Legislative Context

3.1. Habitats Directive (92/43/EEC)

The Habitats Directive (Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Flora and Fauna) adopted in 1992, transposed into Irish Law in 1997 and subsequently amended and consolidated aims to promote the maintenance of biodiversity, taking account of economic, social, cultural and regional requirements. It provides a framework for legal protection to ensure the conservation of a wide range of rare, threatened, or endemic animal and plant species throughout the European Union. The Birds Directive (Conservation of Wild Birds Directive (79/409/EEC) aims to protect all 500 wild bird species naturally occurring in the European Union. The Habitats Directive, along with the Birds Directive forms the cornerstone of Europe's nature conservation policy. Together they form a coherent network of protected areas (SACs and SPAs), called Natura 2000, safeguarded against potentially damaging developments. In Ireland, and throughout this document, they are referred to as European sites.

The requirement for "Appropriate Assessment" is set out in Articles 6(3) and 6(4) of the Habitats Directive (92/43/EEC). If a project is likely to have a significant effect on a Natura 2000 site, either alone or in combination with other plans or projects, it must undergo an appropriate assessment (AA). According to Article 6(3) of the Habitats Directive:

"Any plan or project not directly connected with or necessary to the management of the site (Natura 2000 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 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 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 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 social or economic nature, the Member State 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. Where the site concerned hosts a priority natural habitat type and/or a priority species, the only considerations which may be raised are those relating to human health or public safety, to beneficial consequences of primary importance for environment or, further to an opinion from the Commission to other imperative reasons of overriding public interest."

3.2. Irish Legislation

The Habitats Directive and Birds Directive are transposed into Irish law by the European Communities (Birds and Natural Habitats) Regulations 2011 (as amended). These regulations are hereafter referred to as the 2011 Regulations.

3.3. The Appropriate Assessment Process

The European Commission's methodological guidance (EC, 2002) promotes a four-stage process to complete the AA and outlines the issues and tests at each stage. The four stages are shown in Figure 3-1 and are described in the following sub-sections.

An important aspect of the process is that the outcome at each successive stage determines whether a further stage in the process is required. Stages 1-2 deal with the main requirements for assessment under Article 6(3). Stage 3 may be part of Article 6(3) or may be a necessary precursor to Stage 4. Stage 4 is the main derogation step of Article 6(4). This report considers Stage 1 in the process.



Figure 3-1 : Stages in the AA process (DEHLG, 2009)



3.3.1. Stage 1. Screening for Appropriate Assessment

Screening is the process that addresses and records the reasoning and conclusions in relation to the first two tests of Article 6(3) and the requirements of Regulation 42 of the 2011 Regulations:

- whether a plan or project is directly connected to or necessary for the management of the European site, and
- whether a plan or project, alone or in combination with other plans and projects, is likely to have significant effects on a European site in view of its conservation objectives.

If the effects are deemed to be significant, potentially significant, or uncertain, or if the screening process becomes overly complicated, then the process must proceed to Stage 2 (AA).

Screening should be undertaken without the inclusion of mitigation. The greatest level of evidence and justification will be needed in circumstances when the process ends at screening stage on grounds of no impact.

3.3.2. Stage 2. Appropriate Assessment

This stage considers whether the plan or project, alone or in combination with other projects or plans, will have adverse effects on the integrity of a European site, and includes any mitigation measures necessary to avoid, reduce or offset negative effects. The proponent of the plan or project will be required to submit a Natura Impact Statement (NIS), i.e., the report of a targeted professional scientific examination of the plan or project and the relevant European sites, to identify and characterise any possible implications for the site in view of the site's conservation objectives, taking account of in combination effects. This should provide information to enable the competent authority to carry out the appropriate assessment.

The European Court of Justice has also made a relevant ruling on what should be contained within an Appropriate Assessment: *"[The Appropriate Assessment] cannot have lacunae and must contain complete, precise and definitive findings and conclusions capable of removing all reasonable scientific doubt as to the effects of the works proposed on the protected site concerned"*.

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 3, or the plan or project should be abandoned. The AA is carried out by the competent authority and is supported by the NIS.

3.3.3. Stage 3. Alternative Solutions:

This stage examines any alternative solutions or options that could enable the plan or project to proceed without adverse effects on the integrity of a European site. The process must return to Stage 2 as alternatives will require appropriate assessment in order to proceed. Demonstrating that all reasonable alternatives have been considered and assessed, and that the least damaging option has been selected, is necessary to progress to Stage 4.

3.3.4. Stage 4. Imperative Reasons of Overriding Public Interest (IROPI)/Derogation

Stage 4 is the main derogation process of Article 6(4) which examines whether there are imperative reasons of overriding public interest (IROPI) for allowing a plan or project that will have adverse effects on the integrity of a European site to proceed in cases where it has been established that no less damaging alternative solution exists. The extra protection measures for Annex I priority habitats come into effect when making the IROPI case. Compensatory measures must be proposed and assessed. The Commission must be informed of the compensatory measures. Compensatory measures must be practical, implementable, likely to succeed, proportionate and enforceable, and they must be approved by the Minister for Housing, Planning and Local Government.



4. Stage 1 Screening for Appropriate Assessment

4.1. Approach

This Stage 1 Screening of the Appropriate Assessment process has been undertaken according to the process set out in OPR (2021) guidance which states that screening involves:

1. Description of the proposed project, and local site characteristics.
2. Identification of relevant European sites and compilation of information on Qualifying Interests / Special Conservation interests and conservation objectives.
 - a) Identify all European sites that might be affected using the Source-Pathway-Receptor model.
 - b) Identify the Qualifying Interests of the site concerned and the conservation objectives.
 - c) Determine which of those Qualifying Interests/conservation objectives could be affected by the proposed development.
3. Assessment of likely significant direct and indirect effects on the conservation objectives of the site(s) in relation to:
 - a) The project alone, and
 - b) In-combination with other plans and projects.
4. Screening determination – in the absence of mitigation measures, determine if the project alone or in-combination with other plans and projects could undermine the conservation objectives of the site(s) and give rise to likely significant effects.
5. Screening statement with conclusions – this includes the identification of sites (screened in sites) where it is not possible to conclude no likely significant effects therefore further information is required to inform an Appropriate Assessment of these sites (Stage 2).

A full and detailed description of the proposed site investigations is presented in the Schedule of Works, which accompanies this report (document reference: C01477_Floating Cork_SOSW_v2) and is summarised in Section 2 above.

This report has been informed by a review of the publicly available datasets and the available literature that allowed the characterisation of the receiving environment and supported the identification and assessment of potential impacts and their significance. The sources of the information used are cited throughout the report and listed in the Reference section.

The examination, analysis and evaluation of the relevant information that supported the Appropriate Assessment process conducted and documented in this report followed the precautionary principle throughout.

4.2. Identification of European Sites

4.2.1. Criteria for Selection of European Sites for Screening

Selection of relevant European sites follows guidance from the NPWS guidance “Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities (DEHGL, 2010) and the Office of the Planning Regulator Practice Note PN01 (OPR 2021) which recommends that the distance should be evaluated on a case-by-case basis; that the precautionary principle should be adopted; and that the following should be included:

- Any European site within or adjacent to the Application Area which, using the Source-Pathway-Receptor model, may be affected by the proposed site investigations given the nature of said surveys.
- Any European site within the likely zone of influence of the Application Area, following the Source-Pathway-Receptor model.
- Any European site that is designated for mobile Annex II species that have the potential to occur within the Application Area and be affected by the proposed site investigations.

The principles outlined above have been used in this Screening assessment. Table 4-1 presents the zones of influence that have been used in the assessment. As the proposed site investigation surveys under this licence application are entirely marine based, with all survey activity located in the marine environment, there is no possible direct interaction and no pressure pathway on terrestrial or freshwater SACs that have no coastal habitat and no mobile species with a marine element (e.g., mobile marine or partially marine species). Therefore, such sites have been considered to be outside any zone of influence of the proposed site investigations.



Table 4-1 : Zones of influence

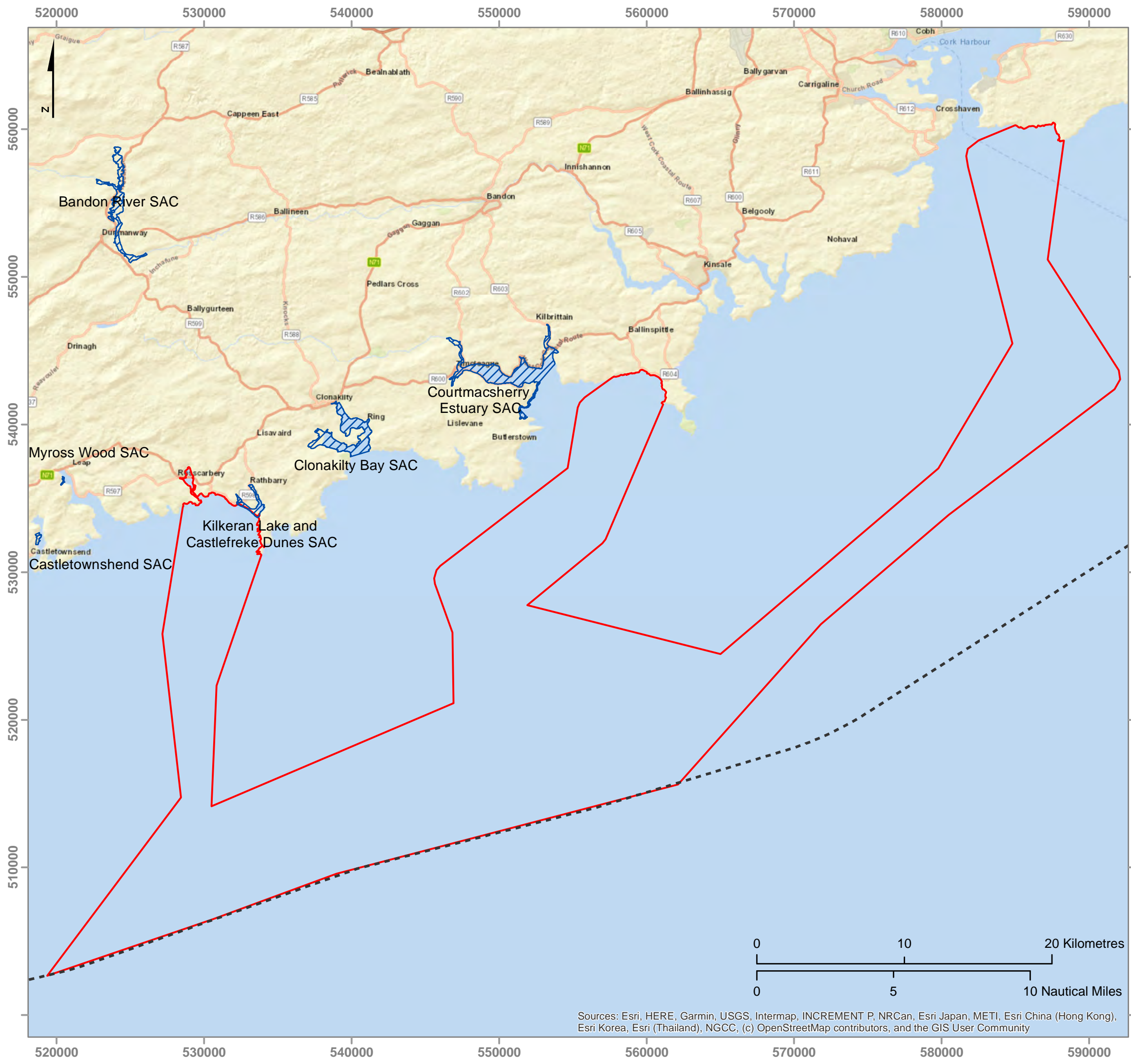
Interest Feature	Zone of Influence	Justification
Annex I Habitat or Annex II Benthic Species	Application Area	<p>The geophysical survey equipment to be used will be located within the water column and there will be no direct impact on Annex I habitats.</p> <p>The intrusive seabed sampling (benthic ecology and geotechnical sampling) involves the removal of extremely small volumes of sediment and will not result in direct or indirect impacts outside of the Application Area. The intertidal surveying will take place in daylight hours and the position of sensitive species within the survey area will be noted and avoided. The intertidal surveys will be undertaken during spring tides in line with guidance in the Marine Monitoring Handbook (Davies <i>et al.</i>, 2001). During the walkover survey, biotopes will be identified according to the European Nature Information System (EUNIS) classification. Where possible, boundaries of biotopes will be tracked using a handheld GPS device and recorded using a suitable software package.</p> <p>Within the Application Area the benthic and geotechnical survey will include the extraction of sediment material directly from the seabed using a grab sampler, vibrocore or borehole. Interpretation of geophysical data and a drop-down camera or remotely operated vehicle (ROV) will be used in advance of sample acquisition to ensure that protected habitats are avoided.</p> <p>Indirect effects arising from incidents (such as accidental pollution, for example) have the potential to extend further than the site boundary. However, Section 4.3 below screened out accidental pollution as a potential impact pathway for Annex I Habitats and therefore the zone of influence used in the assessment has not been extended past the Application Area boundary.</p>
Annex II Migratory Fish	50km	<p>A precautionary approach to the identification of relevant sites has been adopted which considers all European sites within a 50 km buffer of the Application Area. It should be noted that this buffer is over precautionary with respect to capturing the spatial zone of the impact pathway (e.g., underwater noise) associated with the proposed site investigations based on the typically small ranges of effects on fish resulting from geophysical surveys. However, it allows for the possibility that migratory fish from nearby SACs may be passing through the Application Area. There is no Source-Pathway-Receptor link which may have implications for the conservation objectives of the European sites beyond this range (e.g., ability of migratory fish to reach these sites).</p> <p>Any impact pathways on Annex II benthic species e.g., freshwater pearl mussels, will be limited to the footprint of the geotechnical and benthic sampling and therefore the zone of influence for direct impacts is limited to the Application Area.</p> <p>Indirect effects arising from accidental pollution for example have the potential to extend further than the site boundary. However, Section 4.3 below screened out accidental pollution as a potential impact pathway for Annex II Migratory Fish.</p>
Annex II Otter	13 km along the coast in either direction from the Application Area	<p>The Application Area is within the habitat range of the Eurasian otter (<i>Lutra lutra</i>). The Eurasian otter is a semi-aquatic mammal which occurs in a wide variety of aquatic habitats such as rivers, streams, lakes, estuaries and on the coast. Coastal dwelling populations use shallow, inshore marine areas for feeding but they also require access to fresh water for bathing and terrestrial areas for resting and breeding, therefore their foraging range in the marine environment is limited to coastal areas. In Ireland, the territory of female otters is 6.5 ± 1.0km in coastal environments (Reid <i>et al.</i>, 2013) and males may have a larger extent; it has been suggested that the otter's range is approximately 13 km along the coast and 80m seaward from the coast (Reid <i>et al.</i> 2013; NWPS 2015).</p> <p>The majority of the Application Area lies either in open coastal waters. The exception is where the Application Area extends to the high-water mark along the coast. The presence of vessels in the nearshore and surveyors in the intertidal area has the potential to interact with otter if present.</p>



Interest Feature	Zone of Influence	Justification
Annex II Cetaceans	Relevant Marine Mammal Management Unit	<p>The only cetacean species afforded protection through the designation of an SAC are bottlenose dolphin and harbour porpoise. Most cetaceans are wide-ranging, and individuals encountered within Irish waters form part of a much larger biological population whose range extends into adjacent jurisdictions. As a result, management units (MUs) have been outlined for seven of the common regularly occurring species (JNCC 2015). These provide an indication of the spatial scales at which impacts of anthropogenic activities should be taken into consideration.</p> <p>The proposed surveys lie within the Celtic and Irish Seas (CIS) MU for harbour porpoise and the Offshore Channel, Celtic Sea & South West England (OSCW) and West Coast of Ireland (WCI) MUs for bottlenose dolphin (JNCC, 2015).</p>
Annex II Grey Seal	100km	<p>The zone of influence has been established based on information presented in Offshore Energy Strategic Environmental Assessment 4 that grey seals are estimated to forage up to 100 km from haul-out sites on the coast, whilst harbour seal take shorter trips up to 50 km (DECC 2022).</p>
Annex II Harbour Seal	50km	
Species of Conservation Interest (SCIs)	Application Area	<p>All direct impacts to SCIs will be spatially limited and confined to the Application Area. Indirect effects arising from accidental pollution for example have the potential to extend further than the site boundary. There is also the possibility that SCIs from distant SPAs may be foraging within or passing through the Application Area. Thaxter <i>et al.</i> (2012) and Woodward <i>et al.</i> (2019) reported on representative foraging ranges for a range of species from a breeding colony to a foraging area. Whilst applying mean maximum foraging radius would encompass the majority of a population's home-range area, the overall size of the predicted foraging areas around the colony would potentially make it too large to be a useful management tool (Soanes <i>et al.</i>, 2016). Similarly, the assumption that seabirds are uniformly distributed out to some threshold distance from their colonies, such as their putative maximum foraging range, is unrealistic (Wakefield <i>et al.</i>, 2017). Therefore, given the scale and largely offshore nature of the proposed survey, it was considered disproportionate to identify relevant SPAs on the basis of mean maximum foraging ranges of their SCIs, as there is no evidence to support an impact pathway given the scale and nature of the proposed surveys. As such, only SPAs in the vicinity of the Application Area with breeding seabirds listed as SCIs have been considered.</p>

The following sections details the outcomes of the process of identifying relevant European Sites for consideration in the Stage 1 Screening for Appropriate Assessment.

Figure 4-1 and Figure 4-2 present the SACs and SPAs in the vicinity of the Application Area.



**Foreshore Licence
Floating Cork Offshore Wind Farm
Offshore Export Cable Corridor
SAC Designations**



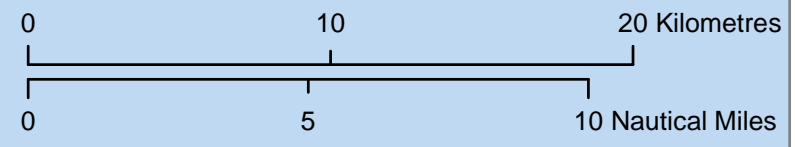
- Special Area of Conservation (SAC)
- 12nm territorial sea limit
- Licence area

Notes:
Where the licence area meets the land, the High Water Mark coastline data has been used as the Licence area boundary.

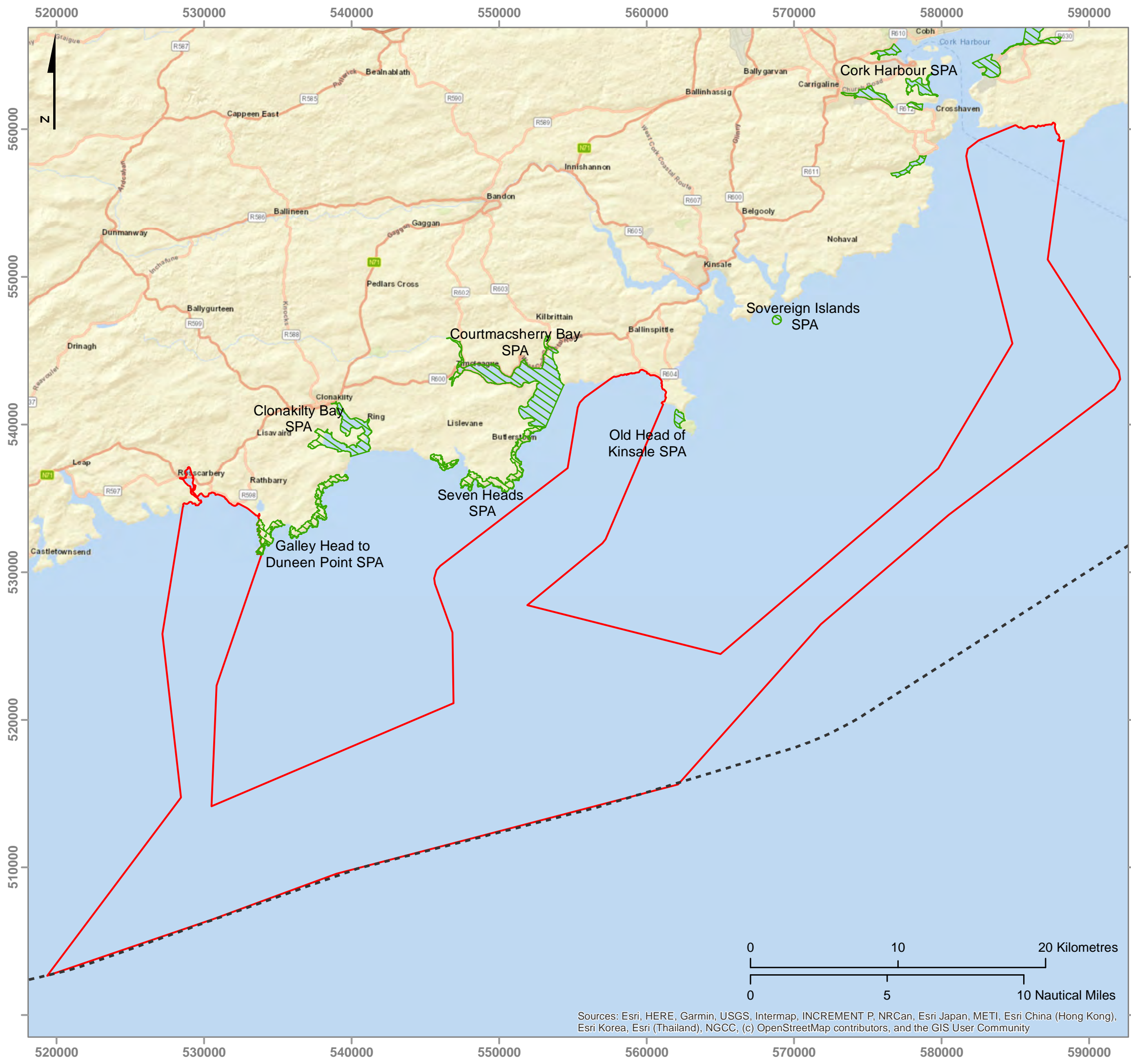
Data sources;
data.gov.ie (maritime limits)
atlas.marine.ie (High Water Mark- 'Shoreline Coastline')
EMODnet (designations)

Drawing Title: Floating Cork Offshore Wind Farm-
Offshore Export Cable Corridor- SAC designations
Drawing Number: C01477/2
Revision: 04
Coordinate Reference System; EPSG 2157
Date: 13/09/2022
Created by: [Redacted] (on behalf of CEA Ltd)
Review by: [Redacted] (CEA Ltd)

Scale	Plot Size	Datum	Projection
1:250000	A3	IRENET95	ITM



Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



**Foreshore Licence
Floating Cork Offshore Wind Farm
Offshore Export Cable Corridor
SPA Designations**



- Special Protection Area (SPA)
- 12nm territorial sea limit
- Licence area

Notes:
Where the licence area meets the land, the High Water Mark coastline data has been used as the Licence area boundary.

Data sources;
data.gov.ie (maritime limits)
atlas.marine.ie (High Water Mark- 'Shoreline Coastline')
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Drawing Title: Floating Cork Offshore Wind Farm-
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Scale	Plot Size	Datum	Projection
1:250000	A3	IRENET95	ITM



4.2.1.1. Annex I Habitats

Only one SAC overlaps with the Application Area – Kilkieran Lake and Castlefreke Dunes SAC (IE001061). The Qualifying Interests for the site are listed in Table 4-2. Examination of the habitat distribution maps provided for the SAC (NPWS 2016) identified that all four habitats are located above the mean high water springs mark. This site has therefore not been taken forward for selection as a relevant site as there is no Source-Pathway-Receptor link between these habitats and the proposed site investigations.

Table 4-2 : QIs for Kilkieran Lake and Castlefreke Dunes SAC

SAC	Distance from Application Area (km)	Annex I Qualifying Interests
Kilkieran Lake and Castlefreke Dunes SAC (IE001061)	Overlaps	Embryonic shifting dunes [2110] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] Coastal lagoons [1150] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]

4.2.1.2. Annex II Migratory Fish or Benthic Species

European Sites within the zone of influence in Table 4-1 above were screened for the presence of the Annex II species listed in Table 4-3 below.

Table 4-3 : Annex II Species

ID Code	Common Name	Latin Name
1095	Sea lamprey	<i>Petromyzon marinus</i>
1099	River lamprey	<i>Lampetra fluviatilis</i>
1096	Brook lamprey	<i>Lampetra planeri</i>
1103	Twaite Shad	<i>Alosa fallax fallax</i>
5046	Killarney shad	<i>Alosa fallax killarnensis</i>
1106	Atlantic salmon	<i>Salmo salar</i>
1029	Freshwater pearl mussel	<i>Margaritifera margaritifera</i>
1092	White-clawed crayfish	<i>Austropotamobius pallipes</i>
1990	Nore pearl mussel	<i>Margaritifera durrovensis</i>

One European site was identified that met the criteria in Section 4.2.1 that list migratory fish or other benthic species as a QI, identified below in Table 4-4.

Table 4-4 : European Sites Selected for Consideration in the Stage 1 Screening for Appropriate Assessment for Annex II Migratory fish and other benthic species Qualifying Interests and Associated Conservation Objectives

SAC	Distance from Application Area (km)	Relevant Annex II Qualifying Interests	Conservation Objectives
Blackwater River (Cork/Waterford) SAC (IE002170)	34km	Sea Lamprey (<i>Petromyzon marinus</i>) [1095] Twaite Shad (<i>Alosa fallax fallax</i>) [1103] Freshwater Pearl Mussel (<i>Margaritifera margaritifera</i>) [1029] White-clawed Crayfish (<i>Austropotamobius pallipes</i>) [1092] Brook Lamprey (<i>Lampetra planeri</i>) [1096] River Lamprey (<i>Lampetra fluviatilis</i>) [1099] Salmon (<i>Salmo salar</i>) [1106]	To restore the favourable conservation condition in the which is defined by the list of attributes and targets in NPWS (2012). To maintain the favourable conservation condition in the which is defined by the



SAC	Distance from Application Area (km)	Relevant Annex II Qualifying Interests	Conservation Objectives
		Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Perennial vegetation of stony banks [1220] <i>Salicornia</i> and other annuals colonising mud and sand [1310] Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>) [1330] Mediterranean salt meadows (<i>Juncetalia maritim</i>) [1410] Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation [3260] Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0] Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i>) [91E0] Killarney Fern (<i>Trichomanes speciosum</i>) [1421] Otter (<i>Lutra lutra</i>) [1355]	list of attributes and targets in NPWS (2012).

4.2.1.3. Annex II Otter

European Sites within the zone of influence in Table 4-1 above were screened for the presence of the Annex II otter listed as a qualifying interest. The sites selected for consideration in the Stage 1 Screening for Appropriate Assessment which list otter as a QI are listed in Table 4-5.

Table 4-5 : European Sites Selected for Consideration in the Stage 1 Screening for Appropriate Assessment which list Otter as a Qualifying Interest and Associated Conservation Objectives

SAC	Distance from Application Area (km)	Relevant Annex I Qualifying Interests	Conservation Objectives
Blackwater River (Cork/Waterford) SAC (IE002170)	34 km	Otter (<i>Lutra lutra</i>) [1355]	To restore the favourable conservation condition of otter in the SAC, which is defined by a list of attributes and targets in NPWS (2012).

4.2.1.4. Annex II Marine Mammals

European Sites within the zone of influence in Table 4-1 above were screened for the presence of the Annex II species listed in Table 4-6 below.

Table 4-6 : Annex II Marine Mammals

ID Code	Common Name	Latin Name
1349	Bottlenose Dolphin	<i>Tursiops truncatus</i>
1351	Harbour Porpoise	<i>Phocoena phocoena</i>
1364	Grey Seal	<i>Halichoerus grypus</i>
1365	Common (Harbour) Seal	<i>Phoca vitulina</i>

There are 12 European sites identified that met the criteria in Section 4.2.1 that list cetaceans or pinnipeds as a QI.



Table 4-7 : European Sites Selected for Consideration in the Stage 1 Screening for Appropriate Assessment that list Annex II Marine Mammals as a Qualifying Interest and Associated Conservation Objectives

SAC	Distance from Application Area (km)	Relevant Annex II Qualifying Interests	Conservation Objectives
Rockabill to Dalkey Island SAC (IE 003000)	Within CIS MU 259 km	Harbour Porpoise (<i>Phocoena phocoena</i>) [1351] Reefs [1170]	To maintain the favourable conservation condition of Harbour porpoise in Rockabill to Dalkey Island SAC. This is defined by the following attributes and targets: <ul style="list-style-type: none"> Access to suitable habitat: Species range within the site should not be restricted by artificial barriers to site use. Disturbance: Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site.
Blasket Islands SAC (IE002172)	Within CIS MU 81 km	Harbour porpoise (<i>Phocoena phocoena</i>) [1351] Grey seal (<i>Halichoerus grypus</i>) [1364] Reefs [1170] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] European dry heaths [4030] Submerged or partially submerged sea caves [8330]	To maintain the favourable conservation condition of Harbour Porpoise in Blasket Islands SAC, which is defined by the following list of attributes and targets: <ul style="list-style-type: none"> Access to suitable habitat: Species range within the site should not be restricted by artificial barriers to site use. Disturbance: Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site.
Roaringwater Bay and Islands SAC (IE000101)	Within CIS MU 23.5 km	Harbour porpoise (<i>Phocoena phocoena</i>) [1351] Grey seal (<i>Halichoerus grypus</i>) [1364] 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] Otter (<i>Lutra lutra</i>) [1355]	To maintain the favourable conservation condition of Harbour Porpoise in Roaringwater Bay and Islands SAC, which is defined by the following list of attributes and targets: <ul style="list-style-type: none"> Access to suitable habitat: Species range within the site should not be restricted by artificial barriers to site use. Disturbance: Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site.
West Wales Marine / Gorllewin Cymru Forol SAC (UK0030397)	Within CIS MU 173 km	Harbour porpoise (<i>Phocoena phocoena</i>) [1351]	To ensure that the integrity of the site is maintained and that it makes an appropriate contribution to maintaining Favourable Conservation Status (FCS) for harbour porpoise in UK waters.
North Channel SAC (UK0030399)	Within CIS MU 364 km	Harbour porpoise (<i>Phocoena phocoena</i>) [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)
North Anglesey Marine / Gogledd Môn Forol SAC (UK0030398)	Within CIS MU 287 km	Harbour porpoise (<i>Phocoena phocoena</i>) [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)



SAC	Distance from Application Area (km)	Relevant Annex II Qualifying Interests	Conservation Objectives
Bristol Channel Approaches / Dynesfeydd Môr Hafren SAC (UK0030396)	Within CIS MU 202 km	Harbour porpoise (<i>Phocoena phocoena</i>) [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)
Lower River Shannon SAC (IE0021650)	Within WCI MU 208 km	Sandbanks which are slightly covered by sea water all the time [1110] Estuaries [1130] 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] <i>Salicornia</i> and other annuals colonising mud and sand [1310] Atlantic salt meadows (<i>Glaucopuccinellietalia maritimae</i>) [1330] Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410] Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation [3260] Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>) [6410] Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, <i>Alnion incanae</i> , <i>Salicion albae</i>) [91E0] <i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel) [1029] <i>Petromyzon marinus</i> (Sea Lamprey) [1095] <i>Lampetra planeri</i> (Brook Lamprey) [1096] <i>Lampetra fluviatilis</i> (River Lamprey) [1099] <i>Salmo salar</i> (Salmon) [1106] <i>Tursiops truncatus</i> (Common Bottlenose Dolphin) [1349] <i>Lutra lutra</i> (Otter) [1355]	To maintain the FCS of Bottlenose Dolphin in the Lower River Shannon SAC, which is defined by the following list of attributes and targets: <ul style="list-style-type: none"> Access to suitable habitat Habitat use: critical areas representing habitat used preferentially by bottlenose dolphin, should be maintained in a natural condition. Disturbance – human activities should occur at levels that do not adversely affect the bottlenose dolphin population at the site.
Slyne Head Islands SAC (IE000328)	Within WCI MU 292 km	Reefs [1170] <i>Tursiops truncatus</i> (Common Bottlenose Dolphin) [1349] <i>Halichoerus grypus</i> (Grey Seal) [1364]	To maintain the FCS of Bottlenose Dolphin and Grey Seal in Slyne Head SAC, which is defined by the following list of attributes and targets: <ul style="list-style-type: none"> Access to suitable habitat



SAC	Distance from Application Area (km)	Relevant Annex II Qualifying Interests	Conservation Objectives
			<ul style="list-style-type: none"> ▪ Breeding behaviour ▪ Moulting behaviour ▪ Resting behaviour ▪ Disturbance – human activities should occur at levels that do not adversely affect the bottlenose dolphin or grey seal populations at the SAC.
Slyne Head Peninsula SAC (IE002074)	Within WCI MU 295 km	<p>Coastal lagoons [1150] Large shallow inlets and bays [1160] Reefs [1170] Annual vegetation of drift lines [1210] Perennial vegetation of stony banks [1220] Atlantic salt meadows (<i>Glaucopuccinellietalia maritimae</i>) [1330] Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] Machairs (* in Ireland) [21A0] Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>) [3110] Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i> [3130] Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp. [3140] European dry heaths [4030] <i>Juniperus communis</i> formations on heaths or calcareous grasslands [5130] Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) [6210] <i>Molinia</i> meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>) [6410] Lowland hay meadows (<i>Alopecurus pratensis</i>, <i>Sanguisorba officinalis</i>) [6510] Alkaline fens [7230] <i>Tursiops truncatus</i> (Common Bottlenose Dolphin) [1349] <i>Petalophyllum ralfsii</i> (Petalwort) [1395] <i>Najas flexilis</i> (Slender Naiad) [1833]</p>	To ensure that the integrity of the site is maintained and that it makes the best possible contribution to maintaining Favourable Conservation Status (FCS)



SAC	Distance from Application Area (km)	Relevant Annex II Qualifying Interests	Conservation Objectives
West Connacht Coast SAC (IE002998)	Within WCI MU 300 km	<i>Tursiops truncatus</i> (Common Bottlenose Dolphin) [1349]	To maintain the FCS of Bottlenose Dolphin in West Connacht Coast SAC, which is defined by the following list of attributes and targets: <ul style="list-style-type: none"> Access to suitable habitat Disturbance – human activities should occur at levels that do not adversely affect the bottlenose dolphin populations at the SAC.
Duvailaun Islands SAC (IE000495)	Within WCI MU 372 km	<i>Tursiops truncatus</i> (Common Bottlenose Dolphin) [1349] <i>Halichoerus grypus</i> (Grey Seal) [1364]	To ensure that the integrity of the site is maintained and that it makes the best possible contribution to maintaining Favourable Conservation Status (FCS)

4.2.1.5. Special Conservation Interests

The SPAs selected for consideration in the Stage 1 Screening for Appropriate Assessment are outlined in Table 4-8, together with their relevant special conservation interests (SCIs), distances to the Application Area and overarching conservation objectives. The locations of these SPAs are presented in Figure 4-2. Where a SCI is a terrestrial species, these have been greyed out in the table and have not been considered further as there is no Source-Pathway-Receptor link between these species and the proposed survey. Where a SCI is a wader

Two of the SPAs in close proximity to the Application Area, Galley Head to Duneen Point SPA and Seven Heads SPA, are designated solely for Chough (*Pyrrhocorax pyrrhocorax*). Chough are found year-round around rocky coasts and are associated with areas of short grassland. Their primary food source is insects and larvae and they do not dive for food. As such, the chough is associated primarily with terrestrial habitat and is highly unlikely to occur within the marine area. Therefore, Galley Head to Duneen Point SPA and Seven Heads SPA have not been considered for Appropriate Assessment Stage 1 Screening.

The conservation objectives refer to the favourable conservation condition of the SCI. Favourable conservation condition of a species is achieved when:

- Population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats;
- The natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future; and
- There is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

Table 4-8 : European Sites Selected for Consideration in the Stage 1 Screening for Appropriate Assessment for Special Conservation Interests

SPA Name (Code)	Distance from Application Area (km)	Special Conservation Interests	Conservation Objectives
Courtmacsherry Bay SPA (IE004219)	1.4	Great Northern Diver (<i>Gavia immer</i>) [A003] Shelduck (<i>Tadorna tadorna</i>) [A048] Wigeon (<i>Anas penelope</i>) [A050] Red-breasted Merganser (<i>Mergus serrator</i>) [A069] Golden Plover (<i>Pluvialis apricaria</i>) [A140] Lapwing (<i>Vanellus vanellus</i>) [A142] Dunlin (<i>Calidris alpina</i>) [A149] Black-tailed Godwit (<i>Limosa limosa</i>) [A156] Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157] Curlew (<i>Numenius arquata</i>) [A160]	To maintain or restore the favourable conservation condition of the bird species listed as SCIs for this SPA.



SPA Name (Code)	Distance from Application Area (km)	Special Conservation Interests	Conservation Objectives
		Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179] Common Gull (<i>Larus canus</i>) [A182] Wetland and Waterbirds [A999]	
Old Head of Kinsale SPA (IE004021)	1.0	Kittiwake (<i>Rissa tridactyla</i>) [A188] Guillemot (<i>Uria aalge</i>) [A199]	To maintain or restore the favourable conservation condition of the bird species listed as SCIs for this SPA.
Cork Harbour SPA (IE004030)	2.7	Little Grebe (<i>Tachybaptus ruficollis</i>) [A004] Great Crested Grebe (<i>Podiceps cristatus</i>) [A005] Cormorant (<i>Phalacrocorax carbo</i>) [A017] Grey Heron (<i>Ardea cinerea</i>) [A028] Shelduck (<i>Tadorna tadorna</i>) [A048] Wigeon (<i>Anas penelope</i>) [A050] Teal (<i>Anas crecca</i>) [A052] Pintail (<i>Anas acuta</i>) [A054] Shoveler (<i>Anas clypeata</i>) [A056] Red-breasted Merganser (<i>Mergus serrator</i>) [A069] Oystercatcher (<i>Haematopus ostralegus</i>) [A130] Golden Plover (<i>Pluvialis apricaria</i>) [A140] Grey Plover (<i>Pluvialis squatarola</i>) [A141] Lapwing (<i>Vanellus vanellus</i>) [A142] Dunlin (<i>Calidris alpina</i>) [A149] Black-tailed Godwit (<i>Limosa limosa</i>) [A156] Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157] Curlew (<i>Numenius arquata</i>) [A160] Redshank (<i>Tringa totanus</i>) [A162] Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179] Common Gull (<i>Larus canus</i>) [A182] Lesser Black-backed Gull (<i>Larus fuscus</i>) [A183] Common Tern (<i>Sterna hirundo</i>) [A193] Wetland and Waterbirds [A999]	To maintain or restore the favourable conservation condition of the bird species listed as SCIs for this SPA.
Clonakilty Bay SPA (IE004081)	5.6	Shelduck (<i>Tadorna tadorna</i>) [A048] Dunlin (<i>Calidris alpina</i>) [A149] Black-tailed Godwit (<i>Limosa limosa</i>) [A156] Curlew (<i>Numenius arquata</i>) [A160] Wetland and Waterbirds [A999]	To maintain the favourable conservation condition of the bird species listed as SCIs for this SPA.
Sovereign Islands SPA (IE004124)	8.7	Cormorant (<i>Phalacrocorax carbo</i>) [A017]	To maintain or restore the favourable conservation condition of the bird species listed as SCIs for this SPA.

4.2.2. European Sites Selected for Screening

In total 21 European sites were deemed relevant and screened in for Appropriate Assessment Stage 1 Screening, all in the vicinity of the Application Area. These include 14 SACs and seven SPAs namely:



- IE001061 Kilkeran Lake and Castlerefere Dunes SAC
- IE002172 Blasket Islands SAC
- IE000101 Roaringwater Bay and Islands SAC
- UK0030397 West Wales Marine / Gorllewin Cymru Forol SAC
- UK0030399 North Channel SAC
- UK0030398 North Anglesey Marine / Gogledd Môn Forol SAC
- UK0030396 Bristol Channel Approaches / Dynesfeydd Môr Hafren SAC
- IE002170 Blackwater River SAC
- IE003000 Rockabill to Dalkey Island SAC
- IE002165 Lower River Shannon SAC
- IE000328 Slyne Head Islands SAC
- IE002074 Slyne Head Peninsula SAC
- IE002998 West Connacht Coast SAC
- IE00495 Duvailaun Islands SAC
- IE004219 Courtmacsherry Bay SPA
- IE004021 Old Head of Kinsale SPA
- IE004030 Cork Harbour SPA
- IE004081 Clonakilty Bay SPA
- IE004124 Sovereign Islands SPA
- IE004190 Galley Head to Duneen Point SPA
- IE004191 Seven Heads SPA

Information on the European sites is provided in Section 4.4.

4.3. Potential Impact Pathways

The potential for likely significant effects has been assessed using a source-pathway-receptor model. 'Source' is defined as the individual elements of the proposed works that have the potential to affect the identified ecological receptors both within the European site and outside of it. 'Pathway' is defined as the means or route by which a source can affect the ecological receptor. 'Ecological receptor' is defined as the Special Conservation Interests (SCIs) (for SPAs) or Qualifying Interests (of SACs) for which conservation objectives have been set for the European sites under consideration.

Possible direct and indirect effects arising as a result of activities undertaken as part of the proposed site investigations are outlined in Table 4-9.



Table 4-9 : Initial Screening for Potential Impact Pathways

Impact Pathway	Description	Initial Screening			
		Annex I habitats	Annex II Fish or Benthic Species	Annex II Otter, Cetaceans or Pinnipeds	SCIs
Habitat Loss / Disturbance	Benthic communities in the footprint of sampling equipment will be impacted through minor disturbance around the sampling sites and a small volume of substratum loss, direct displacement or smothering during sampling	Screened IN			
Physical collision with vessel	<p>There are known incidents of marine mammals colliding with fast moving vessels. However, it is largely recognised that the key factors contributing to collision between marine mammals and vessels are the presence of both in the same area and vessel speed (see Schoeman et al. (2020) for review). Injuries to marine mammals from vessel strikes are species-dependent but generally are more severe at higher impact speeds (Wang <i>et al.</i>, 2007).</p> <p>Laist <i>et al.</i> (2001) conclude that fatal collisions with marine mammals occur at vessel speeds of 14 knots or more. Vessels involved in these surveys are likely to be either stationary or travelling slowly (c. 5 knots) during survey work, thus allowing both the vessel and any animal in the area time to avoid collision. During transit times, the survey vessels will be travelling at speeds greater than 5 knots. However, these movements are not considered to deviate from normal vessel traffic in the Application Area.</p> <p>Cetacean, seals and otters in the area are exposed to vessels of all sizes on a regular basis due to other activities in the area including fishing and shipping. As a result, they are likely to maintain a distance from all survey vessels for the short time period required for site investigation surveys before returning to the area once surveys have finished. Therefore, the collision risk posed by the site investigation surveys is likely to be significantly lower than that posed by commercial shipping activity. A slow-moving or stationary survey vessel in the area will also not pose a collision risk to seabirds foraging the area, who are accustomed to vessels traversing the area.</p>			Screened OUT	
Physical injury and/or disturbance due to underwater sound changes	<p>Cetaceans and pinnipeds</p> <p>It is generally accepted that exposure to anthropogenic sound can induce a range of behavioural effects, and in extreme circumstances, lead to permanent injury in marine mammals and fish species. There is no direct evidence to link physical injury in cetaceans and pinnipeds and geophysical surveys, however there is evidence that cetaceans and pinnipeds exhibit short-term behavioural responses to geophysical survey</p>		Screened IN (only allis and twaite shad)	Screened IN	



Impact Pathway	Description	Initial Screening			
		Annex I habitats	Annex II Fish or Benthic Species	Annex II Otter, Cetaceans or Pinnipeds	SCIs
	<p>Annex II Fish species</p> <p>There is potential for noise emissions from geophysical survey equipment and vessels to affect sensitive Annex II fish species such as clupeoids (Twaite and Allis shad). Popper <i>et al.</i>, (2014) group fish into three categories based on the presence or absence of a swim bladder and on the potential for that swim bladder to improve the hearing sensitivity and range of hearing. Atlantic salmon, River and Sea Lamprey are not hearing specialist fish species relative to many other marine fish species (Simpson, 2016). This is likely due to a lack of secondary hearing modifications linking the swim bladder to the auditory system in Atlantic salmon and the lack of a swim bladder in lamprey. Therefore, these species are screened out of the assessment. Twaite and Allis shad can detect sound pressure and are therefore sensitive to underwater noise changes.</p> <p>Where a change in underwater noise overlaps with spawning grounds and the spawning period, disturbance could lead to a reduction in spawning success and stock recruitment</p>				
Visual and noise disturbance	<p>Pinnipeds</p> <p>Pinnipeds are more sensitive to anthropogenic disturbance when hauled out. Wilson (2013) presents a review of such studies, and concludes that as an overall generalisation, unless habituation has been established by frequent non-intrusive visits, a safe boat distance for harbour and grey seals (i.e., one at which there is a low risk of significant numbers of seals flushing) is about 200 m. The Application Area does not overlap with a SAC which lists grey or harbour seal as a qualifying interest and therefore seals within an SAC that are hauled out will not be affected by the proposed site investigations. Therefore, pinnipeds have been screened out of the assessment in relation to this impact pathway.</p> <p>Otter</p> <p>Little evidence has come to light to suggest that disturbance by recreation is a significant pressure (NPWS, 2009), indicating that the otter is not particularly sensitive to visual and noise disturbance. The physical presence of the survey vessel/vessels close to shore and of humans onshore, may cause some temporary disturbance to otters should they be in the immediate vicinity of the site investigations. This may result in otters temporarily avoiding their chosen feeding/resting location; however, they are likely to willingly move to another nearby location and to return to their original location once survey activities have ceased.</p>			Screened IN (otter only)	



Impact Pathway	Description	Initial Screening			
		Annex I habitats	Annex II Fish or Benthic Species	Annex II Otter, Cetaceans or Pinnipeds	SCIs
Visual and noise disturbance	<p>SCIs</p> <p>The physical presence of the survey vessels may potentially cause displacement and/or other behavioural responses in birds. Sensitivity to disturbance is species specific and depends on the species level of habitat specialisation and habituation to anthropogenic activity. Rafting birds or nesting birds are more vulnerable to disturbance. Disturbance causing birds to temporarily take flight may leave chicks vulnerable to predation by predators, thereby affecting the successful fledging of chicks and reducing the reproduction rate.</p>				Screened IN
Accidental Pollution	<p>The International Convention for the Prevention of Pollution from Ships, 1973 as modified by the Protocol of 1978 (MARPOL 73/78, MARPOL is an abbreviation for maritime pollution and 73/78 represents the years 1973 and 1978) is one of the most important international marine environmental conventions. It aims to prevent both operational and accidental discharge into the marine from sea going vessels. Ireland ratified the various elements of the MARPOL Convention through the Sea Pollution Act 1991, the Sea Pollution (Amendment) Act 1999 and the Sea Pollution (Miscellaneous Provisions) Act 2006. It was given further legal effect through several Statutory Instruments under these Acts. The Acts place a legal obligation upon operators of vessels to implement measures to prevent both operational and accidental discharges from ships of substances, which may damage the marine environment as well as human health.</p> <p>While the proposed site investigations will result in a temporary increase in vessels using the Application Area, which would therefore theoretically increase the risk of accidents and resultant fuel or oil spills, an incident of pollution whether from an accidental occurrence or operational activities is not considered likely in light of the legal obligations to comply with MARPOL outlined above.</p> <p>Any vessel used during the survey campaign shall, as required by law, be MARPOL Compliant and fully certified by the Maritime Safety Office. This is standard practice for all survey activities irrespective of the survey operator and, as it is required by law, is built into the survey design. Therefore, it is not considered likely that there would be any occurrence of a pollution event either accidental or otherwise that could directly or indirectly affect any SAC or SPA. As such, pollution events are not considered further as a potential impact pathway in this report.</p>	Screened OUT	Screened OUT	Screened OUT	Screened OUT



Impact Pathway	Description	Initial Screening			
		Annex I habitats	Annex II Fish or Benthic Species	Annex II Otter, Cetaceans or Pinnipeds	SCIs
Introduction of Marine Invasive Non-Native Species (MINNS)	<p>MINNS are a major threat to biodiversity. They can have negative impacts on native species due to their ability to grow very large and/or very fast and can quickly become the dominant species. This presents significant challenges in terms of ecosystems and biodiversity.</p> <p>In terms of the proposed site investigations, the main risk of MINNS is introduction via ballast water or biofouling from the survey vessels / equipment, in particular where vessels carrying out the survey are mobilised from locations outside of Irish waters.</p> <p>In line with standard vessel management practices, all survey vessels will prepare a Marine Biosecurity Management Plan to ensure the risk of introducing MINNS is minimised. Given that the proposed site investigations will involve a small number of vessels the potential risk for the introduction of MINNS is limited.</p> <p>Although most habitat and species are considered to be sensitive to the introduction of MINNS, with the implementation of standard marine biosecurity practices, potential effects are concluded to be negligible and not significant.</p>	Screened OUT	Screened OUT	Screened OUT	Screened OUT
In-combination Impacts	<p>In-combination effects are likely to result where localised disturbance from more than one activity either occurs simultaneously resulting in a wider zone of influence; or consecutively within a restricted area resulting in an extension of the impact pathway. Due to the uncertainty around the start date of the proposed site investigations, there is the possibility that the proposed site investigations could overlap, both in time and spatially with other surveys in the region or will occur within short succession of another project. Section 4.3.1 below presents projects identified within the region that could potentially act in-combination with the proposed site investigations. It has been assumed, on a precautionary basis, that these projects will overlap.</p>	Screened IN	Screened IN	Screened IN	Screened IN



4.3.1. In-Combination Impacts

A review of available information for the area surrounding the Application Area was undertaken to identify other activities and potential plans, projects, and activities in the area. This included the DHLGH Foreshore License Applications and Determinations search tool (DHLGH, 2022), the Environment Protection Agency (EPA) Dumping at Sea Register (EPA, 2022), the DAFM Aquaculture Licence Search Tool (DAFM, 2022), as well local authority planning lists.

These other activities or proposed activities identified in the vicinity of the Application Area are listed in Table 4-10 below.

Table 4-10 : Projects considered by the in-combination assessment

Name of Development	Licence Ref	Type of Activity	Commencement date	Licence Status	Distance from Application Area (km)
Simply Blue Emerald Site Investigations for possible Floating Offshore Wind project off Kinsale	FS007139	<ul style="list-style-type: none"> ▪ Geophysical and preliminary geotechnical surveys, ▪ Wind resource monitoring, metocean ▪ Environmental: birds & marine mammal, benthic ecology, ▪ Archaeological surveys, in support of a site investigation 	Planned surveys to be phased over five years following licence approval	Consultation 22/05/2020	Overlaps
DP Energy Site Investigations at Inis Ealga	FS006859	<ul style="list-style-type: none"> ▪ Geophysical and preliminary geotechnical surveys, ▪ Wind resource monitoring, metocean ▪ Environmental: birds & marine mammal, benthic ecology, ▪ Archaeological surveys, in support of a site investigation 	Planned surveys to be phased over five years following licence approval	Consultation 21/10/2019	Overlaps
Kinsale Offshore Windfarm Ltd., Site Investigations for the proposed Kinsale Project offshore wind farm, off County Cork	FS007354	<ul style="list-style-type: none"> ▪ Geophysical and preliminary geotechnical surveys, ▪ Wind resource monitoring, metocean ▪ Environmental: birds & marine mammal, benthic ecology, ▪ Archaeological surveys, in support of a site investigation 	Planned surveys to be phased over five years following licence approval	Applied 10/01/2022	Overlaps
Tulca Offshore Array Limited	FS007431	<ul style="list-style-type: none"> ▪ Geophysical surveys ▪ Geotechnical surveys ▪ Environmental: Birds and Mammals, Benthic Ecology, Water quality, Fishery surveys and Archaeological Survey ▪ Metocean surveys 	Planned surveys to be phased over five years following licence approval	Applied 14/02/2022	Overlaps
Kinsale Offshore Wind Limited	FS007575	<ul style="list-style-type: none"> ▪ Geophysical and preliminary geotechnical surveys, ▪ Wind resource monitoring, metocean ▪ Environmental: birds & marine mammal, benthic ecology ▪ Archaeological surveys, in support of a site investigation 	Planned surveys to be phased over five years following licence approval	Applied 26/08/2022	Overlaps



Name of Development	Licence Ref	Type of Activity	Commencement date	Licence Status	Distance from Application Area (km)
Inis Ealga Marine Energy Park site investigations off County Cork	FS007404	<ul style="list-style-type: none"> Geophysical, geotechnical, wind resource & metocean, archaeological, benthic ecology & intertidal, and birds & marine mammal surveys, in support of a site investigation for a further cable corridor 	Planned surveys to be phased over five years following licence approval	Consultation 30/07/2021	Overlaps
Kinsale Area Decommissioning Project	-	<ul style="list-style-type: none"> Removal of 2 platforms, Alpha and Bravo; <i>in situ</i> rock placement as protection on pipelines; the pipelines and umbilicals decommissioned <i>in situ</i> will be surveyed prior to rock placement, which is expected to take place in Q2/Q3 2022. 	-	Granted /Consultation	Overlaps
Ballycotton Harbour Dredging, Ballycotton, Co. Cork	FS007037	<ul style="list-style-type: none"> Dredging of two areas within Ballycotton Harbour and disposal of dredged materials at a dumping at sea site south of Power Head. 	2 months	Consultation 25/05/2021	Overlaps
Port of Cork Dredging	FS007126	<ul style="list-style-type: none"> Maintenance of navigation channel 		Applied 23/02/2022	Overlaps
Irish Water Whitegate to Aghada	FS007027	<ul style="list-style-type: none"> Construction of a 295m outfall pipeline by HDD, Float and Flood or Bottom-pull, as part of a waste water collection and treatment system. 	-	Consultation 17/02/2021	Within Cork Harbour to north of Application Area
EirGrid Celtic Interconnector Electricity Cable	FS006916	<ul style="list-style-type: none"> Installation of subsea interconnector cables between Ireland and France 	2023 - 2027	Determined 08/07/2021	Close to Youghal to east of Application Area
Irving Oil Whitegate Refinery Ltd - Construction of Catchment Basin	FS007111	<ul style="list-style-type: none"> Upgrade to catchment basin for Whitegate refinery 	-	Applied 21/02/2022	Within Cork Harbour to north of Application Area

4.4. European Site Descriptions

The relevant European sites are briefly described in the sections below; the site description information is based on the most up-to-date data available, and it is taken directly from the site synopses available from National Parks and Wildlife Service (NPWS, www.npws.ie) or Natural Resources Wales (NRW, <https://naturalresourceswales.gov.uk/>) depending on jurisdiction. The location of sites in relation to the Application Area are shown in Figure 4-1 and Figure 4-2 above.

4.4.1. Courtmacsherry Bay SPA (IE004219) (NPWS, 2013)

Courtmacsherry Bay SPA is located approximately 12 km south of Bandon and immediately east of the village of Timoleague in west Co. Cork. It lies approximately 1.4km distant from the Application Area at the closest approach. The site, which is largely estuarine in nature, consists of the drowned valley of the Argideen River which is now filled with sediments, resulting in extensive mudflats and areas of saltmarsh. The estuary of the Kilbrittain River in the north-east of the site holds an area of well-developed saltmarsh. The seaward boundary for the site stretches from Coolmain Point to Barry Point and includes Coolmain Bay and Broadstrand Bay.

The site is an SPA under the EU Birds Directive, of special conservation interest for the following species: Great Northern Diver, Shelduck, Wigeon, Red-breasted Merganser, Golden Plover, Lapwing, Dunlin, Black-tailed Godwit, Bar-tailed Godwit, Curlew, Black-



headed Gull and Common Gull. The EU Birds Directive pays particular attention to wetlands, and as these form part of this SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds.

The site is of ornithological importance for the wintering waders and wildfowl that feed on the mudflats. It supports internationally important numbers of Black-tailed, as well as nationally important numbers of a further eleven species, i.e. Great Northern Diver, Shelduck, Wigeon, Red-breasted Merganser, Golden Plover, Lapwing, Dunlin, Bar-tailed Godwit, Curlew, Black-headed Gull and Common Gull. Other species which occur include Oystercatcher, Redshank and Greenshank.

4.4.2. Old Head of Kinsale SPA (IE004021) (NPWS, 2014)

The Old Head is located approximately 1.0 km away from the Application Area. It lies approximately 10 km south of the town of Kinsale in Co. Cork and is a 5 km long headland formed of steeply inclined beds of rock. These show a cross section of the transition between the Devonian and Carboniferous periods and so have considerable interest from a geological point of view. The site comprises a section of the cliffs on the western side of the narrow isthmus leading to the Head and a 500 m seaward extension. These are vertical rock cliffs providing optimum habitat for ledge nesting seabirds. Maritime grassland and heath occur above the steep cliffs.

The site is a SPA under the EU Birds Directive, of special conservation interest for the following breeding species: Kittiwake and Guillemot.

The Old Head is the largest seabird colony on the south coast between the Bull Rock and the Saltee Islands. In 2001 the Seabird 2000 Survey recorded nationally important populations of Kittiwake and Guillemot, as well as smaller numbers of Fulmar, Shag, Herring Gull and Razorbill. Chough and Peregrine, which breed elsewhere on the Head, are regularly seen within the site.

Old Head of Kinsale SPA is of high ornithological importance for its breeding seabird populations, two species of which occur in nationally important numbers. Owing to the importance of the bird populations, the site was designated as a Refuge for Fauna in 1989.

4.4.3. Cork Harbour SPA (IE004030) (NPWS, 2015a)

Cork Harbour lies, at its closest point, approximately 2.7 km away from the Application Area. This is a large, sheltered bay system, with several river estuaries – principally those of the Rivers Lee, Douglas, Owenboy and Owennacurra. The SPA site comprises most of the main intertidal areas of Cork Harbour. Owing to the sheltered conditions, the intertidal flats are often muddy in character. Salt marshes are scattered through the site, and these provide high tide roosts for the birds. Some shallow bay water is included in the site. The site also includes some marginal wet grassland areas used by feeding and roosting birds.

The site is an SPA under the EU Birds Directive, of special conservation interest for the following species: Little Grebe, Great Crested Grebe, Cormorant, Grey Heron, Shelduck, Wigeon, Teal, Mallard, Pintail, Shoveler, Redbreasted Merganser, Oystercatcher, Golden Plover, Grey Plover, Lapwing, Dunlin, Black-tailed Godwit, Bar-tailed Godwit, Curlew, Redshank, Greenshank, Blackheaded Gull, Common Gull, Lesser Black-backed Gull and Common Tern. The site is also of special conservation interest for holding an assemblage of over 20,000 wintering waterbirds. The EU Birds Directive pays particular attention to wetlands and, as these form part of this SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds.

Cork Harbour is an internationally important wetland site, regularly supporting in excess of 20,000 wintering waterfowl. Of particular note is that the site supports internationally important populations of Black-tailed Godwit and Redshank. Nationally important populations of the following 19 species occur: Little Grebe, Great Crested Grebe, Cormorant, Grey Heron, Shelduck, Wigeon, Teal, Mallard, Pintail, Shoveler, Red-breasted Merganser, Oystercatcher, Golden Plover, Grey Plover, Lapwing, Dunlin, Bartailed Godwit, Curlew and Greenshank. The Shelduck population is the largest in the country (over 10% of national total). Other species using the site include Mute Swan, Whooper Swan, Pochard, Gadwall, Tufted Duck, Goldeneye, Coot, Ringed Plover, Knot and Turnstone. Cork Harbour is an important site for gulls in winter and autumn, especially Black-headed Gull, Common Gull and Lesser Black-backed Gull, all of which occur in numbers of national importance. Little Egret and Mediterranean Gull, two species which have recently colonised Ireland, also occur at this site.

A range of passage waders occurs regularly in autumn, including such species as Ruff, Spotted Redshank and Green Sandpiper. Numbers vary between years and usually a few of each of these species over-winter.

Cork Harbour has a nationally important breeding colony of Common Tern. The birds have nested in Cork Harbour since about 1970, and since 1983 on various artificial structures, notably derelict steel barges and the roof of a Martello Tower. The birds are monitored annually, and the chicks are ringed.

Cork Harbour is of major ornithological significance, being of international importance both for the total numbers of wintering birds (i.e. > 20,000) and also for its populations of Black-tailed Godwit and Redshank. In addition, it supports nationally important wintering



populations of 22 species, as well as a nationally important breeding colony of Common Tern. Several of the species which occur regularly are listed on Annex I of the EU Birds Directive, i.e. Whooper Swan, Little Egret, Golden Plover, Bar-tailed Godwit, Ruff, Mediterranean Gull and Common Tern. The site provides both feeding and roosting sites for the various bird species that use it. Cork Harbour is also a Ramsar Convention site and part of Cork Harbour SPA is a Wildfowl Sanctuary.

4.4.4. Clonakilty Bay SPA (IE004081) (NPWS, 2014a)

Clonakilty Bay, which is located in west County Cork approximately 5.6 km away from the Application Area, is a wetland complex that stretches from the town of Clonakilty to the open sea. It comprises two small estuarine bays, Clonakilty Harbour and Muckcross Strand, separated by Inchydoney Island and its empoldered isthmus. Several small rivers flow into the site, notably the Fealge River. At low tide, substantial areas of sand and mud flats are exposed. The construction of a causeway across the inner part of Muckcross Strand created an extensive wetland complex known as Cloheen Strand Intake.

Intertidal sand and mud flats occupy the majority of the site area and these provide the main food resource for the wintering waterfowl. Sand flats dominate the intertidal area, although mud flats occur at the sheltered upper end of the inlets. The Cloheen Strand Intake wetland contains a fine range of habitats from saline lagoons to brackish grasslands, open freshwater marsh and wet grassland. This area provides the main roosting area for birds at high tide. Birds also roost elsewhere above the shoreline and on the sandy beach associated with the dune system at Inchydoney Island.

The site is an SPA under the EU Birds Directive, of special conservation interest for the following species: Shelduck, Dunlin, Black-tailed Godwit and Curlew. The EU Birds Directive pays particular attention to wetlands, and as these form part of this SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds.

The site contains a good diversity of wintering waterbirds, with over 8,000 birds occurring regularly. The site is noted for its internationally important population of Black-tailed Godwit. The ecology of this population has been studied in detail in recent years. Three species occur in nationally important numbers: Shelduck, Dunlin, and Curlew. Other species that occur at the site include Mute Swan, Wigeon, Teal, Mallard, Red-breasted Merganser, Cormorant, Oystercatcher, Ringed Plover, Golden Plover, Grey Plover, Lapwing, Knot, Bar-tailed Godwit, Redshank, Greenshank and Turnstone.

Little Egret, a species that has recently colonised Ireland, has been recorded in small numbers. Grey Heron commonly uses the site and a heronry is located in the trees near Clonakilty. Cloheen Strand Inlet is also a regular wintering site for usually up to 3, but occasionally 7, Short-eared Owl.

The site is a regular staging post for scarce autumn migrants, especially Little Stint, Curlew Sandpiper and Spotted Redshank. In most years it is also visited by vagrant waders from North America.

Clonakilty Bay SPA is of high ornithological importance, particularly for its internationally important population of Black-tailed Godwit. In addition, there are three species with populations of national importance. The presence of the EU Birds Directive Annex I species, Golden Plover, Bar-tailed Godwit, Little Egret and Short-eared Owl, is of note.

4.4.5. Sovereign Islands SPA (IE004124) (NPWS, 2011)

The Sovereign Islands, which lie approximately 8.7 km away from the Application Area, are two very small marine islands located approximately 1 km off the coastline at the entrance to Oysterhaven Bay in Co. Cork. The islands are rocky stacks separated by a narrow sound of about 20 m width. The eastern island is flat-topped and rises to 24 m above sea level; the western one is more peaked and rises to 30 m. The geology is Lower Carboniferous limestones and shales. Both islands are largely devoid of soil apart from small amounts of organic matter trapped in cracks, and vegetation is sparse. The surrounding sea, to a distance of 200 m, is included.

The site is an SPA under the EU Birds Directive, of special conservation interest for breeding Cormorant. The islands are important for breeding seabirds, with most occurring on the eastern stack. A Cormorant colony has been known since the late 1960s and 156 pairs were recorded here in 1999. A more recent survey in 2008 recorded 89 pairs. Herring Gull and Great Black-backed Gull also breed within the site.

Sovereign Islands SPA is of ornithological importance mainly for the breeding colony of Cormorant, which is both the largest in Co. Cork and of national importance. The non-migratory population of Great Black-backed Gull is also of national importance.



4.4.6. Blasket Islands SAC (IE002172) (NPWS 2014b)

The Blasket Islands are situated at the end of the Dingle peninsula in Co. Kerry. The site includes all of the islands in the group as well as a substantial area of the surrounding seas. The islands have a very maritime climate, being exposed to the prevailing Atlantic wind and swells.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive

- Reefs [1170]
- Vegetated Sea Cliffs [1230]
- Dry Heath [4030]
- Sea Caves [8330]
- Harbour Porpoise (*Phocoena phocoena*) [1351]
- Grey Seal (*Halichoerus grypus*) [1364]

The vegetation of the islands is typical of exposed western islands. Sea cliffs are the dominant habitat and, aside from the cliffs themselves, much of the vegetation of the islands consists of species typical of cliffs or cliff-tops. Sea caves occur at the base of the cliffs on several of the islands.

The seas surrounding the islands have well-developed reef communities. In particular, there are good examples of exposed and tide swept shallow water kelp communities, deeper water sponge dominated communities and a hydroid dominated community. The site has a large Grey Seal population (648-833 breeding in 2005; one-off moult count of 989 seals in 2007). This is one of the largest populations in the country and represents about one-third of the Irish population. The seals breed on boulder beaches and caves on several of the islands. The site is also of importance for Harbour Porpoise, a species which has a regular presence in Blasket Sound. A population estimate in 2008 gave a figure of 267-477 individuals. Other cetaceans (whales and dolphins) regularly observed in the site include Common Dolphin, Bottle-nosed Dolphin, Risso's Dolphin, Killer Whale and Minke Whale.

4.4.7. Roaringwater Bay and Islands SAC (IE000101) (NWPS 2014c)

Roaringwater Bay, Co. Cork, is a wide, shallow bay located on the south-west coast of Ireland. The SAC includes the immediate coastline on the mainland from Long Island to Baltimore, together with the whole bay and most of the islands. The bay itself has a wide variety of reef and sediment habitats, subject to a range of wave exposures and tidal currents. Within the habitat 'large shallow inlets and bays' are found the following communities: muddy sand with bivalves and polychaetes complex, mixed sediment community complex, and shallow sand-mud community complex. Also found are marine caves and reefs. The shallow subtidal reefs have good examples of kelp forest community grazed by the sea urchin *Echinus esculentus*. The animal dominated reefs includes the feather star *Antedon bifida* community, the hydroid *Sertularia argentia* and *Hydrallmania falcata* community, and sponge and ascidian communities.

Roaringwater Bay has a nationally important population of Black Guillemot, with 198 individuals counted in 1999. Terns (Arctic/Common) bred within the site in the 1980s, with a large colony of 122 pairs on Carrigvigliash Rock in 1984. Such large numbers, however, have not been seen since and there have been no records of breeding in recent years.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive:

- Large Shallow Inlets and Bays [1160]
- Reefs [1170]
- Vegetated Sea Cliffs [1230]
- Dry Heath [4030]
- Sea Caves [8330]
- Harbour Porpoise (*Phocoena phocoena*) [1351]
- Otter (*Lutra lutra*) [1355]
- Grey Seal (*Halichoerus grypus*) [1364]

Grey Seal is present at the site throughout the year during all aspects of its annual life cycle which includes breeding, moulting, non-breeding, foraging and resting phases. A minimum population for all ages was estimated at 116-149 in 2005.



Roaringwater Bay may be one of the most important sites in Ireland for Harbour Porpoise. Harbour Porpoise in Irish waters are largely resident, and observations have shown that they are regular in the waters of Roaringwater Bay. Most observations are in the autumn, when more than 100 individuals have been recorded in a day. The population has been estimated (in 2008) to be 117-201 individuals.

4.4.8. West Wales Marine / Gorllewin Cymru Forol SAC (UK0030397) (JNCC, 2017)

Situated off the coast of Wales from the Llŷn peninsula in the north, to Pembrokeshire in the south-west, the West Wales Marine SAC has been identified as an area of importance for harbour porpoise. The site is three times the size of Snowdonia National Park, covering 7,376 km². It extends almost to the mid-line (UK EEZ) between the Republic of Ireland and Wales. The water depths within the site range between the mean low water tide level and 100 m. Away from coastal areas, the depths largely fall within the range of 40-50 m. The site contains a mixture of hard substrate and sediments, including rock, coarse sediment, sand and mud (EUSeaMap). The boundary encompasses part of the Pen Llŷn a'r Sarnau SAC, the whole of the Cardigan Bay / Bae Ceredigion SAC and part of the Pembrokeshire Marine / Sir Benfro Morol SAC.

The site has been recognised as an area with the top 10% predicted persistent high densities of harbour porpoise. The area included within the site covers important summer habitat for porpoises, while a part of this site in Cardigan Bay was also identified as important during winter. The qualifying feature of the site is the Habitats Directive Annex II species harbour porpoise (*Phocoena phocoena*).

4.4.9. North Channel SAC (UK0030399) (JNCC/DAERA 2017)

The North Channel site comprises an area of 1,604km². The site is located along part of the east coast of Northern Ireland from Island Magee in the north to south of Cloughey. It extends across the northern part of the Irish Sea, with its southern edge bordering Isle of Man waters and the eastern edge following the Northern Ireland Adjacent Water boundary. It is located within the Celtic and Irish Seas harbour porpoise MU. The area included within the site covers important winter habitat which emerged as one of the top 10% persistent high-density areas for this season in the UK.

The qualifying feature of the site is the Habitats Directive Annex II species harbour porpoise (*Phocoena phocoena*).

The water depths within the site range from mean low water springs at the coast to depths of around 150 m in the northern and eastern parts of the site. Shallower areas occur near the coast with depths mostly between 10 and 40 m. Beyond these shallower areas close to the coast, the water depth ranges between 50 and 130m. Varied seabed substrate types mosaic the site (EUNIS level 3, EUSeaMap). The seabed along the Northern Ireland coast comprises mainly coarse sediments, sands and mixed sediments close to shore. Further away from the coast towards the North Channel and north Irish Sea the sea bed is predominantly coarse sediments and sand, with pockets of mixed sediment and moderate and high energy circalittoral rock, and there is a large expanse of mud in the south-west corner of the site.

4.4.10. North Anglesey Marine / Gogledd Môn Forol SAC (UK0030398) (NRW/JNCC 2017)

Stretching from the northern coast of the Isle of Anglesey into the Irish Sea, the North Anglesey Marine SAC has been identified as an area of importance for harbour porpoise, covering an area almost five times the size of Anglesey. The site covers an area of 3,249 km², reaching north-west from the island of Anglesey into the Irish Sea. It sits at the northern end of St George's Channel, extending approximately halfway across to the Republic of Ireland, skirting the national waters of the Isle of Man

The qualifying feature of the site is the Habitats Directive Annex II species harbour porpoise (*Phocoena phocoena*).

The North Anglesey Marine SAC overlaps a range of other habitats, including coarse and sandy sediments, rock, and mud. Encompassed within the site is the Croker Carbonate Slabs SAC which was designated for submarine structures made by leaking gases. The North Anglesey Marine / Gogledd Môn Forol site has been recognised as an area with predicted persistent high densities of harbour porpoise. The area included within the site covers important summer habitat for porpoises, which was identified as part of the top 10% persistent high-density areas for the summer seasons within the UK.

4.4.11. Bristol Channel Approaches / Dynesfeydd Môr Hafren SAC (UK0030396) (NRW 2016)

The Bristol Channel Approaches SAC lies along the south-west coasts of Wales and England. This site straddles the Bristol Channel from Carmarthen Bay in the north to the northern coasts of Devon and Cornwall in the south. Designated for the protection of harbour porpoise *Phocoena phocoena*, this site supports an estimated 4.7% of the UK Celtic and Irish Sea (CIS) Management Unit (MU)



population. This site is recognised as important for porpoises particularly during the winter when high densities persistently occur throughout the site.

Over half of the site lies in English inshore waters (0–12 NM from shore), with just over a sixth in Welsh inshore waters and the remainder extending into the offshore. As a result, Natural England (NE) and Natural Resources Wales (NRW), along with JNCC, have joint responsibility in producing statutory advice.

Water depth in the Bristol Channel Approaches SAC ranges between the Mean Low Water (MLW) mark and the 70 m contour, with the majority 50 m deep or shallower. Though much of the site is characterised by sandy and coarse sediment seabed, this SAC supports a diversity of habitats, from small patches of rocky reef scattered throughout the site, to sandbanks, sea caves, sand/mudflats and salt meadows.

Survey data collated through the Joint Cetacean Protocol (JCP) were analysed to identify areas with persistently high harbour porpoise occurrence. The modelled outputs of this analysis demonstrate that the Bristol Channel Approaches SAC persistently contains densities of porpoises which are within the top 10% of those for the Management Unit in winter. However, harbour porpoises do use the site year-round. The population estimate for harbour porpoise in the Bristol Channel Approaches SAC was based on data collected during the SCANS-II survey which took place in July 2005.

4.4.12. Blackwater River (Cork/Waterford) SAC (IE002170) (NPWS, 2016a)

The River Blackwater is one of the largest rivers in Ireland, draining a major part of Co. Cork and five ranges of mountains. In times of heavy rainfall the levels can fluctuate widely by more than 12 feet on the gauge at Careysville. The peaty nature of the terrain in the upper reaches and of some of the tributaries gives the water a pronounced dark colour. The site consists of the freshwater stretches of the River Blackwater as far upstream as Ballydesmond, the tidal stretches as far as Youghal Harbour and many tributaries, the larger of which include the Licky, Bride, Flesk, Chimneyfield, Finisk, Araglin, Awbeg (Buttevant), Clyda, Glen, Allow, Dalua, Brogeen, Rathcool, Finnow, Owentaraglin and Awnaskirtaun. The portions of the Blackwater and its tributaries that fall within this SAC flow through the counties of Kerry, Cork, Limerick, Tipperary and Waterford. Nearby towns include Rathmore, Millstreet, Kanturk, Banteer, Mallow, Buttevant, Doneraile, Castletownroche, Fermoy, Ballyduff, Rathcormac, Tallow, Lismore, Cappoquin and Youghal.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive.

- Estuaries
- Tidal Mudflats and Sandflats
- Perennial Vegetation of Stony Banks
- Salicornia Mud
- Atlantic Salt Meadows
- Mediterranean Salt Meadows
- Floating River Vegetation
- Old Oak Woodlands
- Alluvial Forests*
- Freshwater Pearl Mussel (*Margaritifera margaritifera*)
- White-clawed Crayfish (*Austropotamobius pallipes*)
- Sea Lamprey (*Petromyzon marinus*)
- Brook Lamprey (*Lampetra planeri*)
- River Lamprey (*Lampetra fluviatilis*)
- Twaite Shad (*Alosa fallax*)
- Atlantic Salmon (*Salmo salar*)
- Otter (*Lutra lutra*)
- Killarney Fern (*Trichomanes speciosum*)

The estuary and the habitats within and associated with it form a large component of the site. Very extensive areas of intertidal flats, comprised of substrates ranging from fine, silty mud to coarse sand with pebbles/stones are present. The main expanses occur at the southern end of the site, with the best examples at Kinsalebeg in Co. Waterford, and between Youghal and the main bridge north of it across the river in Co. Cork. Other areas occur along the tributaries of the Licky in east Co. Waterford, and Glendine, Newport, Bride



and Killahaly Rivers in Waterford west of the Blackwater. There are also large tracts along the Tourig River in Co. Cork. There are narrow bands of intertidal flats along the main river as far north as Camphire Island. Patches of green filamentous algae (*Ulva* sp. and *Enteromorpha* sp.) occur in places, while furoid algae are common on the more stony flats, even as high upstream as Glenassy or Coneen.

The area of saltmarsh within the site is small. The best examples occur at the mouths of the tributaries and in the townlands of Foxhole and Blackbog. Those found are generally characteristic of Atlantic salt meadows. The species list at Foxhole consists of Common Saltmarsh-grass (*Puccinellia maritima*), small amounts of Greater Seaspurrey (*Spergularia media*), glasswort (*Salicornia* sp.), Sea Arrowgrass (*Triglochin maritima*), Annual Sea-blite (*Suaeda maritima*) and Sea Purslane (*Halimione portulacoides*) - the latter a very recent coloniser. Some Sea Aster (*Aster tripolium*) occurs, generally with Creeping Bent (*Agrostis stolonifera*). Sea Couch (*Elymus pycnanthus*) and small isolated clumps of Sea Club-rush (*Scirpus maritimus*) are also seen. On the Tourig River additional saltmarsh species found include sea-lavenders (*Limonium* spp.), Thrift (*Armeria maritima*), Red Fescue (*Festuca rubra*), Common Scurvygrass (*Cochlearia officinalis*) and Sea Plantain (*Plantago maritima*). Oraches (*Atriplex* spp.) are found on channel edges. Species such as Saltmarsh Rush (*Juncus gerardi*) and Sea Rush (*J. maritimus*) are found in places in this site also, and are indicative of Mediterranean salt meadows. Areas of *Salicornia* mud are found at the eastern side of the townland of Foxhole above Youghal, at Blackbog, along the Tourig and Kinsalebeg estuaries.

The site is also important for the presence of several E.U. Habitats Directive Annex II animal species, including Sea Lamprey (*Petromyzon marinus*), Brook Lamprey (*Lampetra planeri*), River Lamprey (*L. fluviatilis*), Twaite Shad (*Alosa fallax fallax*), Freshwater Pearl Mussel (*Margaritifera margaritifera*), Otter (*Lutra lutra*) and Salmon (*Salmo salar*). The Awbeg supports a population of White-clawed Crayfish (*Austropotamobius pallipes*). This threatened species has been recorded from a number of locations and its remains are also frequently found in Otter spraints, particularly in the lower reaches of the river. The freshwater stretches of the Blackwater and Bride Rivers are designated salmonid rivers. The Blackwater is noted for its enormous run of salmon over the years. The river is characterised by significant pools, streams, glides, and generally, a good push of water coming through except in very low water. Spring salmon fishing can be carried out as far upstream as Fermoy and is highly regarded especially at Careysville. The Bride, main Blackwater upstream of Fermoy, and some of the tributaries are more associated with grilse fishing

The site holds important numbers of wintering waterfowl. Both the Blackwater Callows and the Blackwater Estuary Special Protection Areas (SPAs) hold internationally important numbers of Black-tailed Godwit (average peak 847, 1994/95-95/96 on the callows, average peak 845, 1974/75-93/94 in the estuary). The Blackwater Callows also hold Wigeon (average peak 2,752), Teal (average peak 1,316), Mallard (average peak 427), Shoveler (average peak 28), Lapwing (average peak 880), Curlew (average peak 416) and Black-headed Gull (average peak 396) (counts from 1994/95-95/96). Numbers of birds using the Blackwater Estuary, given as the mean of the highest monthly maxima over 20 years (1974-94), are Shelduck (137 +10 breeding pairs), Wigeon (780), Teal (280), Mallard (320 + 10 breeding pairs), Goldeneye (11-97), Oystercatcher (340), Ringed Plover (50 + 4 breeding pairs), Grey Plover (36), Lapwing (1,680), Knot (150), Dunlin (2,293), Snipe (272), Black-tailed Godwit (845), Bar-tailed Godwit (130), Curlew (920), Redshank (340), Turnstone (130), Black-headed Gull (4,000) and Lesser Black-backed Gull (172). The greatest numbers (75%) of the wintering waterfowl of the estuary are located in the Kinsalebeg area on the east of the estuary in Co. Waterford. The remainder are concentrated along the Tourig estuary on the Co. Cork side.

4.4.13. Rockabill to Dalkey Island SAC (IE003000) (NPWS, 2014e)

This site includes a range of dynamic inshore and coastal waters in the western Irish Sea. These include sandy and muddy seabed, reefs, sandbanks and islands. This site extends southwards, in a strip approximately 7 km wide and 40 km in length, from Rockabill, running adjacent to Howth Head, and crosses Dublin Bay to Frazer Bank in south Co. Dublin. The site encompasses Dalkey, Muglins and Rockabill islands.

The site is a SAC selected for the following habitat listed on Annex I of the EU Habitats Directive:

- Reefs [1170]

The site is also a SAC designated for the following species listed on Annex II of the EU Habitats Directive:

- *Phocoena phocoena* (Harbour porpoise) [1351]

Reef habitat is uncommon along the eastern seaboard of Ireland due to prevailing geology and hydrographical conditions. Expansive surveys of the Irish coast have indicated that the greatest resource of this habitat within the Irish Sea is found fringing offshore islands which are concentrated along the Dublin coast. A detailed survey of selected suitable islands has shown areas with typical biodiversity for this habitat both intertidally and subtidally. Species recorded in the intertidal included *Fucus spiralis*, *Fucus serratus*, *Pelvetia canaliculata*, *Ascophyllum nodosum*, *Semibalanus balanoides* and *Necora puber*. Subtidally, a wide range of species include *Laminaria hyperborea*, *Flustra foliacea*, *Alaria esculenta*, *Halidrys siliquosa*, *Pomatocereos triqueter*, *Alcyonium digitatum*, *Metridium senile*,



Caryophyllia smithii, *Tubularia indivisa*, *Mytilus edulis*, *Gibbula umbilicalis*, *Asterias rubens*, and *Echinus esculentus*. These reefs are subject to strong tidal currents with an abundant supply of suspended matter resulting in good representation of filter feeding fauna such as sponges, anemones and echinoderms.

The area selected for designation represents a key habitat for the Annex II species Harbour porpoise within the Irish Sea, as it contains a wide array of habitats believed to be important for this species including inshore shallow sand and mudbanks and rocky reefs scoured by strong current flow.

4.4.14. Lower River Shannon SAC (IE002165) NPWS (2013c)

This very large site stretches along the Shannon valley from Killaloe in Co. Clare to Loop Head/ Kerry Head, a distance of some 120 km. The site thus encompasses the Shannon, Feale, Mulkear and Fergus estuaries, the freshwater lower reaches of the River Shannon (between Killaloe and Limerick), the freshwater stretches of much of the Feale and Mulkear catchments and the marine area between Loop Head and Kerry Head. Rivers within the sub-catchment of the Feale include the Galey, Smearlagh, Oolagh, Allaughaun, Owweg, Clydagh, Caher, Breanagh and Glenacarneay. Rivers within the sub-catchment of the Mulkear include the Killeenagarriff, Annagh, Newport, the Dead River, the Bilboa, Glashacloonaraveela, Gortnageragh and Cahernahallia.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive.

- Sandbanks
- Estuaries
- Tidal Mudflats and Sandflats
- Coastal Lagoons
- Large Shallow Inlets and Bays
- Reefs
- Perennial Vegetation of Stony Banks
- Vegetated Sea Cliffs
- Salicornia Mud
- Atlantic Salt Meadows
- Mediterranean Salt Meadows
- Floating River Vegetation
- Molinia Meadows
- Alluvial Forests
- Freshwater Pearl Mussel (*Margaritifera margaritifera*)
- Sea Lamprey (*Petromyzon marinus*)
- Brook Lamprey (*Lampetra planeri*)
- River Lamprey (*Lampetra fluviatilis*)
- Atlantic Salmon (*Salmo salar*)
- Bottle-nosed Dolphin (*Tursiops truncatus*)
- Otter (*Lutra lutra*)

The Shannon and Fergus Estuaries form the largest estuarine complex in Ireland. They form a unit stretching from the upper tidal limits of the Shannon and Fergus Rivers to the mouth of the Shannon Estuary (considered to be a line across the narrow strait between Kilcredaun Point and Kilconly Point). Within this main unit there are several tributaries with their own 'sub-estuaries' e.g. the Deel River, Mulkear River, and Mague River. To the west of Foynes, a number of small estuaries form indentations in the predominantly hard coastline, namely Pounasherry Bay, Ballylongford Bay, Clonderalaw Bay and the Feale or Cashen River estuary.

Both the Fergus and inner Shannon Estuaries feature vast expanses of intertidal mudflats, often fringed with saltmarsh vegetation. The smaller estuaries also feature mudflats, but have their own unique characteristics, e.g. Pounasherry Bay is stony and unusually rich in species and biotopes. Plant species are typically scarce on the mudflats, although there are some eelgrass (*Zostera* spp.) beds and patches of green algae (e.g. *Ulva* sp. and *Enteromorpha* sp.). The main macro-invertebrate community which has been noted from the inner Shannon and Fergus estuaries is a *MacomaScrobicularia-Nereis* community.



Overall, the Shannon and Fergus Estuaries support the largest numbers of wintering waterfowl in Ireland. The highest count in 1995-96 was 51,423 while in 1994-95 it was 62,701. Species listed on Annex I of the E.U. Birds Directive which contributed to these totals include: Great Northern Diver (3; 1994/95), Whooper Swan (201; 1995/96), Pale-bellied Brent Goose (246; 1995/96), Golden Plover (11,067; 1994/95) and Bartailed Godwit (476; 1995/96). In the past, three separate flocks of Greenland Whitefronted Goose were regularly found, but none were seen in 1993/94.

Other wintering waders and wildfowl present include Greylag Goose (216; 1995/96), Shelduck (1,060; 1995/96), Wigeon (5,976; 1995/96), Teal (2,319; 1995-96), Mallard (528; 1995/96), Pintail (45; 1995/96), Shoveler (84; 1995/96), Tufted Duck (272; 1995/96), Scaup (121; 1995/96), Ringed Plover (240; 1995/96), Grey Plover (750; 1995/96), Lapwing (24,581; 1995/96), Knot (800; 1995/96), Dunlin (20,100; 1995/96), Snipe (719, 1995/96), Black-tailed Godwit (1,062; 1995/96), Curlew (1,504; 1995/96), Redshank (3,228; 1995/96), Greenshank (36; 1995/96) and Turnstone (107; 1995/96). A number of wintering gulls are also present, including Black-headed Gull (2,216; 1995/96), Common Gull (366; 1995/96) and Lesser Black-backed Gull (100; 1994/95). This is the most important coastal site in Ireland for a number of the waders including Lapwing, Dunlin, Snipe and Redshank. It also provides an important staging ground for species such as Black-tailed Godwit and Greenshank.

A number of species listed on Annex I of the E.U. Birds Directive breed within the site. These include Peregrine Falcon (2-3 pairs), Sandwich Tern (34 pairs on Rat Island, 1995), Common Tern (15 pairs: 2 on Sturamus Island and 13 on Rat Island, 1995), Chough (14-41 pairs, 1992) and Kingfisher. Other breeding birds of note include Kittiwake (690 pairs at Loop Head, 1987) and Guillemot (4,010 individuals at Loop Head, 1987).

There is a resident population of Bottle-nosed Dolphin in the Shannon Estuary. This is the only known resident population of this E.U. Habitats Directive Annex II species in Ireland. The population is estimated (in 2006) to be 140 ± 12 individuals. Otter, a species also listed on Annex II of this Directive, is commonly found on the site.

Five species of fish listed on Annex II of the E.U. Habitats Directive are found within the site. These are Sea Lamprey (*Petromyzon marinus*), Brook Lamprey (*Lampetra planeri*), River Lamprey (*Lampetra fluviatilis*), Twaite Shad (*Allosa fallax fallax*) and Salmon (*Salmo salar*). The three lampreys and Salmon have all been observed spawning in the lower Shannon or its tributaries. The Fergus is important in its lower reaches for spring salmon, while the Mulkear catchment excels as a grilse fishery, though spring fish are caught on the actual Mulkear River. The Feale is important for both types. Twaite Shad is not thought to spawn within the site. There are few other river systems in Ireland which contain all three species of lamprey.

4.4.15. Slyne Head Islands SAC (IE000328) (NPWS, 2019)

This site comprises a long archipelago of islands, islets, rocks and reefs located off the western shores and south-western tip of the Slyne Head Peninsula in Co. Galway. The surrounding shallow marine areas are also included as part of the site. The islands are mostly low-lying and have a covering of a grassy maritime turf. A few sandy coves occur on the larger islands, along with shingle. The islands are uninhabited apart from an automated lighthouse on Illaunamid.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I /II of the E.U. Habitats Directive

- Reefs
- Bottle-nosed Dolphin (*Tursiops truncatus*)
- Grey Seal (*Halichoerus grypus*)

Slyne Head Islands SAC contains excellent examples of reefs, ranging from those extremely exposed to wave action to more sheltered ones. The complexity of the islands helps provide a good range of habitat conditions, and many typical communities are present. The rocky shores moderately exposed to wave action have an excellent example of community zonation down to the shore, with an extensive zone of grey lichens followed by a zone of black lichens. Below there is a narrow band of Channel Wrack (*Pelvetia canaliculata*) and following this an extensive area of limpets and barnacles. The mid shore has an extensive zone of *Fucus serratus* and in the lower shore *Fucus serratus* and *Himantalis elongata* are common. The sublittoral fringe is a mixture of *Laminara sacharina* and *L. digitata*.

The site contains an important breeding colony of Grey Seal, a species listed on Annex II of the E.U. Habitats Directive. The breeding population is estimated at 238306 individuals (in 2005). A one-off moult count in 2007 gave a figure of 162 seals. Waters within the site also support groups of the Annex II species Bottlenose Dolphin (*Tursiops truncatus*) that are likely to be part of a population inhabiting the west and north coasts of Connacht and which numbers at least 177-337 dolphins. Group sizes of up to 12 individual dolphins have been recorded within the site and sighting records have predominantly occurred in September.



The islands also support important colonies of breeding seabirds. In 1995, 329 pairs of Arctic Tern were recorded on Illaunamid - this was one of the largest colonies in Ireland and comprised 11.3% of the national total. Terns have also bred on Chapel Island in the past. Also of national importance is the colony of Black Guillemots, with 60 individuals counted in 1980. Other seabirds which breed include Storm Petrel (50 pairs), Manx Shearwater (70-90 pairs), Shag (6-8 pairs), Herring Gull (50 pairs) and Great Black-backed Gull (30 pairs) – all figures from 1980. Of the above seabird species, Arctic Tern and Storm Petrel are listed on Annex I of the E.U. Birds Directive.

4.4.16. Slyne Head Peninsula SAC (IE002074) (NPWS, 2019a)

This site comprises the peninsula west of Ballyconneely, Co. Galway. It extends northwards to Errislannan Point to include the shallow waters of Mannin Bay. The peninsula is low-lying and undulating, reaching a maximum height of only 64 m (Doon Hill). The underlying rock is predominantly gneiss, except for schist along the northern shores of Mannin Bay, a granite ridge along the western edge of the peninsula and a conspicuous basalt exposure which forms Doon Hill. The peninsula is fringed with rocky shores and sandy beaches, with some extensive areas of machair and several brackish lakes and lagoons. Inland, the site is a maze of small fields, supporting a mosaic of habitats dominated by grassland and heath, interspersed with numerous lakes and associated swamp, marsh and fen. An important feature of the site is the influence of windblown calcareous sand on these habitats.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive

- Coastal Lagoons*
- Large Shallow Inlets and Bays
- Reefs
- Annual Vegetation of Drift Lines
- Perennial Vegetation of Stony Banks
- Atlantic Salt Meadows
- Mediterranean Salt Meadows
- Embryonic Shifting Dunes
- Marram Dunes (White Dunes)
- Machairs*
- Oligotrophic Waters containing very few minerals
- Oligotrophic to Mesotrophic Standing Waters
- Hard Water Lakes
- Dry Heath
- Juniper Scrub
- Orchid-rich Calcareous Grassland*
- Molinia Meadows
- Lowland Hay Meadows
- Alkaline Fens
- Bottle-nosed Dolphin (*Tursiops truncatus*)
- Petalwort (*Petalophyllum ralfsii*)
- Slender Naiad (*Najas flexilis*)

Mannin Bay is an excellent example of a large shallow bay, with a wide range of sediment types. The islets and rocks at the mouth of the bay give some shelter from Atlantic swells. Conditions become more sheltered towards the head of the bay and are extremely sheltered in Mannin Creek. Tidal streams are weak. There are a very high number of sediment communities for such a small area. Mannin Bay is almost unique as a very large proportion of the bay is dominated by a combination of maerl debris and living maerl. Maerl is free living red calcareous algae generally called 'coral'. The two species that are most abundant in Mannin Bay are *Lithothamnion corallioides* and *Phymatolithon calcareum*. In addition *Lithophyllum fasciatum* and *L. dentatum* have also been recorded. In shallow water, Eelgrass (*Zostera marina*) and maerl are found together, an uncommon combination known only from two other locations in Ireland. Mannin Bay has excellent examples of communities characterised by the burrowing brittlestars *Amphiura brachiata* and *A. filiformis*. The brittle star *Ophiopsila annulosa* is present and is an uncommon species. In addition there is an unusual community characterised by the tubeworm *Sabella pavonina* in Mannin Creek. The shores on the south side of Mannin Creek are known to have



bivalve communities with unusually high species diversity. The beaches of Mannin Bay are unusual as they are composed of maerl debris.

Mannin Bay has good examples of littoral reef communities that are sheltered from wave action and subject to moderate tidal streams. Shoreline communities follow a zonation of lichen zones followed by *Pelvetia canaliculata* and then barnacles and limpets with *Fucus spiralis*. The zones are narrow (1-1.5 m), which is typical of sheltered shores. Most of the shore is composed of flat bedrock and boulders characterised by dense *Ascophyllum nodosum* and *Fucus vesiculosus*. The dogwhelk *Nucella lapillus* is common. On the lower shore is a band of *Fucus serratus* on boulders and bedrock, with sponges, anemones and red algae. In the sublittoral fringe is a mixed flora of kelps (*Laminaria saccharina*, *L. digitata*, *Saccorhiza polyschides* and *Himantalia elongata*) and red algae, with areas of sand and gravel with maerl. Sponges, anemones, tunicates and bryozoan crusts are common on the vertical sides and under the boulders. In the shelter of Mannin Creek the uncommon community character.

Marine waters within the site, including Mannin Bay, support one or more groups of Bottlenose Dolphin (*Tursiops truncatus*) that are part of a population inhabiting the west and north coasts of Connacht and which numbers at least 177-337 dolphins. This species is listed on Annex II of the EU Habitats Directive. Group sizes of up to 28 individual dolphins have been recorded within the site and sighting records have predominantly occurred in the summer months. Juvenile dolphins have been recorded within observed groups and a range of behaviours have been documented within the site including foraging and social behaviour.

Three Annex I E.U. Birds Directive species are known to breed at the site - Chough (8 pairs in 1992), Sandwich Tern (31 pairs in 1995) and Common Tern (5 pairs in 1995).

4.4.17. West Connacht Coast SAC (IE002998) (NPWS 2014f)

This site consists of a substantial area of marine waters lying off the coasts of Counties Mayo and Galway in the west of Ireland. Comprising two parts, in its northern component the site extends from the coastal waters off Erris Head westwards beyond Eagle Island and the Mullet Peninsula in Co. Mayo. From there it extends southwards immediately off the coast as far as the entrance to Blacksod Bay. In its southern component, the site stretches from Clare Island and the outer reaches of Clew Bay at Old Head and continues southwards off the Mayo coast to the Connemara coast near Clifden and Ballyconneely, Co Galway. Predominantly coastal in nature, the site extends westwards into Atlantic continental shelf waters up to approximately 7-11 km from the mainland, although in its southern component it remains mostly inshore of the main islands: Clare Island, Inishturk, Inishbofin and Inishshark. Its area contains subtidal waters fringing these and other islands, as well as islets and rocky skerries off the Co. Mayo and Co. Galway coasts.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive

- Bottle-nosed Dolphin (*Tursiops truncatus*)

The site encompasses a diverse range of shallow marine habitats occurring in waters less than 100 m deep. These include a variety of seabed structures including reefs, islets and sedimentary basins. The site contains physical and hydrographic features believed to be important for Bottle-nosed Dolphin, one of two cetacean species listed on Annex II of the E.U. Habitats Directive. These features include shallow coastal bays, areas of steep seafloor topography and complex areas of strong current flow adjacent to estuaries, coastal headlands and islands, sandbanks, shoals and reefs. Its area borders existing designated sites for protected species and habitats, and lies adjacent to a wide array of coastal features including sheltered bays, estuaries, coastal cliffs and sea caves, several of which are located within protected sites.

Bottle-nosed Dolphin occurs within the site in all seasons and the area comprises a key habitat for the species both regionally and within Irish waters as a whole. Survey data show that Bottle-nosed Dolphin occurrence within the site compares favourably with another designated site in Ireland, the Lower River Shannon. Local population estimates off south-west Co. Mayo and Connemara, Co. Galway describe a minimum of 123 dolphins, with possibly up to 150-200 individuals or more, occurring within the site as a whole, exceeding estimates for the Shannon Estuary population. Significant structural linkages have been established between groups of dolphins utilising various coastal habitats within the site, while a high proportion of individuals within this Bottle-nosed Dolphin community have been shown to range freely within its coastal waters. Analyses of genetic structure also show a fine scale distinction between dolphins sampled within the site and animals sampled at the Shannon Estuary or nationally.

Sighting records of Bottle-nosed Dolphins via coastal and boat-based observations from the Mullet Peninsula and outlying islands, outer Clew Bay, Clare Island, Roonagh, outer Killary Harbour, Ballynakill Harbour and west Connemara are significant for the west coast of Ireland and indicate widespread use of the area by individual groups of dolphins. Groups are known to alter their composition or to aggregate together within the site and comparatively high group sizes of up to 50-65 individual dolphins or more have been recorded in the site's northern and southern components. Adults closely accompanying calves are commonly observed in summer and autumn months at a number of locations within the site, and group foraging, resting or social behaviour are also regularly recorded.



Individual dolphins are also known to recur within and between years at key locations within the site (e.g., outer Killary Harbour, off the Mullet Peninsula), indicating a degree of site fidelity to its coastal waters.

4.4.18. Duvillaun Islands SAC (IE00495) (NPWS 2019b)

The Duvillaun Islands comprise a group of marine islands, rocks and reefs 3 km off the southern tip of the Mullet Peninsula, Co. Mayo. The main islands included are Duvillaun More, Duvillaun Beg, Turduvillaun, Gaghta Island, Keely Island and Leamareha Island.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive.

- Bottle-nosed Dolphin (*Tursiops truncatus*)
- Grey Seal (*Halichoerus grypus*)

The Duvillaun Islands form part of a larger group of islands, together with the Inishkeas, Inishkeeragh and Inishglora, which hold an important breeding population of Grey Seal. The breeding population is estimated at 648-833 individuals (in 2005).

Waters around the Duvillaun Islands support groups of Bottlenose Dolphin (*Tursiops truncatus*) that are part of a population inhabiting the west and north coasts of Connacht and which numbers at least 177-337 dolphins. This species is also listed on Annex II of the Habitats Directive. Group sizes of 2-20 individual dolphins, including calves, have been recorded around these islands. So far all dolphin records within the site have occurred in the month of April. Bottlenose Dolphin records from adjacent coastal waters of the Mullet Peninsula and Inishkea island group have occurred in all seasons.

The Duvillaun Islands are also of ornithological interest for their colonies of breeding seabirds and wintering geese. They hold the second largest colony of Great Black-backed Gull in Ireland (217 pairs during 1985-87). Other nationally important colonies include Cormorant (185 pairs), Shag (30-50 pairs), Fulmar (500 pairs), Common Gull (20-50 pairs) and Black Guillemot (80 individuals). Large numbers of Herring Gull are also found (300-400 pairs) (all figures are from 1981). Storm Petrel occur on Duvillaun More (14 colonies in 1966, total numbers are unknown, but probably at least 100 pairs).

The islands are also used as a wintering ground for internationally important numbers of Barnacle Goose (420-450 individuals in 1988), which interchange with the largest Irish population on the nearby Inishkea Islands.

4.5. Determination of Likely Significant Effect

This section summarises the potential for likely significant effects (LSE) on the relevant European sites where it has been identified there is a potential for connectivity with the proposed Application Area. The assessment is based on the precautionary principle and has been undertaken in the absence of mitigation.

The following sections summarise the potential for LSE on Annex I habitats, Annex II migratory fish, cetaceans, pinnipeds and otter, and SCIs.



4.5.1. Annex I Habitats

Table 4-11 : Annex I Habitats assessment of LSE

SAC	Distance from Application Area (km)	Impact Pathway	Relevant Qualifying Interests	Assessment of LSE	Conclusion
Kilkeran Lake and Castlefcreke Dunes SAC (IE001061)	Overlaps	Habitat Loss / Disturbance In-combination Impacts	Embryonic shifting dunes [2110] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] Coastal lagoons [1150] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	No impact pathway has been identified that could cause any permanent habitat loss or alteration. Sampling is trivial in nature with very small volumes of sediment being removed. The relevant QI for this site is located within the intertidal area and so may interact with the walkover surveys as described in Section 2.1 of this report. If appropriate, core/quadrat sampling may be carried out in this area, however any samples removed will be trivial in nature and of a maximum volume of 0.01m ² . Should any of the projects identified in Section 4.3.1 also include seabed sampling, in-combination impacts will also be trivial in nature due to the nature and scale of the activities.	No LSE



4.5.2. Annex II Fish & Other Benthic Species

Table 4-12 : Annex II Migratory fish and benthic species assessment of LSE

SAC	Distance from Application Area (km)	Impact Pathway	Relevant Qualifying Interests	Assessment of LSE	Conclusion
Blackwater River (Cork/Waterford) SAC (IE002170)	34km	Physical injury and/or disturbance due to underwater sound changes In-combination Impacts	Twaite Shad (<i>Alosa fallax fallax</i>) [1103]	Shad are sensitive to sound pressure. Effects on this receptor are predicted to be very localised from the proposed geophysical survey. The expected sound pressure levels (SPLs) for the SBP, MBES, SSS and USBL are above the Popper <i>et al.</i> , (2014) thresholds for injury and temporary threshold shift suggesting that shad could be injured or impaired by the underwater noise level changes. However, sound will attenuate quickly, and the potential injury or impairment would be in the range of a few metres from the noise source. Shad are anadromous fish - they spawn in freshwater rivers before migrating as adults to the marine environment. The survey will not block or provide a barrier to the approach to the spring spawning grounds. It is considered highly unlikely that shad would be in such close proximity to the geophysical survey vessels and as such are not predicted to experience injury or impairment that might adversely affect these species or their pathway of migration.	No LSE

4.5.3. Annex II Cetaceans and Pinnipeds

Table 4-13 : Annex II Cetaceans and Pinnipeds assessment of LSE

SAC	Distance from Application Area (km)	Impact Pathway	Relevant Qualifying Interests	Assessment of LSE	Conclusion
Lower River Shannon SAC (IE0021650)	Within WCI MU 208 km	Physical injury and/or disturbance due to underwater sound changes In-combination Impacts	Bottlenose dolphin (<i>Tursiops truncatus</i>)	The source levels generated by the geotechnical equipment are lower than that generated by the geophysical equipment. This assessment therefore focuses on the geophysical survey. There is the potential for underwater noise generated by the SBP to result in auditory injury to bottlenose dolphin within proximity to the geophysical equipment (see discussion in Annex IV Risk Assessment submitted with this Investigative Foreshore Licence Application document reference: C01477_Floating Cork_Annex IV RA). The	No LSE



SAC	Distance from Application Area (km)	Impact Pathway	Relevant Qualifying Interests	Assessment of LSE	Conclusion
Slyne Head Islands SAC (IE000328)	Within CIS MU and WCI MU 292 km	Physical injury and/or disturbance due to underwater sound changes In-combination Impacts	Bottlenose dolphin (<i>Tursiops truncatus</i>)	<p>most likely response of a marine mammal to noise levels that could induce auditory injury is to flee from the ensonified area (Southall <i>et al.</i>, 2007) and subsequently the onset of the thresholds for auditory injury can be referred to as the fleeing response. This is therefore a behavioural response that overlaps with disturbance ranges and animals exposed to these noise levels are likely to actively avoid hearing damage by moving away from the area.</p> <p>For the purposes of this assessment, the UK Joint Nature Conservation Committee (JNCC) (2020) precautionary Effective Deterrence Range (EDR) for geophysical surveys of 5 km has been used to assess the potential effects of disturbance from underwater noise. Although the EDR is for harbour porpoise, as these animals are very high frequency cetaceans, the thresholds for the onset of auditory injury and disturbance are lower than for other cetaceans. The EDR has therefore been used as a conservative proxy for other species.</p>	No LSE
Slyne Head Peninsula SAC (IE002074)	Within WCI MU 295 km	Physical injury and/or disturbance due to underwater sound changes In-combination Impacts	Bottlenose dolphin (<i>Tursiops truncatus</i>)	<p>These five SACs being considered lie further than 5 km from the proposed Application Area and therefore animals within the sites will not be affected by the proposed geophysical survey. Animals foraging outside of the European sites may swim into the zone of influence of the geophysical survey but given the wide area available for foraging within the management unit, the transient nature of the survey (the vessel will not be present on one area for a sustained period of time) and the short duration of the geophysical survey, the proposed site investigations will not have a significant effect on foraging animals from any of the five European sites.</p>	No LSE
West Connacht Coast SAC (IE002998)	Within WCI MU 300 km	Physical injury and/or disturbance due to underwater sound changes In-combination Impacts	Bottlenose dolphin (<i>Tursiops truncatus</i>)	<p>It is unlikely that the geophysical survey components of the other proposed site investigations within the locality will be undertaken at the same time as the Floating Cork proposed site investigations, as this would affect data acquisition. However, there is the potential that they could occur consecutively, extending the duration of disturbance in the region. Given the distance to the five SACs, the wide area available for foraging in the management unit and the fact that the surveys would not act as a barrier to the species accessing any of the SACs, there will be no in-combination LSE.</p>	No LSE
Duvailaun Islands SAC (IE00495)	Within WCI MU 372 km	Physical injury and/or disturbance due to underwater sound changes In-combination Impacts	Bottlenose dolphin (<i>Tursiops truncatus</i>)		No LSE



SAC	Distance from Application Area (km)	Impact Pathway	Relevant Qualifying Interests	Assessment of LSE	Conclusion
Rockabill to Dalkey Island SAC (IE 003000)	Within CIS MU 259km	Physical injury and/or disturbance due to underwater sound changes In-combination Impacts	Harbour Porpoise (<i>Phocoena phocoena</i>) [1351]	<p>The source levels generated by the geotechnical equipment are lower than that generated by the geophysical equipment. This assessment therefore focuses on the geophysical survey.</p> <p>There is the potential for underwater noise generated by the SBP to result in auditory injury to harbour porpoise within proximity to the geophysical equipment (see discussion in Annex IV Risk Assessment submitted with this Investigative Foreshore Licence Application document reference: C01477_Floating Cork_Annex IV RA). The most likely response of a marine mammal to noise levels that could induce auditory injury is to flee from the ensonified area (Southall <i>et al.</i>, 2007) and subsequently the onset of the thresholds for auditory injury can be referred to as the fleeing response. This is therefore a behavioural response that overlaps with disturbance ranges and animals exposed to these noise levels are likely to actively avoid hearing damage by moving away from the area.</p> <p>For the purposes of this assessment, the JNCC (2020) precautionary EDR for harbour porpoise for geophysical surveys of 5 km has been used to assess the potential effects of disturbance from underwater noise. This SAC being considered lies further than 5 km from the proposed Application Area and therefore animals within the sites will not be affected by the proposed geophysical survey. Animals foraging outside of the European sites may swim into the zone of influence of the geophysical survey but given the wide area available for foraging within the management unit, the transient nature of the survey (the vessel will not be present on one area for a sustained period of time) and the short duration of the geophysical survey, the proposed site investigations will not have a significant effect on foraging animals from the European sites.</p>	No LSE
Blasket Islands SAC (IE002172)	Within CIS MU 81km	Physical injury and/or disturbance due to underwater sound changes In-combination Impacts	Harbour porpoise (<i>Phocoena phocoena</i>) [1351] Grey seal (<i>Halichoerus grypus</i>) [1364]	<p>The source levels generated by the geotechnical equipment are lower than that generated by the geophysical equipment. This assessment therefore focuses on the geophysical survey.</p> <p>There is the potential for underwater noise generated by the SBP to result in auditory injury to harbour porpoise within proximity to the geophysical equipment (see discussion in Annex IV Risk Assessment submitted with this Investigative Foreshore Licence Application document reference: C01477_Floating Cork_Annex IV RA). The most likely</p>	No LSE



SAC	Distance from Application Area (km)	Impact Pathway	Relevant Qualifying Interests	Assessment of LSE	Conclusion
Roaringwater Bay and Islands SAC (IE000101)	Within CIS MU 280km	Physical injury and/or disturbance due to underwater sound changes In-combination Impacts	Harbour porpoise (<i>Phocoena phocoena</i>) [1351] Grey seal (<i>Halichoerus grypus</i>) [1364]	<p>response of a marine mammal to noise levels that could induce auditory injury is to flee from the ensonified area (Southall <i>et al.</i>, 2007) and subsequently the onset of the thresholds for auditory injury can be referred to as the fleeing response. This is therefore a behavioural response that overlaps with disturbance ranges and animals exposed to these noise levels are likely to actively avoid hearing damage by moving away from the area.</p> <p>For the purposes of this assessment, the JNCC (2020) precautionary EDR for harbour porpoise for geophysical surveys of 5 km has been used to assess the potential effects of disturbance from underwater noise. These SACs being considered lies further than 5 km from the proposed Application Area and therefore animals within the sites will not be affected by the proposed geophysical survey. Animals foraging outside of the European sites may swim into the zone of influence of the geophysical survey but given the wide area available for foraging within the management unit, the transient nature of the survey (the vessel will not be present on one area for a sustained period of time) and the short duration of the geophysical survey, the proposed site investigations will not have a significant effect on foraging animals from the European sites.</p> <p>Based on information presented in DECC (2022) grey seals are estimated to forage up to 100 km from haul-out sites on the coast, whilst harbour seal takes shorter trips up to 50 km.</p> <p>Pinnipeds in water have a hearing range of 50 Hz to 86 kHz. The source levels generated by the geotechnical equipment are lower than that generated by the geophysical equipment. This assessment therefore focuses on the geophysical survey. Of the geophysical equipment to be used the USBL and SBP operate at frequencies likely to be audible to animals. The Southall <i>et al.</i> (2019) thresholds for auditory injury for pinnipeds is 218 dB re 1 µPa (peak) for the onset of permanent threshold shift (PTS) and 185 dB re 1 µPa (peak) for the onset of temporary threshold shift (TTS) (impulsive unweighted). The sound pressure levels generated by the SBP exceed the thresholds for auditory injury and a temporary threshold shift in animal hearing may occur within several 100 metres of the survey equipment. However, the acoustic-based surveys are directed towards the seabed and would only affect an animal if it was directly in contact</p>	No LSE



SAC	Distance from Application Area (km)	Impact Pathway	Relevant Qualifying Interests	Assessment of LSE	Conclusion
				<p>with the sound beam. When the animal moves away from the main beam there is little potential for injury.</p> <p>The most likely response of a marine mammal to noise levels that could induce auditory injury is to flee from the ensonified area (Southall <i>et al.</i>, 2007) and subsequently the onset of the thresholds for auditory injury can be referred to as the fleeing response. This is therefore a behavioural response that overlaps with disturbance ranges and animals exposed to these noise levels are likely to actively avoid hearing damage by moving away from the area. Animals foraging outside of the European sites may swim into the zone of influence of the geophysical survey but given the wide area available for foraging within the management unit, the transient nature of the survey (the vessel will not be present on one area for a sustained period of time) and the short duration of the geophysical survey, the proposed site investigations will not have a significant effect on foraging animals from the European sites.</p>	
West Wales Marine / Gorllewin Cymru Forol SAC (UK0030397)	Within MU 173km	CIS	Physical injury and/or disturbance due to underwater sound changes In-combination Impacts	<p>Harbour Porpoise (<i>Phocoena phocoena</i>) [1351]</p> <p>The source levels generated by the geotechnical equipment are lower than those generated by the geophysical equipment. This assessment therefore focuses on the geophysical survey.</p> <p>There is the potential for underwater noise generated by the SBP to result in auditory injury to harbour porpoise within proximity to the geophysical equipment (see discussion in Annex IV Risk Assessment submitted with this Investigative Foreshore Licence Application document reference: C01477_Floating Cork_Annex IV RA). The most likely response of a marine mammal to noise levels that could induce auditory injury is to flee from the ensonified area (Southall <i>et al.</i>, 2007) and subsequently the onset of the thresholds for auditory injury can be referred to as the fleeing response. This is therefore a behavioural response that overlaps with disturbance ranges and animals exposed to these noise levels are likely to actively avoid hearing damage by moving away from the area.</p>	No LSE
North Channel SAC (UK0030399)	Within MU 364km	CIS	Physical injury and/or disturbance due to underwater sound changes In-combination Impacts	<p>Harbour Porpoise (<i>Phocoena phocoena</i>) [1351]</p> <p>For the purposes of this assessment, the JNCC (2020) precautionary EDR for harbour porpoise for geophysical surveys of 5 km has been used to assess the potential effects of disturbance from underwater noise.</p>	No LSE
North Anglesey Marine /	Within MU	CIS	Physical injury and/or disturbance due to	<p>Harbour Porpoise (<i>Phocoena phocoena</i>) [1351]</p>	No LSE



SAC	Distance from Application Area (km)	Impact Pathway	Relevant Qualifying Interests	Assessment of LSE	Conclusion
Gogledd Môn Forol SAC (UK0030398)	287km	underwater sound changes In-combination Impacts		<p>The four SACs being considered lie further than 5 km from the Application Area and therefore animals within the sites will not be affected by the proposed geophysical survey. Animals foraging outside of the European sites may swim into the zone of influence of the geophysical survey but given the wide area available for foraging within the management unit, the transient nature of the survey (the vessel will not be present on one area for a sustained period of time) and the short duration of the geophysical survey, the proposed site investigations will not have a significant effect on foraging animals from any of the European sites.</p> <p>It is unlikely that the geophysical survey components of the other proposed site investigations near the locality will be undertaken at the same time as the proposed Floating Cork site investigations, as this would affect data acquisition. However, there is the potential that they could occur consecutively, extending the duration of disturbance in the region. Given the distance to the four SACs, the wide area available for foraging in the management unit and the fact that the surveys would not act as a barrier to the species accessing either of the SACs, there will be no in-combination LSE.</p>	No LSE
Bristol Channel Approaches / Dynesfeydd Môr Hafren SAC (UK0030396)	Within CIS MU 202km	Physical injury and/or disturbance due to underwater sound changes In-combination Impacts	Harbour Porpoise (<i>Phocoena phocoena</i>) [1351]		



4.5.4. Annex II Otter

Table 4-14 : Annex II Otter assessment of LSE

SAC	Distance from Application Area (km)	Impact Pathway	Relevant Qualifying Interests	Assessment of LSE	Conclusion
Blackwater River (Cork/Waterford) SAC (IE002170)	34 km	Visual and noise disturbance	Otter (<i>Lutra lutra</i>) [1355]	<p>It has been suggested that the otter's range is approximately 13 km along the coast and 80m seaward from the coast (Reid <i>et al.</i>, 2013; NWPS 2015).</p> <p>The majority of the Application Area lies in open coastal waters, with the exception of where the Application Area extends to the high-water mark along the coast.</p> <p>Little evidence has come to light to suggest that disturbance by recreation is a significant pressure (NPWS, 2009), indicating that the otter is not particularly sensitive to visual and noise disturbance. The physical presence of the survey vessel/vessels close to shore and of 2-3 humans onshore, may cause some temporary disturbance to otters should they be in the immediate vicinity of the benthic ecology survey activities. This may result in otters temporarily avoiding their chosen feeding/resting location; however, they are likely to willingly move to another nearby location and to return to their original location once survey activities have ceased. Disturbance will not be significant and will not affect the conservation objectives of the site.</p> <p>Should the other Foreshore Licence applications be granted in the region, in-combination impacts will also be trivial in nature due to the nature and scale of the activities</p>	No LSE



4.5.5. SCIs

Table 4-15 : SCIs assessment of LSE

Site Name (Site Code)	Distance to Application Area (km)	Impact Pathway	SCI	Assessment of LSE	Conclusion
Courtmacsherry Bay SPA (IE004219)	1.4	Visual and noise disturbance In- combination Impacts	Great Northern Diver (<i>Gavia immer</i>) [A003]	<p>Marine birds can be sensitive to disturbance from vessel traffic. Great northern diver is highly sensitive to noise and visual disturbance, such as from vessel traffic and may not resettle quickly after being flushed. The vessel route plus a buffer of several kilometres may be effectively lost as habitat (Atterbury <i>et al.</i>, 2021). Although the Application Area does not overlap with the SPA, it is assumed to be within the foraging range of great northern diver (Woodward <i>et al.</i> (2019) do not provide mean max foraging ranges of the species but 9km is stated for red-throated diver which has been used as a proxy). Site investigation surveys may cause disturbance due to temporary avoidance of chosen feeding grounds in the immediate vicinity of the survey vessel should divers from this SPA be present within the Application Area at the time of the surveys. However, the effect will be very localised and temporary in nature and birds will be able to (1) move to alternative feeding grounds nearby and (2) return to the area once the vessel has moved on. The SPA is designated for the winter populations of these species; they are non-breeding and as such are unlikely to be significantly disturbed by 1-2 additional slow-moving or stationary vessels during the investigative surveys.</p> <p>The temporary nature and imperceptible effects of the site investigation surveys are not likely to have any effect on the prey species of the SCIs. Therefore, it is considered not likely that any bird species will be indirectly affected as a result of an effect on their fish prey species.</p> <p>Should the other Foreshore Licence applications be granted in the region, in-combination impacts will also be trivial in nature due to the nature and scale of the activities.</p>	No LSE
			Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179] Common Gull (<i>Larus canus</i>) [A182]	<p>Birds identified as being sensitive to the proposed site investigation surveys are breeding birds or those foraging within close proximity to the survey vessels. These SCIs are low to moderately sensitive to noise and visual disturbance (Atterbury <i>et al.</i>, 2021) and some species may be attracted to vessels in the hopes of fishery discards. Site investigation surveys may cause disturbance due to temporary avoidance of chosen feeding grounds in the immediate vicinity of the survey vessel should species from this SPA be present within the Application Area at the time of the surveys. However, the effect will be very localised and temporary in nature and birds will</p>	No LSE



Site Name (Site Code)	Distance to Application Area (km)	Impact Pathway	SCI	Assessment of LSE	Conclusion
				<p>be able to (1) move to alternative feeding grounds nearby and (2) return to the area once the vessel has moved on.</p> <p>The SPA is designated for the winter populations of these species; they are non-breeding and as such are unlikely to be significantly disturbed by 1-2 additional slow-moving or stationary vessels during the investigative surveys.</p> <p>The temporary nature and imperceptible effects of the site investigation surveys are not likely to have any effect on the prey species of the SCIs. Therefore, it is considered not likely that any bird species will be indirectly affected as a result of an effect on their fish prey species.</p> <p>Should the other Foreshore Licence applications be granted in the region, in-combination impacts will also be trivial in nature due to the nature and scale of the activities.</p>	
			<p>Shelduck (<i>Tadorna tadorna</i>) [A048] Wigeon (<i>Anas penelope</i>) [A050] Red-breasted Merganser (<i>Mergus serrator</i>) [A069]</p>	<p>Birds identified as being sensitive to the proposed site investigation surveys are breeding birds or those foraging within close proximity to the survey vessels. These SCIs are ducks which could be found in the nearshore and coastal area. The Application Area does not overlap with the SAC so the SCIs will not be disturbed in the SPA. There is the potential that birds travel into the Application Area. The ducks listed are sensitive to visual and noise disturbance caused by vessels (Atterbury <i>et al.</i>, 2021) and may not resettle immediately after being flushed. Escape distances are given for red breasted merganser as 1.2km (per individual, Fliessbach <i>et al.</i>, 2019) suggesting that birds within close proximity to the SPA boundary could be flushed by the presence of the survey vessel. However, survey vessels will be slow moving, circa 5 knots and most of the time stationary. At such slow speeds, the vessels are effectively stationary in terms of bird displacement. The addition of 1-2 slow moving or stationary vessels in the nearshore/coastal will not constitute significant disturbance.</p> <p>The temporary nature and imperceptible effects of the site investigation surveys are not likely to have any effect on the prey species of the SCIs. Therefore, it is considered not likely that any bird species will be indirectly affected as a result of an effect on their fish prey species.</p> <p>Should the other Foreshore Licence applications be granted in the region, in-combination impacts will also be trivial in nature due to the nature and scale of the activities.</p>	No LSE
			<p>Dunlin (<i>Calidris alpina</i>) [A149]</p>	<p>Birds identified as being sensitive to the proposed ecology surveys are breeding birds or those foraging within close proximity to the survey vessels. These SCIs are wading birds which are found in the intertidal area during winter months. The Application Area does not overlap with the</p>	No LSE



Site Name (Site Code)	Distance to Application Area (km)	Impact Pathway	SCI	Assessment of LSE	Conclusion
			Black-tailed Godwit (<i>Limosa limosa</i>) [A156] Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157] Curlew (<i>Numenius arquata</i>) [A160]	<p>SAC so the SCIs will not be disturbed in the SPA. There is the potential that birds could be foraging in the intertidal region of the Application Area. The waders listed are sensitive to visual and noise disturbance caused by vessels (Atterbury <i>et al.</i>, 2021) and may not resettle immediately after being flushed. However, survey vessels will be slow moving, circa 5 knots and most of the time will be stationary. At such slow speeds, the vessels are effectively stationary in terms of bird displacement. The addition of 2-3 surveyors at the landfall undertaking the intertidal surveys or 1-2 additional slow moving or stationary vessels in the nearshore will not constitute significant disturbance.</p> <p>The temporary nature and imperceptible effects of the site investigation surveys are not likely to have any effect on the prey species of the SCIs. Therefore, it is considered not likely that any bird species will be indirectly affected as a result of an effect on their fish prey species.</p> <p>Should the other Foreshore Licence applications be granted in the region, in-combination impacts will also be trivial in nature due to the nature and scale of the activities.</p>	
		None	Wetland and Waterbirds [A999]	No impact pathway is identified that could affect the conservation objectives of this habitat within this SPA.	No LSE
Old Head of Kinsale SPA (IE004021)	1.0	Visual and noise disturbance In-combination Impacts	Kittiwake (<i>Rissa tridactyla</i>) [A188] Guillemot (<i>Uria aalge</i>) [A199]	<p>Birds identified as being sensitive to the proposed site investigation surveys are breeding birds or those foraging within close proximity to the survey vessels. These SCIs are listed as breeding seabird populations. Kittiwake and guillemot are considered to have low to moderate sensitivities to noise and visual disturbance (Atterbury <i>et al.</i>, 2021). Fliessbach <i>et al.</i> (2019) estimate that the escape distance (i.e., the distance at which individuals will be flushed by a vessel) is between 221m and 474m for these SCIs. Given the distance to the SPA, birds within the SPA will not be disturbed by the site investigation surveys.</p> <p>Both species have large foraging ranges (>200km, Woodward <i>et al.</i>, 2019). Although it is possible that individuals from the SPA will forage within the Application Area, they have low to moderate sensitivity to noise and visual disturbance (Atterbury <i>et al.</i>, 2021). Any disturbance effect will be very localised and temporary in nature and birds will be able to (1) move to alternative feeding grounds nearby and (2) are likely to quickly return to the area once the vessel has moved on. No significant effects are predicted.</p>	No LSE



Site Name (Site Code)	Distance to Application Area (km)	Impact Pathway	SCI	Assessment of LSE	Conclusion
				<p>The temporary nature and imperceptible effects of the investigative surveys are not likely to have any effect on the prey species of cormorant. Therefore, it is considered not likely that the species will be indirectly affected as a result of an effect on their fish prey species.</p> <p>Should the other Foreshore Licence applications be granted in the region, in-combination impacts will also be trivial in nature due to the nature and scale of the activities.</p>	
Cork Harbour SPA (IE004030)	2.7	Visual and noise disturbance In- combination Impacts	Little Grebe (<i>Tachybaptus ruficollis</i>) [A004] Great Crested Grebe (<i>Podiceps cristatus</i>) [A005] Shelduck (<i>Tadorna tadorna</i>) [A048] Wigeon (<i>Anas penelope</i>) [A050] Teal (<i>Anas crecca</i>) [A052] Pintail (<i>Anas acuta</i>) [A054] Shoveler (<i>Anas clypeata</i>) [A056] Red-breasted Merganser (<i>Mergus serrator</i>) [A069]	<p>Birds identified as being sensitive to the proposed site investigation surveys are breeding birds or those foraging within close proximity to the survey vessels. These SCIs are waterfowl (seaducks) which are found in the intertidal area or forage in the nearshore and coastal environment during winter months. Grebes and merganser are highly sensitive to noise and visual disturbance whilst the other SCIs are considered sensitive to noise and visual disturbance by Atterbury <i>et al.</i>, (2019). Grebes and merganser may not resettle quickly after flushing and a buffer of several kilometres is effectively lost as habitat for these species as a vessel passes by. Escape distances of 1.2km have been noted for individual merganser, although red-necked grebe (used as a proxy for the grebe SCIs) is noted to flush at as 221m from passing vessels (Fliessbach <i>et al.</i>, 2019).</p> <p>The Application Area does not overlap with the SAC so resident SCIs will not be disturbed in the SPA. The SPA boundary is also a further distance from the Application Area than the maximum flushing distance for merganser, indicating that the presence of the vessel in the Application Area will not disturb birds foraging in the SPA.</p> <p>There is the potential that SCIs could be foraging in the Application Area. Survey vessels will be slow moving, circa 5 knots and most of the time stationary. At such slow speeds, the vessels are effectively stationary in terms of bird displacement. Any disturbance effect will be very localised and temporary in nature and birds will be able to (1) move to alternative feeding grounds nearby and (2) are return to the area once the vessel has moved on. No significant effects are predicted.</p> <p>The temporary nature and imperceptible effects of the site investigation surveys are not likely to have any effect on the prey species of cormorant. Therefore, it is considered not likely that the species will be indirectly affected as a result of an effect on their fish prey species.</p> <p>Should the other Foreshore Licence applications be granted in the region, in-combination impacts will also be trivial in nature due to the nature and scale of the activities.</p>	No LSE



Site Name (Site Code)	Distance to Application Area (km)	Impact Pathway	SCI	Assessment of LSE	Conclusion
			Oystercatcher (<i>Haematopus ostralegus</i>) [A130] Dunlin (<i>Calidris alpina</i>) [A149] Black-tailed Godwit (<i>Limosa limosa</i>) [A156] Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157] Curlew (<i>Numenius arquata</i>) [A160] Redshank (<i>Tringa totanus</i>) [A162]	<p>Birds identified as being sensitive to the proposed site investigation surveys are breeding birds or those foraging within close proximity to the survey vessels. These SCIs are wading birds which are found in the intertidal area during winter months. The Application Area does not overlap with the SAC so the SCIs will not be disturbed in the SPA. There is the potential that birds could be foraging in the intertidal region of the Application Area. The waders listed are sensitive to visual and noise disturbance caused by vessels (Atterbury <i>et al.</i>, 2021) and may not resettle immediately after being flushed. However, survey vessels will be slow moving, circa 5 knots and most of the time stationary. At such slow speeds, the vessels are effectively stationary in terms of bird displacement. The addition of 2-3 surveyors at the landfall undertaking the intertidal surveys or 1-2 additional slow moving or stationary vessels in the nearshore will not constitute significant disturbance.</p> <p>The temporary nature and imperceptible effects of the site investigation surveys are not likely to have any effect on the prey species of the SCIs. Therefore, it is considered not likely that any bird species will be indirectly affected as a result of an effect on their fish prey species.</p> <p>Should the other Foreshore Licence applications be granted in the region, in-combination impacts will also be trivial in nature due to the nature and scale of the activities.</p>	No LSE
		Visual and noise disturbance In-combination Impacts	Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179] Common Gull (<i>Larus canus</i>) [A182] Lesser Black-backed Gull (<i>Larus fuscus</i>) [A183] Cormorant (<i>Phalacrocorax carbo</i>) [A017]	<p>These SCIs are listed as wintering species within the SPA. The Application Area does not overlap with the SAC and is outside the escape distance for these species (given as between 221m and 474m in Fliessbach <i>et al.</i>, 2019) so the SCIs will not be disturbed within the SPA.</p> <p>The Application Area lies within the foraging ranges of all species. The mean maximum distances noted in Woodward <i>et al.</i> (2019) range from 18.5km for black-headed gull to 35km, 50km and 533km for cormorant, common gull and lesser black-backed gull respectively. However, the species have low to moderate sensitivity to noise and visual disturbance (Atterbury <i>et al.</i> 2021). Any disturbance effect will be very localised and temporary in nature and birds will be able to (1) move to alternative feeding grounds nearby and (2) are likely to quickly return to the area once the vessel has moved on. No significant effects are predicted.</p> <p>The temporary nature and imperceptible effects of the site investigation surveys are not likely to have any effect on the prey species of any of the SCIs. Therefore, it is considered not likely that any bird species will be indirectly affected as a result of an effect on their fish prey species.</p> <p>Should the other Foreshore Licence applications be granted in the region, in-combination impacts will also be trivial in nature due to the nature and scale of the activities.</p>	No LSE



Site Name (Site Code)	Distance to Application Area (km)	Impact Pathway	SCI	Assessment of LSE	Conclusion
		Visual and noise disturbance In-combination Impacts	Common Tern (<i>Sterna hirundo</i>) [A193]	<p>Common tern is listed as a breeding SCI within the SPA. Tern has low to moderate sensitivity to noise and visual disturbance (Atterbury <i>et al.</i>, 2021). Fliessbach <i>et al.</i> (2019) estimate that the escape distance for gulls / terns is between 221m and 474m. Given the distance to the SPA, birds within the SPA will not be disturbed by the site investigation surveys.</p> <p>Common tern has a mean max foraging range of 30km (Woodward <i>et al.</i>, 2019) indicating that it is possible that individuals from the SPA will forage within the Application Area. However, survey vessels will be slow moving, circa 5 knots and most of the time stationary. At such slow speeds, the vessels are effectively stationary in terms of bird displacement. Any disturbance effect will be very localised and temporary in nature and birds will be able to (1) move to alternative feeding grounds nearby and (2) are likely to quickly return to the area once the vessel has moved on. No significant effects are predicted.</p> <p>The temporary nature and imperceptible effects of the site investigation surveys are not likely to have any effect on the prey species of cormorant. Therefore, it is considered not likely that the species will be indirectly affected as a result of an effect on their fish prey species.</p> <p>Should the other Foreshore Licence applications be granted in the region, in-combination impacts will also be trivial in nature due to the nature and scale of the activities.</p>	No LSE
		None	Wetland and Waterbirds [A999]	No impact pathway is identified that could affect the conservation objectives of this habitat within this SPA.	No LSE
Clonakilty Bay SPA (IE004081)	5.6	Visual and noise disturbance In-combination Impacts	Shelduck (<i>Tadorna tadorna</i>) [A048] Dunlin (<i>Calidris alpina</i>) [A149] Black-tailed Godwit (<i>Limosa limosa</i>) [A156] Curlew (<i>Numenius arquata</i>) [A160]	Birds identified as being sensitive to the proposed site investigation surveys are breeding birds or those foraging within close proximity to the survey vessels. These SCIs are wading birds and seaducks which are found primarily in the intertidal area during winter months, although shelduck can be found in nearshore and coastal waters. The Application Area does not overlap with the SAC so the SCIs will not be disturbed in the SPA. There is the potential that birds could be foraging in the Application Area. The waders and shelduck listed are sensitive to visual and noise disturbance caused by vessels (Atterbury <i>et al.</i> , 2021) and may not resettle immediately after being flushed. However, survey vessels will be slow moving, circa 5 knots and most of the time stationary. At such slow speeds, the vessels are effectively stationary in terms of bird displacement. The addition of 2-3 surveyors at the landfall undertaking the intertidal surveys or 1-2 additional slow moving or stationary vessels in the nearshore will not constitute significant disturbance.	No LSE



Site Name (Site Code)	Distance to Application Area (km)	Impact Pathway	SCI	Assessment of LSE	Conclusion
				<p>The temporary nature and imperceptible effects of the site investigation surveys are not likely to have any effect on the prey species of the SCIs. Therefore, it is considered not likely that any bird species will be indirectly affected as a result of an effect on their fish prey species.</p> <p>Should the other Foreshore Licence applications be granted in the region, in-combination impacts will also be trivial in nature due to the nature and scale of the activities.</p>	
		None	Wetland and Waterbirds [A999]	No impact pathway is identified that could affect the conservation objectives of this habitat within this SPA.	No LSE
Sovereign Islands SPA (IE004124)	8.7	Visual and noise disturbance In-combination Impacts	Cormorant (<i>Phalacrocorax carbo</i>) [A017]	<p>The SPA has been designated for breeding cormorant. The breeding season extends from February to September. As a diver, the SCI is highly sensitive to noise and visual disturbance (Atterbury <i>et al.</i>, 2021) from vessel traffic. Species may not resettle quickly after being flushed. Fliessbach <i>et al.</i> (2019) estimate that the escape distance for great cormorant is 258m, suggesting that a small area of habitat (up to 0.5km wide) may temporarily be lost as a vessel passes through.</p> <p>The predicted escape distances do not overlap with the SPA boundary indicating that individuals within the SPA will not be disturbed. However, the mean maximum foraging distance for Cormorant is 25 km (Woodward <i>et al.</i>, 2019). It is possible that foraging cormorant may be present in the Application Area. Survey vessels will be slow moving, circa 5 knots and most of the time stationary. At such slow speeds, the vessels are effectively stationary in terms of bird displacement. Any disturbance effect will be very localised and temporary in nature and birds will be able to (1) move to alternative feeding grounds nearby and (2) return to the area once the vessel has moved on. No significant effects are predicted.</p> <p>The temporary nature and imperceptible effects of the site investigation surveys are not likely to have any effect on the prey species of cormorant. Therefore, it is considered not likely that the species will be indirectly affected as a result of an effect on their fish prey species.</p> <p>Should the other Foreshore Licence applications be granted in the region, in-combination impacts will also be trivial in nature due to the nature and scale of the activities.</p>	No LSE



5. Screening Statement

Having regard to the relevant legislation and the methodology followed, a Stage 1 Screening for Appropriate Assessment was undertaken to ascertain whether or not the proposed site investigations are likely to have a significant effect on any European site.

In total 21 European sites were deemed relevant and screened in for Appropriate Assessment Stage 1 Screening, all in the vicinity of the Application Area. These include 14 SACs and seven SPAs. Two of the SPAs within the search area for relevant SPAs, Galley Head to Duneen Point SPA and Seven Heads SPA, are designated solely for Chough (*Pyrrhocorax pyrrhocorax*). Chough is associated primarily with terrestrial habitat and is highly unlikely to occur within the marine area. Therefore, Galley Head to Duneen Point SPA and Seven Heads SPA have not been considered for Appropriate Assessment Stage 1 Screening

Table 5-1 provides a summary of the relevant QIs and SCIs for the European sites, the impact pathways screened and the screening decision. The information to support Screening for Appropriate Assessment concluded that for all 21 of the relevant European sites the proposed site investigations **will not** have a likely significant effect either alone or in combination with other plans or projects on any European sites. These 21 European sites will not need to be taken to Stage 2 Appropriate Assessment as the potential for likely significant effects can be excluded.

Table 5-1 : Summary of Stage 1 Screening Conclusions

European Site	Impact Pathway	Relevant Qualifying Interests	Conclusion
Kilkeran Lake and Castlefcreke Dunes SAC (IE001061)	Habitat Loss / Disturbance In-combination Impacts	Embryonic shifting dunes [2110] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] Coastal lagoons [1150] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	No LSE
Blackwater River (Cork/Waterford) SAC (IE002170)	Physical injury and/or disturbance due to underwater sound changes In-combination Impacts	Twaite Shad (<i>Alosa fallax fallax</i>) [1103]	No LSE
	Visual and noise disturbance	Otter (<i>Lutra lutra</i>) [1355]	No LSE
Lower River Shannon SAC (IE0021650)	Physical injury and/or disturbance due to underwater sound changes In-combination Impacts	Bottlenose dolphin (<i>Tursiops truncates</i>)	No LSE
Slyne Head Islands SAC (IE000328)	Physical injury and/or disturbance due to underwater sound changes In-combination Impacts	Bottlenose dolphin (<i>Tursiops truncates</i>)	No LSE
Slyne Head Peninsula SAC (IE002074)	Physical injury and/or disturbance due to underwater sound changes In-combination Impacts	Bottlenose dolphin (<i>Tursiops truncates</i>)	No LSE
West Connacht Coast SAC (IE002998)	Physical injury and/or disturbance due to underwater sound changes In-combination Impacts	Bottlenose dolphin (<i>Tursiops truncates</i>)	No LSE
Duvailaun Islands SAC (IE00495)	Physical injury and/or disturbance due to underwater sound changes In-combination Impacts	Bottlenose dolphin (<i>Tursiops truncates</i>)	No LSE
Rockabill to Dalkey Island SAC (IE 003000)	Physical injury and/or disturbance due to underwater sound changes In-combination Impacts	Harbour Porpoise (<i>Phocoena phocoena</i>) [1351]	No LSE
Basket Islands SAC (IE002172)	Physical injury and/or disturbance due to underwater sound changes In-combination Impacts	Harbour porpoise (<i>Phocoena phocoena</i>) [1351] Grey seal (<i>Halichoerus grypus</i>) [1364]	No LSE



European Site	Impact Pathway	Relevant Qualifying Interests	Conclusion
Roaringwater Bay and Islands SAC (IE000101)	Physical injury and/or disturbance due to underwater sound changes In-combination Impacts	Harbour porpoise (<i>Phocoena phocoena</i>) [1351] Grey seal (<i>Halichoerus grypus</i>) [1364]	No LSE
West Wales Marine / Gorllewin Cymru Forol SAC (UK0030397)	Physical injury and/or disturbance due to underwater sound changes In-combination Impacts	Harbour Porpoise (<i>Phocoena phocoena</i>) [1351]	No LSE
North Channel SAC (UK0030399)	Physical injury and/or disturbance due to underwater sound changes In-combination Impacts	Harbour Porpoise (<i>Phocoena phocoena</i>) [1351]	No LSE
North Anglesey Marine / Gogledd Môn Forol SAC (UK0030398)	Physical injury and/or disturbance due to underwater sound changes In-combination Impacts	Harbour Porpoise (<i>Phocoena phocoena</i>) [1351]	No LSE
Bristol Channel Approaches / Dynesfeydd Môr Hafren SAC (UK0030396)	Physical injury and/or disturbance due to underwater sound changes In-combination Impacts	Harbour Porpoise (<i>Phocoena phocoena</i>) [1351]	No LSE
Courtmacsherry Bay SPA (IE004219)	Visual and noise disturbance In-combination impacts	Great Northern Diver (<i>Gavia immer</i>) [A003] Shelduck (<i>Tadorna tadorna</i>) [A048] Wigeon (<i>Anas penelope</i>) [A050] Red-breasted Merganser (<i>Mergus serrator</i>) [A069] Dunlin (<i>Calidris alpina</i>) [A149] Black-tailed Godwit (<i>Limosa limosa</i>) [A156] Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157] Curlew (<i>Numenius arquata</i>) [A160] Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179] Common Gull (<i>Larus canus</i>) [A182]	No LSE
	None	Wetland and Waterbirds [A999]	No LSE
Cork Harbour SPA (IE004030)	Visual and noise disturbance In-combination impacts	Little Grebe (<i>Tachybaptus ruficollis</i>) [A004] Great Crested Grebe (<i>Podiceps cristatus</i>) [A005] Cormorant (<i>Phalacrocorax carbo</i>) [A017] Shelduck (<i>Tadorna tadorna</i>) [A048] Wigeon (<i>Anas penelope</i>) [A050] Teal (<i>Anas crecca</i>) [A052] Pintail (<i>Anas acuta</i>) [A054] Shoveler (<i>Anas clypeata</i>) [A056] Red-breasted Merganser (<i>Mergus serrator</i>) [A069] Oystercatcher (<i>Haematopus ostralegus</i>) [A130] Dunlin (<i>Calidris alpina</i>) [A149] Black-tailed Godwit (<i>Limosa limosa</i>) [A156] Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157] Curlew (<i>Numenius arquata</i>) [A160] Redshank (<i>Tringa totanus</i>) [A162] Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179] Common Gull (<i>Larus canus</i>) [A182] Lesser Black-backed Gull (<i>Larus fuscus</i>) [A183]	No LSE



European Site	Impact Pathway	Relevant Qualifying Interests	Conclusion
	None	Common Tern (<i>Sterna hirundo</i>) [A193] Wetland and Waterbirds [A999]	No LSE
Old Head of Kinsale SPA (IE004021)	Visual and noise disturbance In-combination impact	Kittiwake (<i>Rissa tridactyla</i>) [A188] Guillemot (<i>Uria aalge</i>) [A199]	No LSE
Clonakilty Bay SPA (IE004081)	Visual and noise disturbance In-combination impacts	Shelduck (<i>Tadorna tadorna</i>) [A048] Dunlin (<i>Calidris alpina</i>) [A149] Black-tailed Godwit (<i>Limosa limosa</i>) [A156] Curlew (<i>Numenius arquata</i>) [A160]	No LSE
	None	Wetland and Waterbirds [A999]	No LSE
Sovereign Islands SPA (IE004124)	Visual and noise disturbance In-combination impacts	Cormorant (<i>Phalacrocorax carbo</i>) [A017]	No LSE



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