

# **POWERING UP OFFSHORE SOUTH COAST**

Supporting Information for Screening for Appropriate Assessment (SISAA)



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Document status					
Version	Purpose of document	Authored by	Reviewed by	Approved by	Review date
S1 P01	Draft for internal review	AE	GMcE	GMcE	03/10/2024
S3 P01	Draft for client review	AE	GMcE	GMcE	04/10/2024
S3 P02	Client and Legal comments received	AE	GMcE	GMcE	15/10/2024
S3 P03	Client and Legal comments addressed	AE	GMcE	GMcE	04/11/2024
A1 C02	Updates due to new HWM area	AE	GMcE	GMcE	29/01/2025

#### Approval for issue

GMcE 29 January 2025
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# **EXECUTIVE SUMMARY**

The Powering Up Offshore South Coast (PUOSC) will be the first state-led offshore renewable electricity connection in Ireland. While the project is at an early stage of development, it is expected to include the development of offshore substation(s) off the southern coast of Ireland, new onshore and offshore transmission cables, and new onshore compensation compounds as required to accommodate the connection on the existing onshore transmission system. Following publication of the South Coast Designated Maritime Area Plan (SC-DMAP) by the Government of Ireland on 25<sup>th</sup> October 2024, as part of Shaping Our Offshore Energy Future and the PUOSC project, EirGrid plans to develop offshore electricity substation(s) and associated offshore transmission cables off the south coast of Cork, Waterford, and Wexford.

There is currently insufficient baseline geophysical, geotechnical environmental and archaeological information available to fully inform the preliminary and detailed design of the offshore elements of the PUOSC project. In order to progress the design elements of the project and carry out the necessary environmental assessments, further baseline data must be obtained. Therefore, site investigations and surveys must be undertaken.

This report has been prepared by RPS, on behalf of EirGrid, in support of the Maritime Usage Licence Application (MULA) to the Maritime Area Regulatory Authority (MARA). The MULA is for site investigation works (SI works) to inform engineering design of the PUOSC project. The results of these surveys will also provide baseline data for subsequent environmental assessments, e.g. Appropriate Assessment (AA).

The SI works include coastal and marine geophysical, geotechnical, environmental and archaeological investigations below the High Water Mark (HWM) as summarised below.

- Coastal geophysical surveys (land-based below the HWM);
- Marine geophysical surveys (undertaken from survey vessel(s));
- Coastal geotechnical surveys (land-based below the HWM);
- Marine Geotechnical Surveys (undertaken from survey vessel(s) or jack-up barge(JUB)).
- Metocean and Marine Mammal Acoustic Device Deployment (deployed by vessel and moored to seabed)
- Coastal Environmental Surveys (land-based below the HWM);
- Marine Environmental Surveys (undertaken from survey vessel(s));
- Archaeological surveys; and
- Other surveys for: noise; shipping and navigation; unmanned aircraft systems/ drone surveys; and aerial surveys for birds and marine mammals.

This Supporting Information for Screening for Appropriate Assessment (SISAA) report has been prepared to provide all necessary information to MARA for them to complete a Screening for Appropriate Assessment of the potential for Likely Significant Effects (LSE) on European sites, in view of their conservation objectives, arising from the SI works either individually or in combination with other plans or projects.

The overall findings of this SISAA are as follows.

- 1. The SI works are not connected with or necessary to the management of the nature conservation interest of any European site.
- 2. Surveys undertaken within the intertidal zone have the potential to disturb otter and wintering bird species that may be within the immediate vicinity of the survey area. Surveys undertaken at sea close to land have the potential to disturb breeding birds at their nests.
- 3. Significant effects due to disturbance of seabirds utilising the marine environment (i.e. foraging or rafting) are considered unlikely due to the temporary and limited nature of the surveys, in a region with a baseline of regular vessel activity.
- 4. Intrusive coastal geotechnical investigations and environmental grab/core sampling will take place in the intertidal and subtidal zones. Sampling locations will be discrete and confined to the area of investigation, however, without further information on locations and without the application of

mitigation, there is potential for loss of, or damage to, QI habitats in Hook Head SAC and/or Bannow Bay SAC. In the subtidal zone, suspended sediments may be released into the water column while the SI works are being conducted and there is potential for smothering of sensitive habitats such as reefs.

- 5. The subtidal marine geophysical, geotechnical and metocean surveys will introduce subsea noise that has the potential to impact on bottlenose dolphin (*Tursiops truncates*), harbour porpoise (*Phocoena phocoena*), grey seal (*Halichoerus grypus*) and harbour seal (*Phoca vitulina*), as well as migratory fish species (sea lamprey *Petromyzon marinus*, river lamprey *Lampetra fluviatilis*, Atlantic salmon *Salmo salar* and twaite shad *Alosa fallax fallax*) and otter (*Lutra lutra*) foraging at sea.
- 6. It is our opinion that without the implementation of mitigation measures, it cannot be excluded on the basis of objective scientific information that the project, individually or in combination with other plans or projects, will have a significant effect on the European sites listed below, including two sites in the UK. It is respectfully submitted that MARA should carry out an Appropriate Assessment and a Natura Impact Statement (NIS) will be submitted to MARA accordingly.
  - Bannow Bay SPA
  - Ballycotton Bay SPA
  - Ballyteige Burrow SPA
  - Mid Waterford Coast SPA
  - Tramore Back Strand SPA
  - Dungarvan Harbour SPA
  - Tacumshin Lake SPA
  - Wexford Harbour and Slobs SPA
  - Mid Waterford Coast SPA
  - Keeragh Islands SPA
  - Hook Head SAC
  - River Barrow and River Nore SAC
  - Saltee Islands SAC
  - Blackwater River (Cork/Waterford) SAC
  - Lower River Suir SAC
  - Slaney River Valley SAC
  - Carnsore Point SAC
  - Blackwater Bank SAC
  - Roaringwater Bay and Islands SAC
  - Glengarriff Harbour and Woodland SAC
  - Pembrokeshire Marine/ Sir Benfro Forol SAC
  - West Wales Marine / Gorllewin Cymru Forol SAC

# 1 INTRODUCTION

## 1.1 Overview

The Irish Government is taking major steps to make Ireland carbon neutral by 2050. These steps include a commitment to increase the proportion of electricity generated from renewable sources to 80% by 2030. The Climate Action Plan 2024 (DECC, 2024) places offshore wind power at the centre of this commitment, with a key target being the grid connection of at least 5 Gigawatts (GW) of offshore wind by 2030.

EirGrid develops, manages, and operates Ireland's electricity grid and are responsible for the safe, secure and reliable supply of Ireland's electricity. EirGrid was established to act as the independent Transmission System Operator (TSO), in line with the requirements of the EU Electricity Directive (EU) 2019/944 (EU Electricity Directive). EirGrid became operational as the TSO on 1 July 2006 and is a public limited company, registered under the Companies Acts. The Irish Government has also designated EirGrid as the TSO and Transmission Asset Owner (TAO)/ Offshore Asset Owner (OAO) for Ireland's offshore electricity grid.

In March 2023, the Department of the Environment, Climate and Communications (DECC) published the "Accelerating Ireland's Offshore Energy Programme; Policy Statement on the Framework for Phase Two Offshore Wind" (the Framework). This policy identified EirGrid as the developer of new offshore grid transmission infrastructure to connect new offshore wind farms on the south coast.

On the basis of the policy, EirGrid has initiated the Powering Up Offshore South Coast (PUOSC) project. This will be the first state led offshore renewable electricity connection in Ireland. The project was included in the European Network of Transmission System Operators for Electricity (ENTSO-E) Ten Year Network Development Plan (TYNDP) in 2024. While the project is at an early stage of development, it is expected to include the development of offshore substation(s) off the southern coast of Ireland, new onshore and offshore transmission cables and new onshore compensation compound as required to accommodate the connection on the existing onshore transmission system. The development area will be established based on the South Coast Designated Maritime Area Plan (SC-DMAP) which was published by the Government of Ireland on 25<sup>th</sup> October 2024. This infrastructure will facilitate up to 900 MW of power generated by offshore wind farms in Irish waters into our national electricity grid.

DECC's Framework outlined a four-phase process for developing offshore wind energy infrastructure. In the short-term, the framework is based on a developer-led approach, taking advantage of projects that have been in development for several years. In the medium to long-term it transitions to a plan-led approach in which EirGrid plays a key role.

EirGrid are undertaking the engineering, planning and environmental services necessary to provide the grid infrastructure to support the development of offshore wind.

#### PHASE 2

As part of the government-led approach to the delivery of offshore wind, known as Phase 2, approximately 900 MW of electricity will be supplied from wind farms off Ireland's south coast. It is anticipated that these offshore wind farms will be constructed in Area A – Tonn Nua within the SC-DMAP area (see Figure 1.1).

These wind farms will be provided by private developers. EirGrid will be responsible for delivering the infrastructure that will connect the power from these wind farms off the south coast to the onshore grid. This will be realised through EirGrid's PUOSC project.

Following publication of the SC-DMAP, EirGrid plans to develop offshore electricity substation(s) and associated offshore transmission cables. This new infrastructure will connect the power generated by offshore windfarms to the national electricity grid.



Figure 1.1 SC-DMAP Area

The main components of the PUOSC project are:

- Offshore substation(s) to be located within Maritime Area A (Tonn Nua) of the SC-DMAP (Figure 1.1).
- A connection between the offshore substation(s) and onshore compensation compounds. This will
  involve offshore transmission cables; and
- Onshore compensation compounds.

The precise location of the offshore substations have not yet been determined, nor has it been determined how and where they will connect to the national electricity grid onshore. However, due to onshore grid capacity constraints, it is anticipated that one 450 MW offshore to onshore connection will be developed in the Cork area and the other 450 MW offshore to onshore connection will be developed in the Waterford/ Wexford area.



Figure 1.2 Typical Offshore Wind Project Schematic

## **1.2** Accompanying Reports

The Maritime Usage Licence Application (MULA) consists of the following documents and reports:

- Maritime Usage Licence Application;
- Project Description including drawings;
- Assessment of Impact on the Maritime Usage (AIMU);
- Supporting Information for Screening for Appropriate Assessment (SISAA);
- Risk Assessment for Annex IV Species;
- Subsea Noise Technical Report.

In order to avoid repetition, this report makes reference to these other reports and drawings throughout.

## **1.3 Purpose of this Report**

This report has been prepared by RPS, on behalf of EirGrid, to provide information on the site investigation works (SI works) proposed to be undertaken for the PUOSC project in support of the MULA to MARA. This Supporting Information for Screening for Appropriate Assessment (SISAA) report provides all necessary information to MARA for them to complete a Screening for Appropriate Assessment of the potential for likely significant effects on European sites, in view of their conservation objectives, arising from the SI works either individually or in combination with other plans or projects.

This report provides a brief description of the SI works, consisting of coastal and marine geophysical, geotechnical, metocean, environmental, archaeological and other investigations and surveys that are proposed to be undertaken. A more detailed description is provided in the separate 'Project Description' document (report ref: IE001220-RPS-RP-XX-RP-EN-0001). The Project Description includes details of the methods, equipment and quantities for proposed activities and drawings of the proposed locations for the SI works. The results of the SI works will be used to inform engineering design and will also provide baseline data for any subsequent environmental assessments.

## **1.4** Statement of Authority

The technical competence of the authors is outlined below:

s Technical Director in the Environmental Services Business Unit in RPS. He has over 24 years' experience. He holds an honours degree in Civil Engineering (B.E.) from NUI, Galway, a postgraduate diploma in Environmental Sustainability from NUI, Galway, and a Master's in Business Studies from the Irish Management Institute/ UCC. **Security** is also a Chartered Engineer and Project Management Professional with the Project Management Institute (PMI-PMP). He has managed the delivery of numerous environmental projects including marine and terrestrial projects that have required environmental impact assessment, appropriate assessment, and Annex IV species reports.

s a Principal Scientist in the Environmental Services Business Unit in RPS. She has over 13 years' experience in the marine science field and is a Chartered Environmentalist and a Full Member of the Institute of Environmental Sciences. Holds an honours degree in Environmental Science from Trinity College Dublin and a Master's in Marine Environmental Protection from Bangor University, Wales. Has delivered the environmental assessments for a wide range of marine and coastal projects, including environmental impact assessment, appropriate assessment and Annex IV species reports.

is a Project Scientist in the Environmental Services Business Unit in RPS. She holds a Bachelor's Degree in Marine Science from the University of Galway and Master's Degree in Climate Change and Managing the Marine Environment from Heriot-Watt University Edinburgh. She has three years' experience working in consultancy, assisting on a wide range of projects from offshore renewable energy projects to flood relief schemes, including marine and terrestrial surveys. She is a qualifying CIEEM member.

is a Scientist in the Environmental Services Business Unit in RPS. He holds a Bachelor's Degree in Environmental Science from the University of Galway. He has two years' experience working in consultancy, assisting on a wide range of projects from offshore renewable energy projects to flood relief schemes, including terrestrial surveys.

This SISAA report has been prepared in compliance with the legislative and policy requirements described in Section 1.5 below.

## 1.5 Legislation

### 1.5.1 European Legislation

Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (as amended) (the Habitats Directive) provides protection for habitats and species of European importance; Council Directive 2009/147/EC on the conservation of wild birds (Codified version) (the Birds Directive) aims to protect all of the 500 wild bird species naturally occurring in the European Union (EU). Areas designated for protection under the Habitats Directive are described as Special Areas of Conservation (SAC) and those designated under the Birds Directive as Special Protection Areas (SPA) and the sites are known collectively as the Natura 2000 network which includes European sites (see section 1.5.2.4). As each member of the EU is required to designate areas in their jurisdictions, the establishment of this network of European sites under Articles 3 to 9 of the Habitats Directive is the key measure to protect nature and biodiversity in the EU.

Articles 6(3) and 6(4) of the Habitats Directive set out the decision-making tests for plans and projects likely to have a significant effect on or to adversely affect the integrity of Natura 2000 sites. Article 7 of the Habitats Directive extends the scope of its articles 6(3) and 6(4) to the Birds Directive.

Article 6(3) establishes the requirement for Appropriate Assessment (AA):

"Any plan or project not directly connected with or necessary to the management of the [Natura 2000] site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subjected to appropriate assessment of its implications for the site in view of the site's conservation objectives. Considering the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the public."

Further detail on the stages of AA is provided in Section 3.2.

In the context of the marine works to which this MULA relates, the Habitats and Birds Directives have been transposed into Irish Legislation under, amongst other things, the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011), as amended.

Each European site has assigned Conservation Objectives (COs) and a list of Qualifying Interests (QI). The CO concept appears in the eighth recital of the Habitats Directive which reads: "whereas it is appropriate, in each area designated, to implement the necessary measures having regard to the conservation objectives pursued". Article 1 then explains that "conservation means a series of measures required to maintain or restore the natural habitats and the populations of species of wild fauna and flora at a favourable status".

The National Parks and Wildlife Service (NPWS) has established COs for each European site in Ireland. These are published on their website. NPWS advise in the general introductory notes of their site-specific conservation objectives (SSCO) series publications, that an appropriate assessment based on their "published conservation objectives will remain valid even if the CO targets are subsequently updated, providing they were the most recent objectives available when the assessment was carried out". NPWS advise that to assist in that regard, it is essential that the date and version are included when objectives are cited.

### 1.5.2 National Legislation

### **1.5.2.1 Maritime Area Planning Act**

The Maritime Area Planning Act, 2021 (as amended) established MARA. One of the functions of MARA is to determine applications for the granting of licences to undertake any of the activities included in Schedule 7 of the Maritime Area Planning Act, 2021 (as amended).

The following definitions in relation to Appropriate Assessment (AA) are included in Section 2(1) of the Maritime Area Planning Act, 2021 (as amended):

"screening for appropriate assessment" shall be construed in accordance with, as appropriate—

(a) section 177U of the Act of 2000, or

(b) Part 5 of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011)

"appropriate assessment" shall be construed in accordance with, as appropriate—

(a) section 177V of the Act of 2000, or

(b) Part 5 of the European Communities (Birds and Natural Habitats) Regulations (S.I. No. 477 of 2011);

where the Act of 2000 refers to the Planning and Development Act 2000 (as amended).

Under Section 112 of the Maritime Area Planning Act, 2021 (as amended), MARA has been designated as a competent authority for the purposes of Part 5 of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011); and appropriate assessments to which that Part applies.

MARA is required to carry out a screening for Appropriate Assessment (AA) in accordance with Section 117(4)(a) of the Maritime Area Planning Act, 2021 (as amended).

Where MARA determines that an AA is required it shall carry out the AA in accordance with Section 117(7)(a) of the Maritime Area Planning Act, 2021 (as amended).

### 1.5.2.2 Screening Out for AA

Under Regulation 42(7) of the European Communities (Birds and Natural Habitats) Regulations 2011 (as amended) the competent authority in this case MARA shall determine that an AA of a project *is not required* where the plan or project is not directly connected with or necessary to the management of the site as a European Site *and* if it can be excluded on the basis of objective scientific information following screening that the project, individually or in combination with other plans or projects, will have a significant effect on a European site.

#### 1.5.2.3 Screening In for AA

Under Regulation 42(6) of the European Communities (Birds and Natural Habitats) Regulations 2011 (as amended) the competent authority shall determine that an AA of a plan or project *is required* where the plan or project is not directly connected with or necessary to the management of the site as a European Site and if it cannot be excluded, on the basis of objective scientific information following screening under this Regulation, that the plan or project, individually or in combination with other plans or projects, will have a significant effect on a European site. Under Section 117(4) of the Maritime Area Planning Act, 2021 (as amended) the MARA shall, as soon as is practicable after it receives a MUL application and if it considers it necessary to do so in its capacity as the competent authority, carry out screening for Appropriate Assessment in respect of the proposed maritime usage the subject of the application.

Where the competent authority determines that an AA is required, they shall make a determination under Article 6(3) of the Habitats Directive as to whether or not the proposed development would adversely affect the integrity of a European site and an Appropriate Assessment shall be carried out by the competent authority before consent is given for the proposed development - see Regulation 42(11) European Communities (Birds and Natural Habitats) Regulations 2011 (as amended).

#### 1.5.2.4 European Sites and Natura 2000 Sites

The term European site is defined in the European Communities (Birds and Natural Habitats) Regulations 2011 (as amended) as:

*"European Site" means—* (a) a candidate site of Community importance, (b) a site of Community importance, (c) a candidate special area of conservation,

(d) a special area of conservation,

- (e) a candidate special protection area, or
- (f) a special protection area;

The term Natura 2000 is defined in the same Regulations as:

"Natura 2000" means the European network of special areas of conservation under the Habitats Directive and special protection areas under the Birds Directive, provided for by Article 3(1) of the Habitats Directive and, for the purposes of these Regulations, includes European Sites.

As such, and as adopted in this report, the term European site refers to one of the sites comprising the Natura 2000 network.

## 2 **PROJECT DESCRIPTION**

A detailed Project Description report, including drawings, has been included as a separate report to the MULA to reduce repetition in reports. Please refer to this document for the detail on each of the elements summarised in the text below.

In summary, the PUOSC project SI works Area of Interest (AoI) is located off the south coast of Ireland from the High Water Mark (HWM) out into the Celtic Sea. The AoI has been developed to include:

- Potential areas where offshore substations (OSS) may be constructed,
- Potential offshore transmission cable corridors from the OSS locations towards seven potential landfall zones in coastal areas, and
- The intertidal area below the HWM at seven potential landfall zones where the offshore transmission cables will come to shore and connect to onshore infrastructure.

This area is almost entirely within the area of the SC-DMAP except for a number of coastal locations. The AoI also includes the full extent of SC-DMAP Area A Tonn Nua within which it is proposed that the OSS will be located.

A site location map with the proposed locations of SI works is shown in Figure 2.2 through to Figure 2.9 in the Project Description document. More detailed drawings are provided in Appendix A of the same document.

The total AoI encompass an area of 2,336 km<sup>2</sup>. The western extent of the AoI is at Ringroe in County Cork (approx. 10 km south of Crosshaven and 13 km east of Kinsale) and extends eastwards to Cullenstown in County Wexford (approx. 4 km east of Bannow Bay and 6 km south of Wellingtonbridge). The AoI extends into the offshore area to approx. 34 km (18.4 nm) from the coastline at its furthest distance (measured from Bunmahon).

The Aol includes coastal areas below the HWM from Ringroe, Co. Cork to Ballycrenane Co. Cork, and from west of Bunmahon, Co Waterford to east of Bannow Bay, Co. Wexford. Seven potential landfall locations and zones for surveys and investigations have been identified and are summarised in Table 2.1.

Landfall Zone	Nearest Townlands	County
A	Ballintra West, Ballintra East, Inch, Lahard	Cork
В	Ballybrangan, Ballycroneen West, Ballyrobin South	Cork
С	Garryvoe Lower, Ballybutler, Ballycrenane	Cork
D	Templeyvrick, Ballynasissala, Bunmahon, Ballynagigla, Knockmahon	Waterford
E	Ramstown, Carnivan	Wexford
F	Bannow	Wexford
G	Haggard, Blackhall, Ballymadder	Wexford

#### Table 2.1 Potential Landfall Locations to be Investigated

The drawings prepared in support of the MULA are included in Appendix A of the Project Description document. As described in more detail in the Project Description document, the proposed locations shown in the figures and drawings are subject to refinement based on the results of the coastal and marine geophysical and environmental surveys. Similarly, the location may be moved due to the presence of obstructions/ refusals at individual locations, i.e. where a physical object, e.g. a subsurface boulder, prevents the borehole, CPT, etc., from going to its target depth. In such circumstances, the borehole location is moved to another nearby location away from the obstruction and drilled again to the target depth.

Following the assessment of the results of the SI works, it may be necessary to undertake further SI works in particular areas within the AoI, e.g., potential OSS locations, along routes for the offshore transmission cable corridors and approaches to landfall zones. The proposed SI works, including the quantities detailed and assessed in this MULA, include contingencies to cover any follow up investigations that may be undertaken at refined locations. For the avoidance of doubt, this assessment is based on the quantities stated in the Project Description as these are the maximum quantities that will be undertaken as part of the SI works.

The activities proposed to be carried out within the AoI are summarised in Table 2.2. It should be noted that the information provided in this table lists the proposed activities. Where possible and efficient to do so, activities will be grouped together and undertaken as part of one survey campaign. For example, the marine geophysical survey campaign will likely involve one vessel undertaking the multi-beam echosounder

(MBES), sub-bottom profiler (SBP), side scan sonar (SSS) and magnetometer surveys, with the magnetometer survey providing the information necessary for the archaeological geophysical survey. Similarly, the marine environmental drop-down video (and/or remotely operated vehicle; ROV) and benthic grab sampling surveys will, where convenient to do so, be undertaken from the geotechnical survey vessel.

#### Table 2.2Proposed SI works Activities

urvey Type Survey Elements		Maximum Quantity (where relevant)
Coastal Geophysical Surveys	Ground Penetrating Radar (GPR) and/or Seismic Refraction.	n/a
	Topographical surveying techniques including UAS, GPS, GNSS devices	n/a
Marine Geophysical Surveys	Multi Beam Echosounder (MBES).	n/a
(undenaken nom survey vessel(s))	Sub-bottom profiler (SBP) including Ultra-High Resolution Seismic (UHRS) survey.	n/a
	Side Scan Sonar (SSS).	n/a
	Magnetometer.	n/a
Coastal Geotechnical Surveys (land-based below the HWM)	Trial Pit Investigations.	42
Marine Geotechnical Surveys (undertaken from survey vessel(s) or	Grab sampling (this is the same campaign as the surveys included under the Environmental Surveys).	420 (subtidal)
jack-up barge; JUB)	Vibrocore testing.	276
	Borehole investigations (including downhole Cone Penetration Testing; CPT and sampling).	21 (inshore) 8 (OSS locations)
	Shallow CPT.	276
	Deep Drive CPT.	16
Metocean and Marine Mammal	Metocean buoy.	2
by vessel and moored to seabed)	Acoustic Doppler Current Profiler (ADCP).	3
	Marine mammal static acoustic monitoring (SAM)	16 locations (4 SAMS x 4 different locations)
Coastal Environmental Surveys (land-based below the HWM)	Ecological walkover surveys (habitats, bat activity and roose assessment, mammals including otter).	n/a
	Ornithological vantage point surveys.	n/a
	Marine mammal vantage point surveys.	n/a
	Intertidal core sampling survey.	Intertidal cores = 126
Marine Environmental Surveys (undertaken from survey vessel(s))	Drop-down video (DDV) and/or Remotely Operated Vehicles (ROV) survey	n/a
	Grab sampling (this is the same campaign as the surveys included under the Marine Geotechnical Surveys Surveys).	Subtidal = As per geotechnical specification.
	Ornithological surveys (boat-based)	n/a
	Marine mammal surveys (boat-based) including passive acoustic monitoring (PAM).	Monthly surveys for minimum two- year period.
	Water Quality Samples, including Conductivity, Temperature and Depth (CTD) Measurements	n/a
Archaeological Surveys	Intertidal Survey.	n/a
	Marine Geophysical Survey (this is the same campaign as the Marine Geophysical Survey above).	n/a
	Sampling	n/a
	Dive Survey.	n/a
	Wade Survey.	n/a

Survey Type	vey Type Survey Elements	
	Monitoring.	n/a
Other Surveys	Noise Surveys.	n/a
	Shipping & Navigation Survey.	n/a
	Unmanned Aircraft Systems (UAS)/ drone surveys.	n/a
	Aerial Surveys (birds and marine mammals).	n/a

### 2.1.1 Vessels

At the time of this application specific details of the survey vessels to be used were not available and were subject to an ongoing tender process. Based on typical survey vessels operating in Irish waters, the SI works are proposed to utilise vessels which range in length between 15 m and 75 m, have an endurance of up to 30 days and require a draft depth greater than 15 m below lowest astronomical tide (LAT) to safely operate. Such vessels will therefore generally be deployed for survey tasks from approximately the 15 m depth contour of the LAT to the seaward extent of the Aol.

In cases where survey is required but larger survey vessels cannot be deployed safely (i.e. in waters typically shallower than 15 m below LAT) smaller vessels may be used subject to safe vessel draft limits and other local conditions.

For the shallowest locations, including the intertidal zone, and where intrusive geotechnical survey is required (i.e. vibrocores, CPTs, boreholes and grab samples), such investigations may be undertaken from a jack-up barge (JUB). Where required, the JUB will be towed to and from the investigation sites by tugs.

Survey vessels will be used to undertake the following surveys:

- Coastal and marine geophysical surveys (one vessel <15 m; another vessel >15 m LAT);
- Coastal and marine geotechnical surveys (one vessel <15 m and the JUB; another vessel >15 m LAT);
- Coastal and marine environmental surveys (one vessel <15 m and another vessel >15 m LAT. Usually undertaken from one of the geophysical and/or geotechnical survey vessels);
- Coastal and marine archaeological surveys (one vessel <15 m and another vessel >15 m LAT. Usually undertaken from one of the geophysical and/or geotechnical survey vessels);
- Boat-based ornithology surveys (one vessel); and
- Boat-based marine-mammal surveys (one vessel).

In addition, vessels will be required to deploy and retrieve the static recording devices; metocean buoy, ADCP and SAM. A tug will be required to tow the JUB into and from position, and a rigid inflatable boat (RIB) will be used to transfer personnel to and from the JUB as required.

Specific survey vessel details are subject to a procurement process and are currently unavailable, and it is not yet known if a multi-disciplinary survey vessel will be used, i.e. one vessel capable of undertaking geophysical, geotechnical and environmental surveys, or separate vessels for each survey type. It is extremely unlikely that all vessels will be mobilised at the same time. For example, the geophysical survey campaign will need to occur prior to geotechnical and environmental sampling. Vessels retrieving static recording devices, transferring personnel or positioning the JUB will operate for a short period of time, transiting to and from survey locations. It is estimated, on a precautionary basis, that up to eight vessels could be operating within the AoI at a time.

Further information on vessels and survey equipment is provided in the Project Description document accompanying the MULA.

## 2.1.2 Surveying Periods

Surveys will be conducted during the following daily periods:

- Landfall/ intertidal zone during daylight hours and subject to tidal conditions.
- <15m below LAT during daylight hours up to 12 hours per day, seven days a week.
- >15m below LAT 24 hours per day, seven days a week.

# 3 METHODOLOGY

## 3.1 Appropriate Assessment Guidance

This SISAA report has been completed in accordance with the EU and national guidance documents that pertain to Member States' fulfilling their requirements under the EU Habitats Directive, with particular reference to Article 6(3) and 6(4) of that Directive. The methodology followed in relation to this SISAA has complied with the following guidance:

- EC (2000). Communication from the Commission on the Precautionary Principle. Office for Official Publications of the European Communities, Luxembourg;
- EC (2002). Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg. European Commission;
- EC (2007). Guidance document on the strict protection of animal species of Community interest under the Habitats Directive 92/43/EEC. European Commission;
- DoEHLG (2009, rev. 2010). Appropriate Assessment of Plans and Projects in Ireland Guidance for Planning Authorities. Department of the Environment, Heritage and Local Government;
- EC (2013). Interpretation Manual of European Union Habitats. Version EUR 28. European Commission, Luxembourg;
- EC (2018). European Commission Notice C (2018) 7621 'Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC', Office for Official Publications of the European Communities, Luxembourg;
- OPR (2021). Practice Note PN01: Appropriate Assessment Screening for Development Management. Office of the Planning Regulator, Dublin Ireland.
- EC (2021). European Commission Notice C (2021) 6913 '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', Office for Official Publications of the European Communities, Luxembourg.

## 3.2 Stages of Appropriate Assessment

Appropriate Assessment (AA) is a four-stage process with tests at each stage. The four stages are summarised diagrammatically in Figure 3.1 below. 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) of the Habitats Directive. Stage 3 is a precursor to Stage 4 which is the main derogation step of Article 6(4).



Figure 3.1 Four Stages of Appropriate Assessment

The screening for AA carried out by the competent authority (Stage 1), will determine whether an AA (Stage 2) of the proposed project is required. The purpose of the screening stage is to determine, on the basis of a preliminary assessment and objective criteria, whether a plan or project, alone and in-combination with other plans or projects, could have significant effects on a European site in view of the site's conservation objectives.

There is no necessity to establish such an effect; it is merely necessary for the competent authority to determine that there may be such an effect. The need to apply the precautionary principle in making any key decisions in relation to the tests of Appropriate Assessment (AA) has been confirmed by the case law of the Court of Justice of the European Union (CJEU). Plans or projects that have no appreciable effect on a European site may be excluded. The threshold at this first stage is a very low one and operates as a trigger in order to determine whether a Stage Two AA must be undertaken by the competent authority on the

implications of the proposed development for the conservation objectives of a European site. Therefore, where significant effects are likely, uncertain or unknown at screening stage, a second stage AA will be required

Stage 2 is required if it cannot be excluded, on the basis of the objective information provided at Stage 1, that the proposed project, individually or in combination with other projects or plans, will have a significant effect on a European site, in view of the site's conservation objectives. In this case, a Natura Impact Statement (NIS) must be prepared to assist the competent authority to conduct the Stage 2 AA. Stage 2 AA is a focused and detailed examination, analysis and evaluation carried out by the competent authority of the implications of the plan or project, alone and in-combination with other plans and projects, on the integrity of a European site in view of that site's conservation objectives. Case law has established that such an Appropriate Assessment, to be lawfully conducted, in summary:

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

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

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

If it is not possible during Stage 2 to avoid adverse effects on the integrity of one or more European sites through avoidance and/or mitigation, Stage 3 of the process must be undertaken which is to objectively assess whether alternative solutions exist by which the objectives of the plan or project can be achieved. If it can be demonstrated that there are no reasonable alternative solutions, the AA progresses to Stage 4. This final stage is undertaken when it has been determined that negative impacts on the integrity of a European site will result from a plan or project and there are no alternative solutions. At Stage 4 of the AA process, the competent authority must determine if, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, the project must nevertheless be carried out for imperative reasons of overriding public interest, or 'IROPI', including those of a social or economic nature. In such circumstances, the Member State is required to take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected.

While there is no prescribed form or content for reporting (DoEHLG, 2009) the methodology and format adopted in this report has been in accordance with the European Commission Methodological Guidance on the provision of Article 6(3) and 6(4) of the 'Habitats' Directive 92/43/EEC (EC, 2021) and the European Commission Guidance 'Managing Natura 2000 sites' (EC, 2018), guidance prepared by the NPWS (DoEHLG, 2009) and by the Office of the Planning Regulator (OPR, 2021).

As per DoEHLG (2009):

# The first test is to establish whether, in relation to a particular plan or project, appropriate assessment is required.

In summary, the test for the screening for AA is to determine on the basis of a preliminary assessment and objective scientific information could there be effects in view of the site's conservation objectives. There is no necessity to establish such an effect; it is merely necessary for the competent authority to determine that there may be such an effect. The need to apply the precautionary principle in making any key decisions in relation to the tests of Appropriate Assessment (AA) has been confirmed by the case law of the Court of Justice of the European Union (CJEU). Plans or projects that have no appreciable effect on a European site may be excluded. The threshold at this screening stage is a very low one and operates as a trigger in order to determine whether an AA must be undertaken by the competent authority on the implications of the proposed development for the conservation objectives of a European site. Therefore, where significant effects are likely, uncertain or unknown at screening stage, an AA and NIS will be required.

## 3.3 Stage 1 Screening / Test of Significance

This process identifies whether the proposed development is directly connected to or necessary for the management of a European site(s) and identifies whether likely significant effects upon a European site(s) can be excluded, either alone or in combination with other projects or plans.

The screening for AA will incorporate the following steps:

- 1. Determining whether a project is directly connected with or necessary to the conservation management of any European sites;
- 2. Describing the project;
- 3. Identifying the European sites potentially affected by the project or plan;
- 4. Identifying and describing any potential effects of the project or plan on European sites, alone, or in combination with other plans/projects; and
- 5. Assessing the likelihood of significant effects on European sites.

The output from this stage is a determination for each European site(s) of not significant, significant, potentially significant, or uncertain effects. The latter three determinations will cause that site to be brought forward to Stage 2.

## 3.4 Desk Study

Information on the receiving environment was analysed to determine the potential for significant effects to QIs and SCIs of the European sites with established connectivity to the SI works (see Section 5.3). The following publications and data sources were reviewed.

- Information on ranges of mobile QI populations in Volume 1 of NPWS' Status of EU Protected Habitats and Species in Ireland (NPWS, 2019), and associated digital shapefiles obtained from the NPWS Research Branch;
- BirdWatch Ireland (https://birdwatchireland.ie/);
- Mapping of European site boundaries and Conservation Objectives for relevant sites, available online from the NPWS included site synopsis, European site Data form and Conservation Objective Supporting Documents where available (https://www.npws.ie/protected-sites);
- Distribution records for QI of European sites held online by the National Biodiversity Data Centre (NBDC) (www.biodiversityireland.ie);
- Ordnance Survey of Ireland maps and aerial photography (<u>https://osi.ie</u>)
- EMODnet (2024) Map Viewer. Available at: https://emodnet.ec.europa.eu/geoviewer/ . Accessed October 2024.
- ObSERVE aerial survey data (Rogan et al., 2018 and Giralt Paradell, et al., 2024).

## 3.5 Identification of Relevant European Sites

#### 3.5.1 Source-Pathway-Receptor Model

The identification of relevant European sites to be included in this report was based on the identification of the 'zone of influence (ZoI)' of the SI works using a Source-Pathway-Receptor (S-P-R) model where:

- A 'source' is defined as the individual element of the proposed works that has the potential to impact on a European site, its qualifying features, and its COs;
- A 'pathway' is defined as the means or route by which a source can affect the ecological receptor; and
- A 'receptor' is defined as QI of SACs or SPAs for which COs have been set for the European site(s) being assessed.

An S-P-R model is a standard tool used in environmental assessment. In order for an effect to be likely, all three elements of this mechanism must be in place. The absence or removal of one of the elements of the mechanism results in no likelihood for the effect to occur. The S-P-R model was used to identify a list of European sites, and their QIs, to which the SI works are potentially linked. These are termed as 'relevant' sites/QIs throughout this report.

#### 3.5.2 Zone of Influence

Determination of the SI works' ZoI was achieved by assessing the SI works' against the ecological receptors within the AoI, in addition to the ecological receptors that could be connected to and subsequently impacted by the project through abiotic and biotic vectors.

The proximity of the SI works to European sites, and more importantly, QIs and SCIs of the European sites, is of importance when identifying potentially likely significant effects. In accordance with the OPR AA Screening Guidelines (2021), the S-P-R model has been used to identify the ZoI to ensure that relevant European sites are identified. The S-P-R model minimises the risk of overlooking distant or obscure effect pathways, while also avoiding an over reliance on buffer zones (e.g., 15 km), within which all European sites should be considered. This approach follows the DoEHLG 2009 guidance on AA which states that:

"For projects, the distance could be much less than 15 km, and in some cases less than 100m, but this must be evaluated on a case-by-case basis with reference to the nature, size and location of the project, and the sensitivities of the ecological receptors, and the potential for in combination effects" (DoEHLG, 2009; p.32, para 1).

The ZoI of the SI works on mobile species (e.g., birds, mammals, and fish), and static species and habitats (e.g., saltmarshes, woodlands, and flora) is considered differently. Mobile species have 'range' outside of the European sites in which they are QI. The range of mobile QI species varies considerably, from several metres (e.g., in the case of whorl snails *Vertigo* spp.), to hundreds of kilometres (in the case of migratory wetland birds). A project's ZoI may extend well beyond the project boundary and can impact or have an effect on static species and habitats remote from the SI works; for example, where an aquatic QI habitat or plant is located many kilometres downstream from a pollution source. In particular, hydrological linkages between the SI works and European sites (and their QIs) can occur over significant distances; however, any effect will be site-specific depending on the receiving water environment and nature of the potential impact.

To this end, the ZoI for this project extends outside of the immediate SI works AoI to include ecological receptors connected to the project through proximity and connectivity through features such as watercourses and waterbodies in addition to potential connectivity through land and air. See Section 5.3 for the identification of relevant European sites.

# 4 DESK STUDY

This section details the results of the desk study undertaken to describe the receiving environment of the SI works. The relevant receiving environment relates to anything that may be directly or indirectly related to the QIs/SCIs of the relevant European Sites.

The Area of Interest (AoI) is located off the south coast of Ireland, extending from the HWM to approximately 34 km (18.4 nm) offshore. It encompasses an area of 2,336 km<sup>2</sup>. The western extent of the AoI is at Ringroe in County Cork (approx. 10 km south of Crosshaven and 13 km east of Kinsale) and extends eastwards to Cullenstown in County Wexford (approx. 4 km east of Bannow Bay and 6 km south of Wellingtonbridge).

## 4.1 Habitats

The AoI spans a large area (2,336 km<sup>2</sup>) and covers a range of habitat types, from coastal/ intertidal to subtidal. In order to understand the marine habitat types likely to be encountered, the boundary of the AoI was reviewed against EUSeaMap, a broad-scale predictive seabed habitat map for Europe (EMODnet, 2024). A band of moderate to high energy circalittoral rock (MC12 and MD12) extends from the coast out to approximately the 50 m depth contour, interspersed with pockets of moderate to high energy circalittoral coarse sediment and sand (MC32 and MC52). Beyond the 50 m depth contour, the predominant habitat type is a mosaic of high energy circalittoral coarse sediment (MC32) and moderate energy circalittoral sand (MC52), with smaller patches of offshore circalittoral mud (MD62).

The table below summarises the predominant sediment types at each potential landfall zone.

Table 4.1	Predominant Sediment Type and Each Potential Landfall Location Zone

Landfa Zone	I Nearest Townlands	County	Predominant Sediment Type (EMODnet, 2024)
A	Ballintra West, Ballintra East, Inch, Lahard	Cork	Ranges from sand to rock or other hard substrate and high energy infralittoral seabed
В	Ballybrangan, Ballycroneen West, Ballyrobin South	Cork	Mainly rock or other hard substrate
С	Garryvoe Lower, Ballybutler, Ballycrenane	Cork	High energy infralittoral seabed and rock or other hard substrate
D	Templeyvrick, Ballynasissala, Bunmahon, Ballynagigla, Knockmahon	Waterford	Ranges from sand to rock or other hard substrate
E	Ramstown	Wexford	Ranges from sand to rock or other hard
F	Bannow	Wexford	substrate and pockets of high energy
G	Haggard, Blackhall, Ballymadder	Wexford	circalittoral seabed

The AoI intersects with or is adjacent to a number of SACs designated for Annex I habitats, namely Bannow Bay SAC, Hook Head SAC, and River Barrow and River Nore SAC. The desk study identified a number of Annex I marine habitats in the wider landscape within and adjacent to the AoI. These are mainly located in coastal and subtidal areas and include estuaries (1130), mudflats and sandflats not covered by seawater at low tide (1140), and reefs (1170).

Bannow Bay SAC is an estuarine site approximately 14 km long in the northeast of the AoI (NPWS, 2014a). This European site is designated for a range of coastal habitats including estuaries, mudflats and sandflats, Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) (1330), Mediterranean salt meadows (*Juncetalia maritimi*) (1410), and *Salicornia* and other annuals colonising mud and sand (1310). The southern extent of the River Barrow and River Nore SAC is adjacent to the AoI. Intertidal Annex I habitats that are designated QIs for this site include estuaries and mudflats and sandflats. These habitats form a large component of the site, with extensive areas of good quality intertidal sand and mudflats present. In both European sites, these habitat areas are stable or increasing, and conservation objectives (COs) are designated to maintain their favourable conservation condition (NPWS, 2011a and 2012). Hook Head SAC, located within the AoI, is a site of importance for its large shallow inlets and bays, with an estimated habitat area of 5,244 ha. This Annex I habitat is limited to the south-west facing Ballyteigue Bay and contains communities of Annex I reef habitat. The reef habitats are extensive throughout the SAC (NPWS, 2011b). Three community types have been identified for this habitat including exposed to moderately exposed intertidal reef community, with a combined area of approximately 10,534 ha. Finally, while Ballyteige Burrow SAC (000696) does not fall

within the AoI, it is located adjacent to the north-east boundary of the AoI. This European site is designated for the marine Annex I QIs of estuaries and mudflats and sandflats. This coastal site is of important ecological value for its range of good quality coastal habitats, which also include Atlantic salt meadows and fixed coastal dunes (2130) (NPWS, 2014b).

## 4.2 Species

#### 4.2.1 Otter

Otter (*Lutra lutra*) occurs throughout Ireland, including along the coasts in Cork and Waterford (NPWS, 2019) with populations also found along rivers, lakes, and coasts, where fish and other prey are abundant, and where the bank-side habitat offers plenty of cover. They have diverse habitat preferences: lakes, canals, riverine (streams up to major river systems) marshland and estuaries. Otters are a mobile species and maintain territories. In lowland rivers and fish-rich lakes otters only need to maintain small territories (up to 6km), but along smaller river systems and in upland areas where prey may be less abundant, otter territories can stretch to 20 km (Mullen et al., 2021). Female territories range between  $7.5 \pm 1.5$  km for riverine and 6.5  $\pm$  1.0 km for coastal environments where male territories are approximately  $13.2 \pm 5.3$  km along rivers but with a high degree of variability (Reid et al., 2013). In general, otters exploit a narrow strip of habitat, about 10 m wide at the aquatic-terrestrial interface (Mullen et al., 2021). However, otters have been observed to forage out to a maximum of 80 m from the coast (NPWS, 2009).

Otter is an opportunistic predator with a broad and varied diet. In coastal areas, otters are known to eat rockling, wrasse, eel, sea scorpion, blenny and molluscs (Mullen et al., 2021).

A desk-based study utilising records from NBDC (2024)<sup>1</sup> indicated that otters have been sighted in the last 10 years in coastal habitats adjacent to the Aol. Otter sightings (live animal sightings, spraints and footprints) were recorded between 2014 and 2017; Three otter sightings were recorded along the Aol's northern boundary at Ballycotton Bay Co. Cork in 2015. Sightings to the east of the Aol were at Bunmahon in 2016, Annestown in 2015, Brownstown in 2014 and a further three sightings in Bannow Bay between 2016 and 2017. Another live sighting in close proximity to the Aol (c. 2 km northwest of the Aol) was recorded at Ballydwane Bay Co. Waterford in 2016. According to NBDC (2024) live otter sightings have been recorded at Bunmahon in Co. Waterford and Ballinwilling Beach (at Ballycrenane in Co. Cork), both of which are potential landfall locations and will be investigated during the SI works. It is therefore reasonable to conclude that otters are likely to be present at the potential landfall locations. There are 45 SACs designated for otter in Ireland, three of these are within 20 km of the Aol (considered as a precautionary coastal range for otter): Lower River Suir SAC (002137), River Barrow and River Nore SAC (002162), and Blackwater River (Cork/Waterford) SAC (002170).

The main threats to otter include habitat destruction, pollution, particularly organic pollution resulting in fish kills, and accidental deaths, e.g., road traffic and fishing gear (NPWS, 2019). The most recent Article 17 conservation assessment for otters in Ireland deemed the species as being in favourable conservation status (NPWS, 2019).

#### 4.2.2 Marine mammals

The Celtic Sea supports a great diversity and abundance of marine mammals, including the following species listed on Annex II of the Habitats Directive and which are therefore QI of certain SACs: harbour porpoise (*Phocoena phocoena*), bottlenose dolphin (*Tursiops truncatus*), harbour seal (*Phoca vitulina*) and grey seal (*Halichoerus grypus*).

### 4.2.2.1 Harbour porpoise

Harbour porpoise is the smallest, most widespread and abundant cetacean species in Irish waters (Berrow, 2001). It has been recorded off all coasts and over the continental shelf but is thought to be most abundant off the southwest coast (Wall et al. 2013). The shallow continental shelf is a key habitat for harbour porpoise, which is strongly associated with shallow water (<200 m) where they predominantly feed on demersal fish

<sup>&</sup>lt;sup>1</sup> <u>https://maps.biodiversityireland.ie/Map/Marine/Species/119290</u> accessed October 2024

species. Sightings of this species offshore are relatively uncommon, but this may be due in part to low sighting and acoustic survey effort in favourable sea conditions (Ó Cadhla et al., 2004).

As this species is highly mobile, species-specific Management Units (MU) are used to assess the effect of an activity on them. The Inter Agency Marine Mammal Working Group (IAMMWG) has identified MUs for harbour porpoise and provided recommended abundance estimates for each MU. The AoI is located within the Celtic and Irish Seas MU, where the most recent estimate of abundance for harbour porpoises is 62,517 (IAMMWG, 2023), based on data collected during SCANS III and the ObSERVE surveys (Rogan et al., 2018, Hammond et al., 2021). Phase II of the Irish ObSERVE programme (2021-2023) was published in October 2024 and includes an estimate of abundance for harbour porpoise along the south coast of Ireland during the summer and autumn of 2021 at 918 (Paradell et al., 2024).

A desk-based study utilising records from NBDC (2024)<sup>2</sup> indicated that harbour porpoise has been sighted in the last 10 years in marine and coastal habitats within and adjacent to the Aol. Live sightings were recorded between 2016 and 2021 in areas which will be investigated during the SI works. It is therefore reasonable to conclude that harbour porpoises are present within the Aol. There are 16 SACs designated for harbour porpoise in Ireland, one of these is within the Aol: Hook Head SAC. Carnsore Point SAC and Blackwater Bank SAC are located 19.6 km and 32 km north-east of the site, respectively. The most recent Article 17 conservation assessment for harbour porpoise in Ireland deemed the species as being in favourable conservation status (NPWS, 2019).

Harbour porpoises have a higher metabolic rate than dolphins, as this species needs to feed more frequently and consume more prey per unit body weight, in order to maintain their body temperature and other energy needs. For this reason, porpoises may be highly susceptible to changes in the abundance of prey species or disturbance from foraging areas. This species feeds on a wide variety of fish and generally focuses on the most abundant local species. Harbour porpoise, as a species, is particularly vulnerable to disturbance, as individual harbour porpoise needs to forage frequently due to their high metabolic rate (Ransijn et al., 2019).

#### 4.2.2.2 Bottlenose dolphin

Bottlenose dolphins occur off all Irish coasts, with inshore animals moving around the entire Irish coastline and between the UK and Ireland (O'Brien et al. 2009; Robinson et al. 2012). Resident or semi-resident groups are present in the Shannon Estuary and Cork Harbour (Berrow et al. 1996; Ryan et al. 2010).

Bottlenose dolphins are one of the most frequently recorded cetaceans in Irish waters. They occur in group sizes between 3 - 30 in coastal waters, and larger groups of hundreds of individuals in offshore waters. The AoI is located within the Irish Sea MU for bottlenose dolphins, where there is an estimated abundance of 293 bottlenose dolphins (IAMMWG, 2023) based on data collected during SCANS III and the ObSERVE surveys (Rogan et al., 2018, Hammond et al., 2021). Phase II of the Irish ObSERVE programme (2021-2023) was published in October 2024 and includes an estimate of abundance for bottlenose dolphin in the south of Ireland during the summer and autumn of 2021 at 93 (Paradell et al., 2024).

A desk-based study utilising records from NBDC (2024)<sup>3</sup> indicated that bottlenose dolphin has been sighted in the last 10 years in marine and coastal habitats within and adjacent to the AoI. Live sightings were recorded between 2016 and 2024 in areas which will be investigated during the SI works, therefore, it is reasonable to assume that bottlenose dolphins are present within the AoI. Previous research has shown the species to have a high degree of site fidelity amongst Ireland's coastal populations (Nykänen et al., 2018). Within 100 km of the AoI, there is one SAC for bottlenose dolphins, Hook Head SAC, which is located within the AoI.

The most recent Article 17 conservation assessment for bottlenose dolphin in Ireland deemed the species as being in favourable conservation status (NPWS, 2019). However, bottlenose dolphins can be subjected to local and/or regional environmental pressures throughout their range in Irish waters (DEHLG, 2009). The main pressures involve commercial shipping-based or vessel-based activities that occur primarily on a local to regional scale and/or on a temporary to intermittent basis, which includes geophysical seismic exploration (DAHG, 2014).

<sup>&</sup>lt;sup>2</sup> https://maps.biodiversityireland.ie/Map/Terrestrial/Species/134662 Accessed October 2024

<sup>&</sup>lt;sup>3</sup> <u>https://maps.biodiversityireland.ie/Map</u>. Accessed October 2024.

#### 4.2.2.3 Grey seal

Grey seal is the larger of the two pinniped species which occur around the Irish coast. They are primarily pelagic or demersal in their feeding habits and can be wide-ranging. In Ireland they are generally considered part of a larger population or meta-population that also inhabits adjacent jurisdictions (i.e. the UK and France) (NPWS, 2019). The habitat used by grey seals in Ireland is diverse and dynamic, from coastal and estuarine waters close to human activity and undisturbed offshore islands, to deeper Atlantic shelf waters and shallow seas shared with adjacent member states (Cronin et al., 2011). The key prey species for grey seal include a number of clupeids (e.g., herring), gadoids (e.g., cod, whiting), salmon, flatfish, and sandeels.

There are 10 SACs in Ireland for which grey seal is a QI. These include the Saltee Islands SAC (000707), located 3.2 km east of the AoI, and Roaringwater Bay SAC (000101) located 74.5 km west of the AoI. A desk-based study utilising records from NBDC (2024)<sup>4</sup> indicated that grey seals have been sighted in the last 10 years in coastal and marine habitats within and adjacent to the AoI. Live sightings have been recorded between 2016 and 2024 in locations which may be investigated during the SI works. Based on tracking data, grey seals typically forage within 100 km of an SAC (Carter et al., 2020). Therefore, it is reasonable to conclude that grey seals are likely to be present within the AoI.

Breeding occurs in late August to December and the annual moult between November to April. Terrestrial habitats used by moulting grey seals around the Irish coastline vary from rocky skerries, island coastlines consisting of rock ledges and outcrops, to sand beaches and sandbanks (O'Cadhla & Strong, 2007). Nationally significant haul-out group sizes have previously been recorded at key sites off the coasts of Wexford, at Raven Point and Great Saltee Island (O'Cadhla et al., 2007). The closest haul-out sites to the AoI are at the Saltee Islands (haul-out located approx. 9.2 km east of the AoI). Between 2009 and 2012, a minimum pup production of 151 pups and a total population size of 529 – 680 was recorded (O'Cadhla et al., 2013). In the south-east survey region, which the AoI falls within, surveys conducted between 2017 and 2018 recorded a total grey seal count of 556. This was substantially higher than in 2011/2012 (Morris & Duck, 2019).

Grey seal has a 'Favourable' conservation status with an increasing trend in Irish waters (NPWS, 2019). Grey seals face a range of local and regional environmental pressures and threats in Irish coastal/offshore waters. The main pressures involve commercial vessel-based or shipping-based activities, which include prey removal and/or bycatch from fisheries, and impacts arising from geophysical seismic exploration (NPWS, 2019). Strong disturbance could result in displacement of seals from an area. Disturbance could cause slight changes in behaviour such as forcing grey seals to travel greater distances than usual to forage. Grey seals are likely to exhibit some tolerance to the effects of disturbance however, due to the uncertainties associated with this, the species is deemed to have some sensitivity to strong and mild disturbances. Furthermore, disturbances such as these may also cause potential injury to grey seal, such as impacts on both reproduction and survival rates (Bellman et al., 2019).

#### 4.2.2.4 Harbour seal

Harbour seal is the smaller of the two species of pinniped found in Ireland. They occur in estuarine, coastal, and fully marine areas, and breed in small groups scattered along the coastline. Harbour seals tend to forage within a maximum of 40 or 50 km of their haul-out sites, but most foraging trips tend to be within shorter ranges (Carter et al., 2020). The key prey species for harbour seals are similar to that of grey seal, including clupeids (e.g., herring), gadoids (e.g., cod, whiting), salmon, flatfish, and sandeels.

Harbour seals have been assessed as having a 'Favourable' conservation status in Irish waters and there are 13 SACs in Ireland for which this species is a QI (NPWS, 2019). These include the Slaney River Valley SAC (000781) located 17.1 km north-east of the AoI, and Glengarrif Harbour and Woodland SAC (000090) located 81 km west. The Slaney River Valley SAC supports regionally significant numbers of harbour seal, which occurs year-round in Wexford Harbour. This Annex II species utilises sandbanks within the harbour for breeding and moulting, with at least 27 harbour seal regularly occur within the site (NPWS, 2015a). This is the closest haul-out site for harbour seal to the AoI. A desk-based study utilising records from NBDC (2024) indicated that harbour seals have been sighted in the last 10 years in coastal and marine habitats within and adjacent to the AoI. Live sightings have been recorded between 2016 and 2024 in locations which may be

<sup>&</sup>lt;sup>4</sup> <u>https://maps.biodiversityireland.ie/Map/Marine/Species/134649/DatasetFilter/91</u> Accessed October 2024

investigated during the SI works. As harbour seals typically forage within 50 km of haul-out sites it is reasonable to conclude that this species is likely to be present within the AoI.

Harbour seal pupping occurs during the summer months, primarily in June and July (Arso Civil et al., 2018). Moulting most frequently occurs during August following pupping, although seals in active moult have been observed in southwest Ireland from June to November (Cronin et al., 2013; SCOS, 2021). Outside of the breeding season, seals will exhibit a wider spatial variation. Of the few pup counts that have been undertaken for harbour seals in the Republic of Ireland, the data presented in these is now outdated, therefore they have not been presented in the current desk study. Morris & Duck (2019) reported on the number and distribution of hauled-out harbour seals in 2017/2018. The lowest records of Ireland's harbour seal populations were located in the south-east region, within which the AoI is located. A total of 34 seals were identified during the survey period, which amounts to 1% of the total population.

Harbour seals are at risk of similar disturbance and threats to grey seals. These include prey removal, bycatch in fisheries, geophysical seismic exploration, as well as coastal tourism and localised human disturbance at haul-out sites. Strong disturbance could result in displacement of harbour seals from an area, changes in behaviour, reduced reproduction rates, and mortality (Bellman et al., 2019).

#### 4.2.3 Migratory fish species

A number of Annex II diadromous fish species (which migrate between the sea and fresh water) have the potential to occur within (pass through) the AoI during certain times in their life cycle, including twaite shad (*Alosa fallax*), sea lamprey (*Petromyzon marinus*), river lamprey (*Lampetra fluviatilis*) and Atlantic salmon (*Salmo salar*). For the above species, this may occur only during upstream or downstream migrations to and from spawning grounds. Twaite shad, Atlantic salmon, sea and river lamprey are all protected under EU legislation via Annex II of the Habitats Directive. There are a number of SACs on the south coast of Ireland which are designated for these fish species including: Lower River Suir SAC, River Barrow and River Nore SAC, Blackwater River (Cork/Waterford) SAC and Slaney River Valley SAC. While the AoI does not overlap with these European sites, migratory fish QI from these sites may migrate through the AoI.

Brook lamprey (*Lampetra planeri*), which is also a designated species of the above SACs, is not considered in this SISAA as brook lamprey is not a diadromous fish species (i.e. it is confined to the freshwater section of the river and does not migrate to the marine environment) and so there is no potential for connectivity with the AoI.

#### 4.2.4 Birds

Aerial surveys undertaken from 2021 to 2023 under Phase II of the ObSERVE Programme recorded 24 species or species groups of seabirds. Records were dominated by auk species, northern gannets (*Morus bassanus*), northern fulmars (*Fulmarus glacialis*), kittiwakes (*Rissa tridactyla*) and Manx shearwaters (*Puffinus puffinus*) (Paradell et al., 2024). Some species such as shearwaters, terns, storm petrels (*Hydrobates pelagicus*), were mainly recorded during the summer surveys. Coastal waters for seabirds were noted as particularly important throughout the year and the survey highlighted hotspots during the summer off the south and southwest coast of Ireland. While during the autumn seabird densities were higher off the southwest coast and further offshore (Paradell et al., 2024).

The Aol overlaps the boundaries of the following SPAs, designated for seabird QIs:

- Keeragh Islands SPA
- Mid-Waterford Coast SPA
- Seas off Wexford SPA.

The Keeragh Islands comprise two low-lying islets approximately 1 km from the coast of Wexford. The SPA includes the islets and associated rocky shorelines and reefs and the surrounding marine area to a distance of 200 m (NPWS, 2014c). The islands support one of the largest cormorant (*Phalacrocorax carbo*) breeding colonies in Ireland. The Mid-Waterford Coast encompasses the areas of high coast and sea cliffs in County Waterford between Newtown Cove to the east and Ballyvoyle to the west. The site supports internationally important population of breeding chough (*Pyrrhocorax pyrrhocorax*), and nationally important breeding populations of peregrine (*Falco peregrinus*), herring gull and cormorant (NPWS, 2015b). The Seas off Wexford SPA constitute valuable feeding resources for seabirds that return every spring to Wexford's coastal and island colonies to breed. Outside of the summer months these waters provide safe feeding and roosting

opportunities for a range of marine birds overwintering here or on passage (NPWS, 2024). Based on a summer aerial survey conducted in 2021, the following species formed a significant proportion of the overall marine bird assemblage of 28,611 individuals: guillemot (*Uria aalge*), Manx shearwater (*Puffinus puffinus*), razorbill (*Alca torda*), sandwich tern (*Sterna sandvicensis*), gannet (*Morus bassana*), herring gull (*Larus argentatus*), common tern (*Sterna hirundo*) and Arctic tern (*Sterna paradisaea*) (NPWS, 2024). A series of surveys were carried out during the non-breeding season of 2018/2019 and nationally important populations of common scoter, red-throated diver and cormorant were recorded (NPWS, 2024).

Species recorded during the Phase II ObSERVE aerial surveys included herring gull, kittiwake, and cormorant, all three of which are designated as a QI species for the nearby sites: Helvick Head to Ballyquin SPA (approximately 2 km inshore of the AoI) and Saltee Islands SPA (approximately 8 km east of the AoI). Both sites are designated for a range of seabird species in addition to these three species that are common to both sites.

The Aol overlaps two SPAs designated for wintering waterbirds: Bannow Bay SPA and Ballycotton Bay SPA. Bannow Bay SPA is an excellent example of an enclosed estuarine system. It supports internationally important populations of light-bellied brent goose and black-tailed godwit as well as nationally important populations of a further eleven species (NPWS, 2014d). While relatively small in area, Ballycotton Bay SPA supports an excellent diversity of wintering waterbirds and has nationally important populations of eleven species (NPWS, 2015c).

The AoI is adjacent to Cork Harbour SPA, Ballyteigue Burrow SPA and Tramore Back Strand SPA. Cork Harbour SPA 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 (NPWS, 2015d). Ballyteige Burrow SPA is of ornithological importance because it supports internationally important populations of light-bellied brent goose and black-tailed godwit, and nationally important populations of a further five species, including little tern (NPWS, 2014c). Wintering waterbirds tend to be relatively sedentary once they arrive in their over-wintering areas; often only moving short distances between roosting and feeding areas, therefore interaction with more distant SPAs designated for wintering waterbirds is considered unlikely.

# 5 IDENTIFICATION OF RELEVANT EUROPEAN SITES

## 5.1 Assessment of Connectivity

Connectivity is identified via the S-P-R model which identifies the potential impact pathways such as land, air, hydrological pathways etc. which may support direct or indirect connectivity between the SI works (source) and European sites and their QIs or SCIs (receptors).

Where it is evident that there is no connectivity between the SI work and receptors (i.e., European sites and/or habitats and species for which the sites are selected), the receptors are excluded from the AA process. Where connectivity exists between the SI works and receptors, these receptors are taken forward to the assessment of likely significant effects (Section 6.2).

When assessing impact, the QI and SCI habitats and species are only considered receptors where a credible or tangible S-P-R link exists between the SI works and the receptor. In order for an impact to occur there must be a risk initiated by having a 'source' - the origin of potential impacts (e.g., near stream construction works), an impact pathway - the means by which the effect reaches the receptor (air, water, or ground) between the source and the receptor (e.g., a watercourse which connects the development site to the site designated for the protection of a receptor) and a 'receptor' (e.g. a protected species associated aquatic or riparian habitats). If the source, pathway, or receptor is absent, no linkage exists and thus, there will be no potential for an impact to be transmitted.

## 5.2 Source-Pathway-Receptor Assessment

## 5.2.1 Sources of Impact

Identification of a risk of impact does not constitute a prediction that it will occur or, in the event that it does occur, that there is an intrinsic likelihood that it will result in ecological or environmental damage or that it will cause or create a significant effect on the European sites in question. The level and significance of the effect depends upon the magnitude, duration or intensity of the impacts ensuing from the proposal and the existence of a credible or tangible S-P-R link between the SI works and the aforementioned European sites. It is also determined by the extent of the exposure to the risk and the characteristics of the receptor.

## 5.2.2 Impacts Scoped Out of Assessment

Accidental pollution event: All vessels operating in the marine environment must adhere to the International Convention for the Prevention of Pollution from Ships (MARPOL) which is the main international convention covering prevention of pollution of the marine environment by ships from operational or accidental causes. The Sea Pollution Act, 1991 ratified MARPOL in Ireland. In addition, all substances handled and/or used whilst undertaking the works are required to be handled, used, stored, and documented in accordance with assessments and the Chemicals Act 2008 (No. 13 of 2008) and Chemicals (Amendment) Act 2010 (No. 32 of 2010) and associated Regulations.

Given the standard legal and regulatory pollution control requirements that apply to all vessels, the nature of the proposed SI works, their limited scale and duration, and the insignificant increase in vessel activity, it can be excluded on the basis of objective evidence that an accidental pollution will cause, either individually or in combination with any other plans or projects, a likely significant effect on any European Site. Therefore, this effect is not considered further in this assessment.

**Introduction of invasive alien species:** The International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004, entered into force globally on 8 September 2017. It is a treaty, adopted by the International Maritime Organization (IMO) in order to help prevent the spread of potentially harmful aquatic organisms and pathogens in ships' ballast water, including invasive species<sup>5</sup>. The Sea Pollution (Miscellaneous Provisions) Act 2006 gives effect to a number of internationally agreed instruments including the International Convention on Ballast Water Management 2004. The Convention stipulates that

<sup>&</sup>lt;sup>5</sup> <u>https://invasives.ie/about/legislation-policy/</u> - Accessed 21 October 2024.

ships must manage their ballast water so that aquatic organisms and pathogens are removed or rendered harmless before the ballast water is released into a new location.

All vessels used as part of the SI works will take actions to prevent the spread of invasive alien species as part of their standard operating procedures. Therefore, it can be excluded on the basis of objective evidence that invasive alien species will be introduced by the SI works and thereby cause, either individually or in combination with any other plans or projects, a likely significant effect on any European Site. Therefore, this effect is not considered further in this assessment.

### 5.2.3 Impacts Scoped In for Assessment

Table 5.1 identifies the potential impacts arising from the SI works, the element of SI works associated with each impact, a description of effect pathway and the receptors with the potential to be affected. This assessment will then be used to identify relevant European sites and QIs and SCIs to be taken forward to the Stage 1 Screening for Appropriate Assessment. Identification of relevant European sites and QIs is presented in Section 5.3.1 to 5.3.5, with Table 5.2 summarising all sites taken forward for screening.

Table 5.1	Source-Pathway-Rec	eptor Assessment	for the SI Works

Impact	Potential source of impact	Description of Effect Pathway	Relevant Receptors
Above water noise, vibration and lighting	Presence of vessel and general non-survey vessel activity. Human presence and use of equipment during intertidal surveys at potential landfall locations.	Potential for disturbance to species, leading to displacement from the area.	Marine mammals, otter, birds
Habitat loss, alteration and/ or fragmentation (including smothering due to increased suspended sediment concentrations (SSC))	Intrusive sampling methods which remove or interact with seabed habitats, including geotechnical borehole drilling, vibrocore sampling, CPT, environmental grab sampling, intertidal core sampling and survey methods requiring interaction with the seabed (i.e. mooring of ADCPs and underwater acoustic recorders).	Potential for direct loss of and/or damage to habitats and potential to indirectly affect species that rely on those habitats for feeding and/or breeding. Potential for sediments disturbed by intrusive sampling methods to smother sensitive habitats and to indirect affect species that rely on those habitats for feeding and/or breeding.	Habitats, marine mammals, otter, fish, birds
Underwater noise	Underwater noise emissions from geophysical survey (MBES, SSS, SBP, magnetometer, USBL, seismic refraction), geotechnical survey (borehole drilling and vibrocores), vessel activity, ADCP.	Potential for direct effects (including injury, disturbance and/or displacement) on mobile species with hearing abilities.	Marine mammals, otter, fish, diving birds
Risk of collision	Vessel activity and equipment associated with the geophysical, geotechnical and environmental surveys.	Potential for collision of vessel and/or equipment with species in the marine environment.	Marine mammals

## 5.3 Identification of relevant European sites

The following sections detail the identification of relevant European sites for consideration in the Stage 1 Screening for Appropriate Assessment. Each section describes the rationale for site selection, which is based on a SPR model of assessment. As outlined in Section 1.5.2.4, the term 'European sites' includes SACs, candidate SACs, SPAs and candidate SPAs, and as such, all designated and candidate European sites are considered in the following assessment.

European sites identified within the overall zone of influence of the SI works, their respective relevant QI/ SCI, and a measure of the distance of the European site from the AoI are detailed in Table 5.2, below. Figure 5.1 and Figure 5.2 show the location of the SI works relative to these European sites.

### 5.3.1 Annex I Habitats

The European sites with relevant Annex I habitat QIs to be considered in this SISAA are:

- All European sites that physically overlap with the AoI. It is noted that intrusive sampling methods will only directly affect a relatively small portion of the overall AoI, however, as a conservative measure, and to allow for flexibility for sampling locations, the entire area of the AoI is assessed for potential impacts.
- All European sites within the zone of influence of impacts and where a SPR link exists, as assessed in Table 5.1. All direct impacts to Annex I habitats (subtidal and intertidal) will be limited to the proposed survey area. Intrusive sampling techniques with the potential to increase SSC in the water column will be limited to discrete sampling locations and the proposed sampling techniques are unlikely to give rise to large sediment plumes. As a precautionary measure, to allow for the potential for indirect effects arising from SSC/smothering, SACs with Annex I habitats which directly border the AoI are also considered.

As the SI works are being undertaken below the HWM, only Annex I habitats with the potential to be impacted during SI works or during access are considered relevant to the assessment. In instances where an SAC is designated for the presence of both marine/coastal and terrestrial/freshwater Annex I habitats, habitats with no connectivity to the SI works (e.g. terrestrial or freshwater habitats upstream of the SI works) will not be considered further in this assessment.

The sites selected for consideration of Annex I habitat QIs in the Stage 1 Screening for Appropriate Assessment are listed below and outlined in Table 5.2:

- Bannow Bay SAC
- Hook Head SAC
- River Barrow and River Nore SAC

#### 5.3.2 Annex II Otter

The European sites with relevant Annex II otter QIs to be considered in this SISAA are:

- All European sites that physically overlap with the AoI; and,
- All European sites that have otter as a QI that have a realistic potential for connectivity with the AoI. While otter is a mobile species, individuals have defined territories. Female territories range between 7.5 ± 1.5 km for riverine and 6.5 ± 1.0 km for coastal environments where male territories are approximately 13.2 ± 5.3 km along rivers but with a high degree of variability (Reid et al., 2013). Otter activity has been recorded at proposed landfall zones (see Section 4.2), therefore a precautionary approach to the identification of relevant sites has been adopted, which has considered European sites designated for otter within 20 km of the AoI.

The sites selected for consideration of otter QIs in this SISAA are listed below and outlined in Table 5.2:

- River Barrow and River Nore SAC
- Blackwater River (Cork/Waterford) SAC
- Lower River Suir SAC
- Slaney River Valley SAC

## 5.3.3 Annex II Marine Mammals

The European sites with relevant Annex II marine mammal QIs to be considered in this SISAA are:

- All European sites that physically overlap with the Aol; and,
- All European sites that have marine mammal QIs with a realistic potential for connectivity with the AoI. A
  conservative approach has been adopted which has considered all sites within a 100 km buffer of the
  AoI. This buffer is considered over-precautionary with respect to capturing the zone of influence of
  underwater noise impacts associated with the proposed surveys, however, it allows for the possibility
  that marine mammals from distant SACs may be foraging or passing through the survey area.

It is noted that MARA's Applicant Technical Guidance Note proposes that foraging ranges of 274 km and 448 km for harbour and grey seal, respectively, are applied in order to identify relevant European sites for Stage 1 screening, using maximum foraging distances quoted in the methodology of Carter et al. (2022). However, Carter et al. (2022) concludes that the drivers of distribution for both grey and harbour seals differ regionally, likely related to regional variation in diet and population trends and provide SAC-specific estimates of at-sea density in the UK and Ireland. These show that hotspots of seal density at sea are not necessarily attributable to nearby designated sites. While it is documented that grey seals can forage hundreds of kilometres from their breeding sides (Cronin et al., 2011; Russell & McConnell, 2014), and harbour seals may travel up to 100 km, this is dependent on seasonality, habitat preference and animal maturity. For the present assessment, given the maximum range for auditory injury expected for marine mammals (during operation of the sparker and boomer, could occur to harbour porpoise within 2.2 km of the sound source and within 70 m for seals; see Section 6.2.3.3 for assessment of underwater noise for marine mammals), it is considered sufficiently precautionary to apply a 100 km buffer for the identification of marine mammal SACs to allow for consideration of foraging or transiting seals from distant SACs. Beyond this distance, there is no realistic SPR link which may have implications for the conservation objectives of more distant European sites (e.g. ability of these species to access habitats within these sites, effects on the natural range of the population etc.).

JNCC management units (MU) refer to geographical areas in which the animals of a particular cetacean species are found, to which management of human activities is applied (IAMMWG, 2023). It is noted that MUs are not estimates of populations, and that almost all species of cetacean are part of larger biological populations. The MU boundary is based on the best understanding of the population structure of species, taking into account jurisdictional boundaries and divisions already used for the management of human activities. According to IAMMWG (2023), MUs may be subdivided to provide advice on a smaller spatial scale for a given purpose.

It is recognised that MARA proposes that all harbour porpoise and bottlenose dolphin SACs within the JNCC MU boundaries should be used in order to identify relevant European sites for Stage 1 screening, however, given that the maximum range for auditory injury to all marine mammals is 2.2 km (see Section 6.2.3.3), and considering the vast scale of the relevant MUs for these species, it is considered that this this would result in an overly precautionary assessment.

In summary, a suitably precautionary approach to the identification of relevant sites has been adopted, which has considered European sites designated for Annex II marine mammals within 100 km of the AoI.

The sites selected for consideration of marine mammal QIs in this SISAA are listed below and outlined in Table 5.2:

- Hook Head SAC
- Saltee Islands SAC
- Carnsore Point SAC
- Slaney River Valley SAC
- Blackwater Bank SAC
- Roaringwater Bay and Islands SAC
- Glengarriff Harbour and Woodland SAC
- Pembrokeshire Marine/ Sir Benfro Forol SAC
- West Wales Marine / Gorllewin Cymru Forol SAC

## 5.3.4 Annex II Migratory Fish

The European sites with relevant Annex II migratory fish QIs to be considered in this SISAA are:

- All European sites that physically overlap with the Aol; and,
- All European sites that have migratory fish as a QI that have a realistic potential for connectivity with the Aol. A precautionary approach to the identification of relevant sites has been adopted which considers all European sites within a 50 km buffer of the Aol. It should be noted that this buffer is considered to be over precautionary with respect to capturing the zone of influence of impacts (e.g. underwater noise) associated with the proposed surveys on the basis of the typically small ranges of effects on fish resulting from geophysical/ geotechnical surveys, however, it allows for the possibility that migratory fish from nearby SACs may be passing through the survey area. There is, therefore, considered to be no realistic SPR link which may have implications for the conservation objectives of the European sites beyond this range (e.g. ability of these species to access habitats within these sites, effects on the natural range of the population etc).

The sites selected for consideration of migratory fish QIs in this SISAA are listed below and outlined in Table 5.2:

- River Barrow and River Nore SAC
- Blackwater River (Cork/Waterford) SAC
- Lower River Suir SAC
- Slaney River Valley SAC

### 5.3.5 Birds

The European sites with relevant bird SCIs to be considered in this SISAA are:

- All European sites that physically overlap with the Aol; and,
- All European sites that have bird species as a SCI that have a realistic potential for connectivity with the AoI. Seabirds can forage considerable distances from their colonies with species such as Manx shearwater, storm petrel, gannet and fulmar capable of foraging hundreds of kilometres away (Woodward et al., 2019). Given the limited size, scale and duration of the SI works within the context of these extensive foraging ranges, seabirds from distant SPAs will not be foraging within the AoI in numbers that would lead to implications to the conservation objectives of those sites (e.g. the ability of these species to access habitats within these sites, effects on the natural range of the population etc). Many wintering QI bird species travel outside of their designated habitats to forage. Wintering swan and goose species can have foraging ranges of up to 20 km from their night roosts (SNH, 2016). Given this ex-situ potential, it is possible that wintering birds occurring in the vicinity of the intertidal SI works are associated with SPAs located up to 20 km away. As a precautionary measure, all SPAs within 20 km of the AoI boundary have been considered for screening.

The sites selected for consideration of bird species SCI in this SISAA are listed below and outlined in Table 5.2:

- Bannow Bay SPA
- Mid Waterford Coast SPA
- Ballycotton Bay SPA
- Keeragh Islands SPA
- Seas off Wexford SPA
- Cork Harbour SPA
- Ballyteige Burrow SPA
- Tramore Back Strand SPA
- Ballymacoda Bay SPA

- Helvick Head to Ballyquin SPA
- Dungarvan Harbour SPA
- Saltee Islands SPA
- Sovereign Islands SPA
- Blackwater Estuary SPA
- Tacumshin Lake SPA
- Wexford Harbour and Slobs SPA
- Old Head of Kinsale SPA

European Site (Code)	Distance from the Area of Interest (km)	List of Relevant Qualifying Interests <sup>6</sup>	Connections (Source-Pathway Receptors)
Bannow Bay SAC (IE000697)	Within SAC boundary	Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Annual vegetation of drift lines [1210] Perennial vegetation of stony banks [1220] Salicornia and other annuals colonising mud and sand [1310] Atlantic salt meadows ( <i>Glauco-Puccinellietalia</i> <i>maritimae</i> ) [1330] Mediterranean salt meadows ( <i>Juncetalia</i> <i>maritimi</i> ) [1410] Mediterranean and thermo-Atlantic <i>halophilous</i> scrubs ( <i>Sarcocornetea fruticosi</i> ) [1420] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	Yes. Aol overlaps with SAC boundary (potential SPR connection with marine and coastal habitats).
Hook Head SAC (IE000764)	Within SAC boundary	Large shallow inlets and bays [1160] Reefs [1170] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] <i>Tursiops truncatus</i> (Bottlenose Dolphin) <i>Phocoena phocoena</i> (Harbour Porpoise)	Aol overlaps with SAC boundary (potential SPR connection with marine and coastal habitats, harbour porpoise, bottlenose dolphin).
River Barrow and River Nore SAC (IE002162)	Within SAC boundary	Estuaries Mudflats and sandflats not covered by seawater at low tide Reefs Salicornia and other annuals colonising mud and sand	Aol overlaps with SAC boundary (potential SPR connection with marine and coastal habitats, migratory fish and otter).

 Table 5.2
 Relevant European Sites and Qualifying Interests to be Considered in Stage 1 Screening for Likely Significant Effects

<sup>&</sup>lt;sup>6</sup> Qualifying interests that have not been identified as relevant to this assessment are greyed out.

European Site (Code)	Distance from the Area of Interest (km)	List of Relevant Qualifying Interests <sup>6</sup>	Connections (Source-Pathway Receptors)
		Atlantic salt meadows ( <i>Glauco-Puccinellietalia</i> <i>maritimae</i> ) Mediterranean salt meadows ( <i>Juncetalia</i> <i>maritimi</i> ) Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho-</i> <i>Batrachion</i> vegetation European dry heaths Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels Petrifying springs with tufa formation ( <i>Cratoneurion</i> ) Old sessile oak woods with Ilex and Blechnum in the British Isles Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> ( <i>Alno-Padion, Alnion</i> <i>incanae, Salicion albae</i> ) Vertigo moulinsiana (Desmoulin's Whorl Snail) Margaritifera margaritifera (Freshwater Pearl Mussel) Austropotamobius pallipes (White-clawed Crayfish) Petromyzon marinus (Sea Lamprey) Lampetra planeri (Brook Lamprey) Lampetra fluviatilis (River Lamprey) Alosa fallax fallax (Twaite Shad) Salmo salar (Salmon) Lutra lutra (Otter) Trichomanes speciosum (Killarnev Fern)	No SPR connection with terrestrial and freshwater QI habitats due to distance from Aol.
Saltee Islands SAC (IE000707)	3	Mudflats and sandflats not covered by seawater at low tide Large shallow inlets and bays Reefs Vegetated sea cliffs of the Atlantic and Baltic coasts Submerged or partially submerged sea caves Halichoerus grypus (Grev Seal)	Grey seal only as site is within 100 km area of search for marine mammals (see Section 5.3.3). No SPR connection with QI habitats due to distance from AoI.

European Site (Code)	Distance from the Area of Interest (km)	List of Relevant Qualifying Interests <sup>6</sup>	Connections (Source-Pathway Receptors)
Blackwater River (Cork/Waterford) SAC (IE002170)	8	Estuaries Mudflats and sandflats not covered by seawater at low tide Perennial vegetation of stony banks Salicornia and other annuals colonising mud and sand Atlantic salt meadows ( <i>Glauco-Puccinellietalia</i> <i>maritimae</i> ) Mediterranean salt meadows ( <i>Juncetalia</i> <i>maritimi</i> ) Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho- Batrachion</i> vegetation Old sessile oak woods with Ilex and Blechnum in the British Isles Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior (Alno-Padion, Alnion</i> <i>incanae, Salicion albae</i> ) <i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel) <i>Austropotamobius pallipes</i> (White-clawed Crayfish) <i>Trichomanes speciosum</i> (Killarney Fern) <i>Petromyzon marinus</i> (Sea Lamprey) <i>Lampetra planeri</i> (Brook Lamprey) <i>Lampetra fluviatilis</i> (River Lamprey) <i>Alosa fallax fallax</i> (Twaite Shad) <i>Salmo salar</i> (Salmon) <i>Lutra lutra</i> (Otter)	SAC is within the 20 km area of search for otter and 50 km area of search for migratory fish species (see Sections 5.3.2 and 5.3.4). No SPR connection with QI habitats due to distance from Aol.
Lower River Suir SAC (IE002137)	8	Atlantic salt meadows ( <i>Glauco-Puccinellietalia</i> maritimae) Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho-</i> <i>Batrachion</i> vegetation <i>Hydrophilous</i> tall herb fringe communities of plains and of the montane to alpine levels	SAC is within the 20 km area of search for otter and 50 km area of search for migratory fish species (see Sections 5.3.2 and 5.3.4). No SPR connection with QI habitats due to distance from AoI.

European Site (Code)	Distance from the Area of Interest	List of Relevant Qualifying Interests <sup>6</sup>	Connections (Source-Pathway Receptors)	
	(KIII)	Old accepte ack woods with llow and Plachnum		
		in the British Isles		
		Allumial forests with Alpus dutiness and		
		Freedom And Annus Giulinosa and		
		inconce. Selicion elboo		
		Torus becasta weads of the Dritich Jalas		
		Taxus baccata woods of the British Isles		
		Margaritifera margaritifera (Freshwater Peari		
		Mussel)		
		Austropotamobius pailipes (white-clawed		
		Crayiisn)		
		Lerenetre planeri (Dreek Lemprey)		
		Lampetra planeri (Brook Lamprey)		
		Aloge follow follow (Tweite Shed)		
		Alosa lallax lallax (Twalle Shau)		
		Salino Salar (Salinon)		
Slapey River Valley SAC (IE000781)	17	Estuarios	SAC is within the 20 km area of search	
	17	Mudflats and sandflats not covered by	for other and 50 km area of search for	
		segurater at low tide	migratory fish species (see Sections 5.3.2	
		Atlantic salt meadows (Clauco-Puccinellietalia	and 5.3.4) and harbour seal as SAC is	
			within 100 km area of search for marine	
		Moditorrangan salt moodows ( Juncotalia	mammale (see Section 5.2.2)	
		maritimi)	mammais (see Section 5.5.5).	
		Water courses of plain to montane levels with	No SPR connection with QI habitats due	
		the Ranunculion fluitantis and Callitricho-	to distance from AoI.	
		Batrachion vegetation		
		Old sessile oak woods with Ilex and Blechnum		
		in the British Isles		
		Alluvial forests with Alnus glutinosa and		
		Fraxinus excelsior (Alno-Padion, Alnion		
		incanae, Salicion albae)		
		Margaritifera margaritifera (Freshwater Pearl		
		Mussel)		
		Petromyzon marinus (Sea Lamprey)		
		Lampetra planeri (Brook Lamprey)		
		Lampetra fluviatilis (River Lamprey)		
		Alosa fallax fallax (Twaite Shad)		
European Site (Code)	Distance from the Area of Interest (km)	List of Relevant Qualifying Interests <sup>6</sup>	Connections (Source-Pathway Receptors)	
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		Salmo salar (Salmon) Lutra lutra (Otter) Phoca vitulina (Harbour Seal)		
Carnsore Point SAC (IE002269)	20	Mudflats and sandflats not covered by seawater at low tide Reefs [1170] <i>Phocoena phocoena</i> (Harbour Porpoise)	Harbour porpoise only as site is within 100 km area of search for marine mammals (see Section 5.3.3).	
			No SPR connection with QI habitats due to distance from AoI.	
Blackwater Bank SAC (IE002953)	32	Sandbanks which are slightly covered by sea water all the time <i>Phocoena phocoena</i> (Harbour Porpoise)	Harbour porpoise only as site is within 100 km area of search for marine mammals (see Section 5.3.3).	
			No SPR connection with QI habitats due to distance from AoI.	
Roaringwater Bay and Islands SAC (IE000101)	75	Large shallow inlets and bays Reefs Vegetated sea cliffs of the Atlantic and Baltic coasts	Harbour porpoise and grey seal only as site is within 100 km area of search for marine mammals (see Section 5.3.3).	
		European dry heaths Submerged or partially submerged sea caves <i>Lutra lutra</i> (Otter) <i>Phocoena phocoena</i> (Harbour Porpoise)	No SPR connection with QI habitats or otter due to distance from AoI.	
Glengarriff Harbour and Woodland SAC (IE000090)	81	Old sessile oak woods with Ilex and Blechnum in the British Isles Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion	Harbour seal only as site is within 100 km area of search for marine mammals (see Section 5.3.3).	
		incanae, Salicion albae) Geomalacus maculosus (Kerry Slug) Rhinolophus hipposideros (Lesser Horseshoe Bat) Lutra lutra (Otter) Phoca vitulina (Harbour Seal)	No SPR connection with QI habitats or otter due to distance from AoI.	

European Site (Code)	Distance from the Area of Interest (km)	List of Relevant Qualifying Interests <sup>6</sup>	Connections (Source-Pathway Receptors)
Pembrokeshire Marine/ Sir Benfro Ford (UK0013116)	ol SAC75	Estuaries Large shallow inlets and bays	Grey seal only as site is within 100 km area of search for marine mammals (see
		Reels Sandbanks which are slightly covered by sea	Section 5.3.3).
		water all the time	No SPR connection with QI habitats.
		Mudflats and sandflats not covered by	migratory fish or otter due to distance
		seawater at low tide	from Aol.
		Coastal lagoons	
		Atlantic salt meadows (Glauco-Puccinellietalia	
		maritimae)	
		Submerged or partially submerged sea caves	
		Rumex rupestris (Shore dock)	
		Petromyzon marinus (Sea lamprey)	
		Lampetra fluviatilis (River lamprey)	
		Alosa alosa (Allis shad)	
		Alosa fallax (Twaite shad)	
		Lutra lutra (Otter)	
		Halichoerus grypus (Grey Seal)	
West Wales Marine / Gorllewin Cymru SAC (UK0030397)	Forol 81	Phocoena phocoena (Harbour Porpoise)	SAC is within 100 km area of search for marine mammals (see Section 5.3.3).
Bannow Bay SPA (IE004033)	Within SPA boundary	Light-bellied Brent goose ( <i>Branta bernicla hrota</i> )	Aol overlaps with SPA boundary.
		Shelduck ( <i>Tadorna tadorna</i> )	
		Pintail (Anas acuta)	
		Oystercatcher (Haematopus ostralegus)	
		Golden plover ( <i>Pluvialis apricaria</i> )	
		Grey plover (Pluvialis squatarola)	
		Lapwing (Vanellus vanellus)	
		Knot ( <i>Calidris canutus</i> )	
		Dunlin ( <i>Calidris alpina</i> )	
		Black-tailed godwit (Limosa limosa)	
		Bar-tailed godwit (Limosa lapponica)	
		Curlew (Numenius arquata)	
		Redshank ( <i>Tringa totanus</i> )	
		Wetland and Waterbirds	
Mid Waterford Coast SPA (IE004193)	Within SPA boundary	Cormorant (Phalacrocorax carbo)	AoI overlaps with SPA boundary.

European Site (Code)	Distance from the Area of Interest (km)	List of Relevant Qualifying Interests <sup>6</sup>	Connections (Source-Pathway Receptors)
		Peregrine (Falco peregrinus)	
		Herring gull (Larus argentatus)	
		Chough ( <i>Pvrrhocorax pvrrhocorax</i> )	
Ballycotton Bay SPA (IE004022)	Within SPA boundary	Teal (Anas crecca)	Aol overlaps with SPA boundary.
, , , , , , , , , , , , , , , , , , ,	,	Ringed plover (Charadrius hiaticula)	
		Golden plover ( <i>Pluvialis apricaria</i> )	
		Grey plover ( <i>Pluvialis squatarola</i> )	
		Lapwing (Vanellus vanellus)	
		Black-tailed godwit (Limosa limosa)	
		Bar-tailed godwit (Limosa lapponica)	
		Curlew (Numenius arquata)	
		Turnstone (Arenaria interpres)	
		Common gull (Larus canus)	
		Lesser black-backed gull (Larus fuscus)	
		Wetland and Waterbirds	
Keeragh Islands SPA (IE004118)	Within SPA boundary	Cormorant (Phalacrocorax carbo)	Aol overlaps with SPA boundary.
Seas off Wexford SPA (IE004237)	Within SPA boundary	Red-throated diver (Gavia stellata)]	Aol overlaps with SPA boundary.
	-	Fulmar ( <i>Fulmarus glacialis</i> )	
		Manx shearwater (Puffinus puffinus)	
		Gannet (Morus bassanus)	
		Cormorant (Phalacrocorax carbo)	
		Shag (Phalacrocorax aristotelis)	
		Common scoter (Melanitta nigra)	
		Mediterranean gull (Larus melanocephalus)	
		Black-headed gull (Chroicocephalus	
		ridibundus)	
		Lesser black-backed gull (Larus fuscus)	
		Herring gull (Larus argentatus)	
		Kittiwake (Rissa tridactyla)	
		Sandwich tern (Sterna sandvicensis)	
		Roseate tern (Sterna dougallii)	
		Common tern (Sterna hirundo)	
		Arctic tern (Sterna paradisaea)	
		Little tern (Sterna albifrons)	
		Guillemot ( <i>Uria aalge</i> )	
		Razorbill (Alca torda)	
		Puffin ( <i>Fratercula arctica</i> )	

European Site (Code) Distance from the Area of Interest List of Relevant Qualifying Interests <sup>6</sup> (km)		Connections (Source-Pathway Receptors)	
Cork Harbour SPA (IE004030)	1	Little grebe ( <i>Tachybaptus ruficollis</i> ) Great crested grebe ( <i>Podiceps cristatus</i> ) Cormorant ( <i>Phalacrocorax carbo</i> ) Grey heron ( <i>Ardea cinerea</i> ) Shelduck ( <i>Tadorna tadorna</i> ) Wigeon ( <i>Anas penelope</i> ) Teal ( <i>Anas crecca</i> ) Pintail ( <i>Anas acuta</i> ) Shoveler ( <i>Anas clypeata</i> ) Red-breasted merganser ( <i>Mergus serrator</i> ) Oystercatcher ( <i>Haematopus ostralegus</i> ) Golden plover ( <i>Pluvialis apricaria</i> ) Grey plover ( <i>Pluvialis squatarola</i> ) Lapwing ( <i>Vanellus vanellus</i> ) Dunlin ( <i>Calidris alpina</i> ) Black-tailed godwit ( <i>Limosa limosa</i> ) Bar-tailed godwit ( <i>Limosa lapponica</i> ) Curlew ( <i>Numenius arquata</i> ) Redshank ( <i>Tringa totanus</i> ) Black-headed gull ( <i>Chroicocephalus ridibundus</i> ) Common gull ( <i>Larus canus</i> ) Lesser black-backed gull ( <i>Larus fuscus</i> ) Common tern ( <i>Sterna hirundo</i> ) Wetland and Waterbirds	SPA is within 20 km area of search for bird sites (see Section 5.3.5).
Ballyteige Burrow SPA (IE004020)	1	Light-bellied Brent goose ( <i>Branta bernicla hrota</i> ) Shelduck ( <i>Tadorna tadorna</i> ) Golden plover ( <i>Pluvialis apricaria</i> ) Grey plover ( <i>Pluvialis squatarola</i> ) Lapwing ( <i>Vanellus vanellus</i> ) Black-tailed godwit ( <i>Limosa limosa</i> ) Bar-tailed godwit ( <i>Limosa lapponica</i> ) Wetland and Waterbirds	SPA is within 20 km area of search for bird sites (see Section 5.3.5).
Tramore Back Strand SPA (IE004027)	1	Light-bellied Brent goose ( <i>Branta bernicla hrota</i> ) Golden plover ( <i>Pluvialis apricaria</i> )	SPA is within 20 km area of search for bird sites (see Section 5.3.5).

European Site (Code)	Distance from the Area of Interest (km)	List of Relevant Qualifying Interests <sup>6</sup>	Connections (Source-Pathway Receptors)
		Grey plover ( <i>Pluvialis squatarola</i> ) Lapwing ( <i>Vanellus vanellus</i> ) Dunlin ( <i>Calidris alpina</i> ) Black-tailed godwit ( <i>Limosa limosa</i> ) Bar-tailed godwit ( <i>Limosa lapponica</i> ) Curlew ( <i>Numenius arquata</i> ) Watland and Waterbirds	
Ballymacoda Bay SPA (IE004023)	4	Weitand und WaterbindsWigeon (Anas penelope)Teal (Anas crecca)Ringed plover (Charadrius hiaticula)Golden plover (Pluvialis apricaria)Grey plover (Pluvialis squatarola)Lapwing (Vanellus vanellus)Sanderling (Calidris alba)Dunlin (Calidris alpina)Black-tailed godwit (Limosa limosa)Bar-tailed godwit (Limosa lapponica)Curlew (Numenius arquata)Redshank (Tringa totanus)Turnstone (Arenaria interpres)Black-headed gull (Chroicocephalus ridibundus)Common gull (Larus canus)Lesser black-backed gull (Larus fuscus)Wetland and Waterbirds	SPA is within 20 km area of search for bird sites (see Section 5.3.5).
Helvick Head to Ballyquin SPA (IE004192)	5	Peregrine ( <i>Falco peregrinus</i> ) Cormorant ( <i>Phalacrocorax carbo</i> ) Herring gull ( <i>Larus argentatus</i> ) Kittiwake ( <i>Rissa tridactyla</i> ) Chough ( <i>Pyrrhocorax pyrrhocorax</i> )	SPA is within 20 km area of search for bird sites (see Section 5.3.5).
Dungarvan Harbour SPA (IE004032)	6	Great crested grebe ( <i>Podiceps cristatus</i> ) Light-bellied Brent goose ( <i>Branta bernicla hrota</i> ) Shelduck ( <i>Tadorna tadorna</i> ) Red-breasted merganser ( <i>Mergus serrator</i> ) Oystercatcher ( <i>Haematopus ostralegus</i> ) Golden plover ( <i>Pluvialis aprica</i> ria)	SPA is within 20 km area of search for bird sites (see Section 5.3.5).

European Site (Code)	Distance from the Area of Interest (km)	List of Relevant Qualifying Interests <sup>6</sup>	Connections (Source-Pathway Receptors)	
		Grey plover ( <i>Pluvialis squatarola</i> ) Lapwing ( <i>Vanellus vanellus</i> ) Knot ( <i>Calidris canutus</i> ) Dunlin ( <i>Calidris alpina</i> ) Black-tailed godwit ( <i>Limosa limosa</i> ) Bar-tailed godwit ( <i>Limosa lapponica</i> ) Curlew ( <i>Numenius arquata</i> ) Redshank ( <i>Tringa totanus</i> ) Turnstone ( <i>Arenaria interpres</i> ) Wetland and Waterbirds		
Saltee Islands SPA (IE000707)	8	Fulmar ( <i>Fulmarus glacialis</i> ) Gannet ( <i>Morus bassa</i> nus) Cormorant ( <i>Phalacrocorax carb</i> o) Shag ( <i>Phalacrocorax aristotelis</i> ) Lesser black-backed gull ( <i>Larus fuscus</i> ) Herring gull ( <i>Larus argentatus</i> ) Kittiwake ( <i>Rissa tridactyla</i> ) Guillemot ( <i>Uria aal</i> ge) Razorbill ( <i>Alca torda</i> ) Puffin ( <i>Fratercula arctica</i> )	SPA is within 20 km area of search for bird sites (see Section 5.3.5).	
Sovereign Islands SPA (IE004124)	7	Cormorant (Phalacrocorax carbo)	SPA is within 20 km area of search for bird sites (see Section 5.3.5).	
Blackwater Estuary SPA (IE004028)	9	Wigeon ( <i>Anas penelope</i> ) Golden plover ( <i>Pluvialis apricaria</i> ) Lapwing ( <i>Vanellus vanellus</i> ) Dunlin ( <i>Calidris alpina</i> ) Black-tailed godwit ( <i>Limosa limosa</i> ) Bar-tailed godwit ( <i>Limosa lapponica</i> ) Curlew ( <i>Numenius arquata</i> ) Redshank ( <i>Tringa totanus</i> ) Wetland and Waterbirds	SPA is within 20 km area of search for bird sites (see Section 5.3.5).	
Tacumshin Lake SPA (IE004092)	16	Little grebe ( <i>Tachybaptus ruficollis</i> ) Bewick's swan ( <i>Cygnus columbianus bewickii</i> ) Whooper swan ( <i>Cygnus cygnus</i> ) Wigeon ( <i>Anas penelope</i> ) Gadwall ( <i>Anas strepera</i> ) Teal ( <i>Anas crecca</i> )	SPA is within 20 km area of search for bird sites (see Section 5.3.5).	

European Site (Code)	Distance from the Area of Interest	List of Relevant Qualifying Interests <sup>6</sup>	Connections (Source-Pathway Receptors)
	(km)		
		Pintail ( <i>Anas acuta</i> )	
		Shoveler (Anas clypeata)	
		Tufted duck ( <i>Aythya fuligula</i> )	
		Coot ( <i>Fulica atra</i> )	
		Golden plover ( <i>Pluvialis apricaria</i> )	
		Grey plover ( <i>Pluvialis squatarola</i> )	
		Lapwing (Vanellus vanellus)	
		Black-tailed godwit (Limosa limosa)	
		Wetland and Waterbirds	
Wexford Harbour and Slobs SPA	(IE004076) 17	Little grebe (Tachybaptus ruficollis)	SPA is within 20 km area of search for
		Great crested grebe (Podiceps cristatus)	bird sites (see Section 5.3.5).
		Cormorant (Phalacrocorax carbo)	
		Grey heron (Ardea cinerea)	
		Bewick's swan ( <i>Cygnus columbianus bewickii</i> )	
		Whooper swan ( <i>Cygnus cygnus</i> )	
		Light-bellied Brent goose (Branta bernicla	
		hrota)	
		Shelduck (Tadorna tadorna)	
		Wigeon (Anas penelope)	
		Teal (Anas crecca)	
		Mallard (Anas platyrhynchos)	
		Pintail (Anas acuta)	
		Scaup (Aythya marila)	
		Goldeneye (Bucephala clangula)	
		Red-breasted merganser (Mergus serrator)	
		Hen harrier (Circus cyaneus)	
		Coot ( <i>Fulica atra</i> )	
		Oystercatcher (Haematopus ostralegus)	
		Golden plover ( <i>Pluvialis apricaria</i> )	
		Grey plover (Pluvialis squatarola)	
		Lapwing (Vanellus vanellus)	
		Knot (Calidris canutus)	
		Sanderling (Calidris alba)	
		Dunlin ( <i>Calidris alpina</i> )	
		Black-tailed godwit ( <i>Limosa limosa</i> )	
		Bar-tailed godwit (Limosa lapponica)	
		Curlew (Numenius arquata)	

European Site (Code)	Distance from the Area of Interest (km)	List of Relevant Qualifying Interests <sup>6</sup>	Connections (Source-Pathway Receptors)	
		Redshank ( <i>Tringa totanus</i> )		
		Black-headed gull (Chroicocephalus		
		ridibundus)		
	Lesser black-backed gull (Larus fuscus)			
	Little tern (Sterna albifrons)			
	Greenland white-fronted goose (Anser			
albifrons flavirostris) Wetland and Waterbirds				
		Wetland and Waterbirds	Waterbirds	
Old Head of Kinsale SPA (IE004021)	18	Kittiwake ( <i>Rissa tridactyla</i> )	SPA is within 20 km area of search for	
		Guillemot ( <i>Uria aalge</i> )	bird sites (see Section 5.3.5).	



Figure 5.1 European Sites within and adjacent to the SI works Aol



Figure 5.2 European Sites within 100 km of the SI works Aol

# 5.4 **Conservation Objectives**

The integrity of a European site (referred to in Article 6(3) of the EU Habitats Directive) is determined based on the conservation status of the QI of these sites.

European and national legislation places a collective obligation on Ireland to maintain at favourable conservation status areas designated as SAC and SPA. The government and its agencies are responsible for the implementation and enforcement of regulations that will ensure the ecological integrity of these sites.

Favourable conservation status of a habitat is achieved when:

- Its natural range and area it covers within that range are stable or increasing;
- The specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future; and
- The conservation status of its typical species is favourable.

The favourable conservation status 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; 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.

The specific conservation objectives for each European site in Ireland are available on www.npws.ie.

# 6 SUPPORTING INFORMATION FOR SCREENING FOR APPROPRIATE ASSESSMENT

## 6.1 Management of European Sites

The SI works are not directly connected with or necessary to the management of any European site(s).

# 6.2 Assessment of Likely Significant Effects

This section determines whether the impacts identified in Section 5.2.1 could have significant effects on the QI or SCIs of the European sites identified in Section 5.3 in view of the conservation objectives of the sites. As described in Table 5.1, the potential impacts arising from the SI works have been identified as follows:

- Noise, vibration, lighting, and human presence-related species disturbance (including the presence of increased marine traffic, where relevant);
- Habitat loss, alteration and/ or fragmentation (including increased SSC/ smothering);
- Underwater noise, including injury and or displacement of Annex II marine mammals, otter, and fish from underwater noise; and,
- Risk of collision.

The following sections will assess whether these impacts are likely to give rise to significant effects on the QIs or SCIs of European sites. The assessment has been split into sections based on receptor type, i.e. habitats, marine mammals, fish, birds etc.

#### 6.2.1 Annex I Habitats

This section assesses the potential for likely significant effects on those SACs designated for Annex I marine and coastal habitats, where there is potential for connectivity with the AoI and the proposed SI works. The assessment is based on the precautionary principle and has been undertaken in the absence of mitigation.

The SPR assessment (Table 5.1) concluded that the following impacts have the potential to affect Annex I habitats as a result of the SI works:

 Habitat loss, alteration and/or fragmentation (including increased SSC/smothering – relevant to subtidal habitats only).

European sites taken forward for assessment and their relevant QI habitats are listed in Table 6.1 below. The following sections assess the likelihood for significant effects to coastal/ intertidal and subtidal habitats and summarise the screening for relevant European sites.

# Table 6.1 European sites selected for consideration in the Screening for Appropriate Assessment for Annex I Habitats

EuropeanDistance from the Site Area of Interest (km) Code	List of Relevant Annex I Habitat Qualifying Interests <sup>7</sup>
Bannow Within SAC boundary Bay SAC (000697)	Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Annual vegetation of drift lines [1210] Perennial vegetation of stony banks [1220] Salicornia and other annuals colonising mud and sand [1310] Atlantic salt meadows ( <i>Glauco-Puccinellietalia maritimae</i> ) [1330] Mediterranean salt meadows ( <i>Juncetalia maritimi</i> ) [1410]

<sup>&</sup>lt;sup>7</sup> Qualifying interests that have not been identified as relevant to this specific assessment are excluded from this table. A full list of QIs for each site considered is provided in Table 5.2, and in each of the receptor-specific assessments.

Europear	Distance from the	List of Relevant Annex I Habitat Qualifying Interests <sup>7</sup>
Site	Area of Interest (km)	
Code		
		Mediterranean and thermo-Atlantic halophilous scrubs (Sarcocornetea fruticosi)
		[1420]
		Embryonic shifting dunes [2110]
		Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120]
		Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]
Hook	Within SAC boundary	Large shallow inlets and bays [1160]
Head		Reefs [1170]
SAC		Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]
(000764)		
River	Within SAC boundary	Estuaries
Barrow		Mudflats and sandflats not covered by seawater at low tide
and Rive	r	Reefs
Nore		Salicornia and other annuals colonising mud and sand
SAC		Atlantic salt meadows (Glauco-Puccinellietalia maritimae)
(002162)		Mediterranean salt meadows (Juncetalia maritimi)

### 6.2.1.1 Coastal surveys

Coastal survey activities (below the HWM) with the potential to interact with QI habitats at the above-listed SACs are as follows:

- Coastal geophysical surveys;
- Coastal geotechnical surveys (trial pits);
- Coastal environmental surveys (ecological walkovers, ornithological and marine mammal vantage point surveys and intertidal core sampling); and,
- Archaeological intertidal walkovers and sampling (if required);

These coastal surveys will take place at the potential landfall zones for survey and investigation (see Table 2.1). There is potential for overlap between these coastal surveys and the following SACs: Hook Head SAC and Bannow Bay SAC.

With the exception of the coastal geotechnical surveys (trial pits), intertidal core sampling and archaeological sampling (if required), the coastal surveys will involve a small team of surveyors walking along the beach or intertidal zone using non-intrusive hand-held equipment or minimally intrusive equipment such as pole-mounted devices or GPR and magnetometer equipment. During these non-intrusive surveys, no sediment or vegetation will be removed or disturbed beyond baseline levels (all potential landfall locations are popular beaches where human recreational activities regularly occur), and therefore there will be no habitat loss, alteration or fragmentation.

Geotechnical trial pits and intertidal core sampling (and archaeological sampling, if required) are intrusive and have the potential to remove and/or disturb sedimentary habitats at the landfall zones, below the HWM. Up to 6 trial pits will be excavated at each potential landfall zone and 18 intertidal cores will be sampled at each landfall zone. Intrusive and extractive coastal surveys at the landfall zones therefore have the potential to directly remove, alter or fragment the coastal QI habitats of Bannow Bay SAC and Hook Head. The **likelihood of significant effects cannot be excluded and the coastal QI habitats of Bannow Bay and Hook Head SAC are screened in.** 

Relevant coastal QI habitats at these sites are:

- Annual vegetation of drift lines (Bannow Bay SAC);
- Perennial vegetation of stony banks (Bannow Bay SAC);
- Salicornia and other annuals colonising mud and sand (Bannow Bay SAC);
- Atlantic salt meadows (Bannow Bay SAC);

- Mediterranean salt meadows (Bannow Bay SAC);
- Mediterranean and thermo-Atlantic halophilous scrubs (Bannow Bay SAC);
- Embryonic shifting dunes (Bannow Bay SAC);
- Shifting dunes along the shoreline with Ammophila arenaria (white dunes) (Bannow Bay SAC);
- Fixed coastal dunes with herbaceous vegetation (grey dunes) (Bannow Bay SAC);
- Vegetated sea cliffs of the Atlantic and Baltic coasts (Hook Head SAC).

#### 6.2.1.2 Marine surveys

Marine survey activities with the potential to interact with Annex I habitats are as follows:

- Marine geotechnical surveys (vibrocore testing, boreholes, CPT);
- Marine environmental surveys (grab sampling); and,
- Mooring of metocean and marine mammal acoustic devices (metocean buoy, ADCP, SAM) to seabed.;

Proposed locations for intrusive geotechnical and environmental sampling, as well as anchoring of metocean and acoustic equipment, are presented in the drawings included in Appendix A to the Project Description report accompanying the MULA. However, as final sampling locations will be subject to the analysis of the geophysical survey findings, the entire subtidal area within the AoI must be considered for sampling, in line with the precautionary principle. As a result, there is potential for direct overlap of the above-listed surveys with subtidal Annex I habitats at the following SACs:

- Bannow Bay SAC;
- Hook Head SAC; and
- River Barrow and River Nore SAC.

Intrusive sampling equipment, including grab samplers, borehole drilling, jack-up barge (JUB) legs and anchoring points have the potential to lead to habitat loss or damage. There is also potential for the suspension of sediments and subsequent smothering of sensitive habitats such as Annex I Reefs, although this is unlikely given the high energy marine environment off the south coast. As final sampling locations are not yet known and will be dependent on review and interpretation of the marine geophysical data, and there is the potential for overlap with Annex I habitats, **likely significant effects to subtidal QI habitats cannot be excluded in the absence of mitigation, and as a result, Bannow Bay SAC, Hook Head SAC and River Barrow and River Nore SAC are screened in.** 

Relevant subtidal QI habitats at these sites are:

- Estuaries (Bannow Bay SAC, River Barrow and River Nore SAC);
- Mudflats and sandflats not covered by seawater at low tide (Bannow Bay SAC, River Barrow and River Nore SAC);
- Large shallow inlets and bays (Hook Head SAC);
- Reefs (Hook Head SAC and River Barrow and River Nore SAC).

#### 6.2.2 Annex II Otter

This section assesses the potential for likely significant effects on those SACs designated for Annex II otter, where there is potential for connectivity with the AoI and the proposed SI Works. The assessment is based on the precautionary principle and has been undertaken in the absence of mitigation.

The SPR assessment (Table 5.1) concluded that the following impacts have the potential to affect Annex II otter as a result of the SI works:

- Habitat loss, alteration and/or fragmentation;
- Above-water noise, vibration and lighting; and,
- Underwater noise.

Survey activities with the potential to interact with Annex II otter are as follows:

- Coastal geophysical surveys;
- Coastal geotechnical surveys (trial pits);
- Archaeological intertidal walkovers and sampling (if required);
- Coastal environmental surveys (habitat walkover surveys, intertidal core sampling, bat activity and roost assessment surveys, mammal and ornithology surveys);
- Marine geophysical surveys;
- Marine geotechnical surveys; and,
- ADCP.

European sites taken forward for assessment for otter are listed in Table 6.2 below. The following sections assess the likelihood for significant effects to otter and summarise the screening for relevant European sites.

#### Table 6.2 European sites selected for consideration in the Screening for Appropriate Assessment for Annex II Otter

European Site Code	Distance from the Area of Interest (km)	List of Relevant Annex II Qualifying Interests <sup>8</sup>
River Barrow and River Nore SAC (002162)	Within SAC boundary	Lutra lutra (Otter)
Blackwater River (Cork/Waterford) SAC (002170)	8	<i>Lutra lutra (</i> Otter)
Lower River Suir SAC (002137)	8	Lutra lutra (Otter)
Slaney River Valley SAC (000781)	17	Lutra lutra (Otter)

#### 6.2.2.1 Habitat loss, alteration and/or fragmentation

It is considered that intrusive sampling works will not interact with otter holts or couches as these are not likely to be on beaches below the HWM where intrusive sampling will take place. Likely significant effects to otter due to habitat loss, alteration and/or fragmentation can be excluded.

#### 6.2.2.2 Above-water noise, vibration and lighting

With the exception of the coastal geotechnical surveys (trial pits), intertidal core sampling and archaeological sampling (if required), the coastal surveys will involve a small team of surveyors walking along the beach or intertidal zone (below the HWM) using non-intrusive hand-held equipment or minimally intrusive equipment such as pole-mounted devices or GPR and magnetometer equipment. During these non-intrusive surveys, and access for same, no above-water noise, vibration or light will be emitted beyond baseline levels (all potential landfall zones are accessible beaches where human recreational activities regularly occur). As otter are typically most active at night, it is considered unlikely that otter will be present during coastal surveys which will take place during daylight hours.

Coastal geotechnical surveys (excavation of trial pits) have the potential to emit above-water noise and vibration beyond baseline levels on land, while above-water noise from geotechnical sampling (borehole and vibrocore drilling from a JUB) in the marine environment close to shore (<15 m LAT) also have the potential

<sup>&</sup>lt;sup>8</sup> Qualifying interests that have not been identified as relevant to this specific assessment are excluded from this table. A full list of QIs for each site considered is provided in Table 5.2, and in each of the receptor-specific assessments.

to disturb otters from nearby SACs using the area. However, given the limited number of samples to be retrieved (up to six trial pits at each potential landfall zone and three boreholes on the seaward side of each landfall zone), any disturbance caused is likely to be temporary and limited in nature. While the precise sampling locations are not known, they will be within or adjacent to the seven landfall zones, and regardless of the location of sampling within these areas, the conclusion remains that any disturbance is likely to be temporary and limited in nature. Therefore, likely significant effects to otter due to above-water disturbance can be ruled out.

#### 6.2.2.3 Underwater noise

As otter tend to forage within 80 m of the shoreline (NPWS, 2009), any potential effects are likely to be associated with survey activity at the potential landfall zones, rather than survey activity further offshore, however, there is potential for interaction between foraging otters and underwater noise generated during the geophysical and geotechnical surveys, as well as from survey vessels. For otters foraging in the marine environment, this has the potential to result in injury and/or disturbance. While there are no published underwear noise injury criteria for Eurasian otter, Southall et al. (2019) has provided injury criteria for the 'Other marine carnivores in water (OCW)' hearing group, which includes sea otters. The OCW criteria is extended to Eurasian otter in the current assessment in the absence of more suitable criteria. The underwater noise assessment undertaken to inform this SISAA has concluded the following with respect to injury and/or disturbance to OCW:

- In the absence of mitigation, geophysical sound sources have the potential to cause auditory injury to OCW within 30 m of the sound source and temporary threshold shift (TTS) within 800 m. Behavioural disturbance for all hearing groups may range out to 19 km.
- In the absence of mitigation, geotechnical sound sources have the potential to cause auditory injury to OCW within 10 m of the sound source and TTS within 170 m. Ranges for behavioural disturbance for all hearing groups are up to 14 km.
- In the absence of mitigation, ADCPs have the potential to cause auditory injury to OCW within <10 m of the sound source and TTS within <10 m. Ranges for behavioural disturbance for all hearing groups are up to 440 m, however, given the ADCPs main energy is above 300 kHz (outside the hearing range of the receivers) the behavioural disturbance ranges while accounting for the receivers' hearing capabilities have been included. Accounting for the frequency dependent sensitivity of the receivers, the behavioural disturbance range decreases to <10 m for all hearing groups. It should be noted that the deployment of the ADCPs will not be within 80 m of the HWM and therefore it is outside of the zone of influence for otter.</p>

In summary, in the absence of mitigation measures, likely significant effects cannot be excluded for the otter QI at River Barrow and River Nore SAC, Blackwater River (Cork/Waterford) SAC, Lower River Suir SAC and Slaney River Valley SAC, due to the potential for underwater noise disturbance.

#### 6.2.3 Annex II Marine Mammals

This section assesses the potential for likely significant effects on those SACs designated for Annex II marine mammals, where there is potential for connectivity with the AoI and the proposed SI works. The assessment is based on the precautionary principle and has been undertaken in the absence of mitigation.

The SPR assessment (Table 5.1) concluded that the following impacts have the potential to affect Annex II marine mammal species as a result of the SI works:

- Above-water noise, vibration and lighting;
- Habitat loss, alteration and/or fragmentation (including increased SSC/smothering);
- Underwater noise; and,
- Risk of collision.

European sites taken forward for assessment for Annex II marine mammals are listed in Table 6.3 below. The following sections assess the likelihood for significant effects to marine mammals and summarise the screening for relevant European sites.

 Table 6.3 European sites selected for consideration in the Screening for Appropriate Assessment for Annex II

 Marine Mammals

European Site (Code)	Distance from the Area of Interest (km)	List of Relevant Annex II Qualifying Interests9
Hook Head SAC (000764)	Within SAC boundary	Bottlenose dolphin ( <i>Tursiops truncatus</i> ) Harbour porpoise ( <i>Phocoena phocoena</i> )
Saltee Islands SAC (000707)	3	Grey seal ( <i>Halichoerus grypus</i> )
Slaney River Valley SAC (000781)	17	Harbour seal (Phoca vitulina)
Carnsore Point SAC (002269)	20	Harbour porpoise (Phocoena phocoena)
Blackwater Bank SAC (002953)	32	Harbour porpoise (Phocoena phocoena)
Roaringwater Bay and Islands SAC (000101)	75	Harbour porpoise ( <i>Phocoena phocoena</i> ) Grey seal ( <i>Halichoerus grypus</i> )
Pembrokeshire Marine/Sir Benfro Forol SAC (UK0013116)	75	Grey seal (Halichoerus grypus)
Glengarriff Harbour and Woodland SAC (IE000090)	81	Harbour seal (Phoca vitulina)
West Wales Marine/Gorllewin Cymru Forol SAC (UK0030397)	81	Harbour porpoise (Phocoena phocoena)

#### 6.2.3.1 Above-water noise, vibration and lighting

There is potential for the coastal surveys at the potential landfall zones to disturb hauled out seals, however, none of the landfall zones overlap with SACs designated for Annex I harbour seal or grey seal or known haul-outs for these species. The Saltee Islands SAC is the closest site designated for grey seal and its boundary is over 3 km from the Aol boundary, with the islands themselves approximately 8 km away; therefore, above-water noise, vibration and lighting from the SI works will not result in likely significant effects on the grey seals hauled out on the Saltee Islands. Likely significant effects due to above-water disturbance can therefore be ruled out for all marine mammal SACs.

# 6.2.3.2 Habitat loss, alteration and/or fragmentation (including increased SSC/smothering)

As above, the proposed SI works do not overlap spatially with European sites designated for harbour seal and grey seal, therefore there is no risk of direct habitat loss to haul-out sites or supporting habitats for these species. The proposed SI works overlap with Hook Head SAC (designated for harbour porpoise and bottlenose dolphin), therefore there is potential for interaction between the proposed SI works and supporting habitats for harbour porpoise and bottlenose dolphin.

There is potential for benthic habitat loss due to intrusive sampling methodologies (grab sampling, boreholes, vibrocoring and anchoring of metocean and acoustic devices), and smothering of benthic and pelagic prey species due to increased SSC. The AoI is in an exposed location off the south coast of Ireland, and benthic habitats in the area are generally high energy (see Section 4.1), therefore it can be expected that habitats will recover quickly from relatively limited sediment extraction, suspension and settling of sediment. Similarly, it is likely that prey species such as benthic and pelagic fish are adapted to the high energy environment and as such will not be affected by the temporary and spatially limited sediment sampling. The extent of sediment to be removed is relatively limited (maximum of 420 grab samples, 276 vibrocores, 29 boreholes across the AoI), therefore there will be plenty of alternative foraging habitat and prey sources available for temporarily displaced foraging marine mammals. While the precise sampling locations are not known, they will be within the AoI, and regardless of the location of sampling, the conclusion remains the same. Likely significant effects due to habitat loss, alteration or fragmentation of intertidal or subtidal habitats can therefore be ruled out for all marine mammal SACs.

<sup>&</sup>lt;sup>9</sup> Qualifying interests that have not been identified as relevant to this specific assessment are excluded from this table. A full list of QIs for each site considered is provided in Table 5.2, and in each of the receptor-specific assessments.

#### 6.2.3.3 Underwater noise

There is the potential for underwater noise generated during the geophysical and geotechnical surveys, as well as from survey vessels, to result in injury and/or disturbance to QI marine mammal species.

This SISAA has drawn upon the results of the Subsea Noise Technical Report (provided under separate cover with the MULA documents) to inform this assessment of underwater noise effects. Full details of the technical report have not been repeated here, but the main conclusions relevant to this screening are outlined below. The assessment has used the latest guidance (National Oceanic and Atmospheric Administration, 2024), reflecting the current best available method for assessing impact from noise on marine mammals. Based on this guidance,

Auditory impacts to marine mammals can be defined as non-reversible auditory injury (previously referred to as permanent threshold shift (PTS)), or as a temporary threshold shift (TTS) in hearing sensitivity, which can have negative effects on the ability to use natural sounds (e.g. to communicate, navigate, locate prey) for a period of minutes, hours or days.

The zone of injury is classified as the distance over which a fleeing marine mammal can suffer non-reversible auditory injury. Injury thresholds are based on a dual criteria approach using both un-weighted L<sub>P</sub> (maximal instantaneous sound pressure level (SPL) and marine mammal hearing weighted sound exposure level (SEL). The hearing weighting function is designed to represent the sensitivity for each hearing group within which acoustic exposures can have auditory effects. For full details on marine mammal hearing groups, please refer to the Subsea Noise Technical Report.

To assess the impacts of the geophysical survey, each type of sub-bottom profiler (SBP) was modelled as a different scenario. Each scenario assumed that the vessel, SSS, USBL and MBES sources were active, with only the type of SBP changing between the scenarios modelled. The results have been summarised below to present the 'worst-case scenario', and it should be noted that no mitigation (i.e. soft-start measures, or marine mammal observers) has been applied at this stage.

#### Parametric SBP and Chirper/Pinger, no mitigation:

- For bottlenose dolphin and seals, auditory injury could occur within 20 m of the sound source, and TTS could occur within 690 m.
- For harbour porpoise, auditory injury could occur within 250 m of the sound source, while TTS could occur within 4,100 m.
- For all marine mammals, behavioural disturbance could occur out to 16 km when applying the criterion strictly (unweighted for hearing groups). However, in their guidance document for assessing noise disturbance against the conservation objectives of harbour porpoise SACs, JNCC (2020) advises that fixed distances should be applied to assess behavioural disturbance, based on empirical evidence. For geophysical surveys, the JNCC's 'effective deterrence range' is 5 km. While the JNCC document focuses on harbour porpoise, this is precautionary for all other hearing groups, as harbour porpoise is considered to be the most sensitive.

#### Sparker/UHRS and Boomer, no mitigation:

- For bottlenose dolphin and seals, auditory injury could occur within 70 m of the sound source, and TTS could occur within 1,500 m.
- For harbour porpoise, auditory injury could occur within 2,200 m of the sound source, while TTS could occur within 4,300 m.
- For all marine mammals, behavioural disturbance could occur out to 19 km when applying the criterion strictly (unweighted for hearing groups). However, in their guidance document for assessing noise disturbance against the conservation objectives of harbour porpoise SACs, JNCC (2020) advises that fixed distances should be applied to assess behavioural disturbance, based on empirical evidence. For geophysical surveys, including sparkers and boomers, the JNCC's 'effective deterrence range' is 5 km. While the JNCC document focuses on harbour porpoise, this is precautionary for all other hearing groups, as harbour porpoise is considered to be the most sensitive.

#### Geotechnical survey, no mitigation:

For bottlenose dolphin and seals, auditory injury could occur within 20 m of the sound source, and TTS could occur within 550 m.

- For harbour porpoise, auditory injury could occur within 180 m of the sound source, while TTS could occur within 3,800 m.
- For all marine mammals, behavioural disturbance could occur out to 14 km, however, as this is unweighted for the hearing groups and as such, is considered to be highly precautionary, as low frequency drilling noise is likely to be below the hearing range of seals, dolphins and harbour porpoise.

#### ADCP, no mitigation:

- For bottlenose dolphin and seals, auditory injury could occur within 10 m of the sound source, and TTS could occur within 10 m.
- For harbour porpoise, auditory injury could occur within 40 m of the sound source, while TTS could occur within 100 m.
- For all marine mammals, behavioural disturbance could occur out to 440 m, when applying the criterion strictly (unweighted for hearing groups), however, given the ADCPs main energy is above 300 kHz (outside the hearing range of the receivers) the behavioural disturbance ranges while accounting for the receivers' hearing capabilities has also been included. Accounting for the frequency dependent sensitivity of the receivers, the behavioural disturbance range decreases to <10 m for all groups.

# In summary, in the absence of mitigation, likely significant effects due to underwater noise disturbance cannot be excluded for all marine mammal SACs considered in this SISAA:

- Hook Head SAC;
- Saltee Islands SAC;
- Carnsore Point SAC;
- Slaney River Valley SAC;
- Blackwater Bank SAC;
- Roaringwater Bay and Islands SAC;
- Glengarriff Harbour and Woodland SAC
- Pembrokeshire Marine/ Sir Benfro Forol SAC; and
- West Wales Marine / Gorllewin Cymru Forol SAC.

### 6.2.3.4 Collision Risk

Vessel strikes are a known cause of mortality in marine mammals (Laist et al., 2001). Non-lethal collisions have also been documented (Laist et al., 2001; Van Waerebeek et al., 2007). Injuries from such collisions can be divided into two broad categories: blunt trauma from impact and lacerations from propellers. Injuries may result in individuals becoming vulnerable to secondary infections or predation.

It has been calculated, on a highly precautionary basis that a maximum of eight vessels could be operating at any one time within the AoI (see Section 2.1.1 for details). For the geophysical surveys, the vessels will be travelling in a predefined trajectory. It is considered that this will allow animals to predict the movement of the vessels and therefore avoid collisions. It is likely that the other survey vessels (i.e. benthic survey vessels, geotechnical survey vessel and metocean equipment deployment vessels) will be stationary for extended periods throughout their operations which will reduce the potential for collision with these vessels.

As documented in the accompanying Assessment of Impact on the Maritime Usage (AIMU) Report, the area supports reasonably high levels of baseline marine traffic, with cargo vessels, fishing boats and pleasure craft traversing the AoI to access commercial and fishing ports and harbours in the region. It is, therefore, reasonable to assume that marine mammals in the area are exposed to vessel traffic on a regular basis and may exhibit some habituation. In addition, the increase in vessel traffic at any one time is considered to be very low, given the location of the AoI. On this basis it is predicted that collisions between survey vessels and marine mammals originating from all relevant SACs will be extremely unlikely. Likely significant effects due to collision can therefore be ruled out for all marine mammal SACs.

## 6.2.4 Annex II Migratory Fish

This section assesses the potential for likely significant effects on those SACs designated for Annex II migratory fish species, where there is potential for connectivity with the AoI and the proposed SI works. The assessment is based on the precautionary principle and has been undertaken in the absence of mitigation.

The SPR assessment (Table 5.1) concluded that the following impacts have the potential to affect Annex II marine mammal species as a result of the SI works:

- Habitat loss, alteration and/or fragmentation (including increased SSC/smothering); and,
- Underwater noise.

European sites taken forward for assessment for Annex II migratory fish species are listed in Table 6.4 below. The following sections assess the likelihood for significant effects to migratory fish and summarise the screening for relevant European sites.

# Table 6.4 European sites selected for consideration in the Screening for Appropriate Assessment for Annex II Migratory Fish

European Site (Code)	Distance from the Area of Interest (km)	List of Relevant Annex II Qualifying Interests <sup>10</sup>
River Barrow and River Nore SAC (IE002162)	Within SAC boundary	Sea lamprey ( <i>Petromyzon marinus</i> ) River lamprey ( <i>Lampetra fluviatilis</i> ) Twaite shad ( <i>Alosa fallax fallax</i> ) Salmon ( <i>Salmo salar</i> )
Blackwater River (Cork/Waterford) SAC (IE002170)	8	Sea lamprey ( <i>Petromyzon marinus</i> ) River lamprey ( <i>Lampetra fluviatilis</i> ) Twaite shad ( <i>Alosa fallax fallax</i> ) Salmon ( <i>Salmo salar</i> )
Lower River Suir SAC (IE002137)	8	Sea lamprey ( <i>Petromyzon marinus</i> ) River lamprey ( <i>Lampetra fluviatilis</i> ) Twaite shad ( <i>Alosa fallax fallax</i> ) Salmon ( <i>Salmo salar</i> )
Slaney River Valley SAC (IE000781)	17	Sea lamprey ( <i>Petromyzon marinus</i> ) River lamprey ( <i>Lampetra fluviatilis</i> ) Twaite shad ( <i>Alosa fallax fallax</i> ) Salmon ( <i>Salmo salar</i> )

# 6.2.4.1 Habitat loss, alteration and/or fragmentation (including increased SSC/smothering)

The proposed SI works do not overlap spatially with European sites designated for relevant Annex II migratory fish species (river lamprey, sea lamprey, Atlantic salmon and twaite shad), therefore there is no risk of direct habitat loss to spawning habitats within these SACs. While the AoI boundary borders the boundary of the River Barrow and River Nore SAC, it does not overlap with the habitats of the SAC.

There is potential overlap between the AoI and the migratory routes of these species, migrating to/from their natal rivers, with the potential for interaction with increased SSC in the water column as a result of intrusive SI works (grab sampling, borehole drilling, vibrocoring). The intrusive subtidal sampling will be limited to discrete locations sampled sequentially (i.e. only one location sampled at any time), and it is expected that suspended sediment will settle out relatively quickly in the high energy environment with no likelihood of extensive sediment plumes. While the precise sampling locations are not known, they will be within the AoI, and regardless of the location of sampling, the conclusion remains the same. Therefore, it is considered unlikely that intrusive sampling as part of the SI works will give rise to significant effects due to smothering on

<sup>&</sup>lt;sup>10</sup> Qualifying interests that have not been identified as relevant to this specific assessment are excluded from this table. A full list of QIs for each site considered is provided in Table 5.2, and in each of the receptor-specific assessments.

the migratory fish species of relevant European sites. Likely significant effects due to habitat loss, alteration or fragmentation (including increased SSC/smothering) can therefore be ruled out for all migratory fish SACs.

#### 6.2.4.2 Underwater noise

The proposed geophysical and geotechnical surveys will produce underwater noise which has the potential to impact Annex II migratory fish. As no European sites designated for migratory fish overlap with the AoI, the risk is that fish could experience adverse effects as they migrate to/from their natal rivers and transit through the AoI.

The impacts of noise on fish can broadly be split into three categories: i) lethal and physical injury; ii) auditory injury; and iii) behavioural response. Hearing loss can be permanent or comprise a temporary reduction in hearing sensitivity (i.e. Temporary Threshold Shift (TTS)). At sound levels lower than those that may cause physical injury or mortality, noise may also cause behavioural effects on a species, for example, avoidance of an area or changes in swimming speed (Mueller-Blenke, 2010). This may be significant if it causes, for example, a migratory species to be delayed or diverted from their course.

Most fish species are capable of hearing within a frequency range of 50 Hz up to 500 to 1,500 Hz. A smaller number of species (notably clupeids) can detect sounds to over 3 kHz while a few species can detect sounds to well over 100 kHz (Popper and Hastings, 2009). Fish can be grouped into the following 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 (Popper et al., 2014):

- Group 1 fish: fish with no swim bladder or other gas chamber with regards to migratory fish, this
  includes sea lamprey and river lamprey. These species are less susceptible to barotrauma and only
  detect particle motion, not sound pressure. However, some barotrauma may result from exposure to
  sound pressure;
- Group 2 fish: fish with swim bladders in which hearing does not involve the swim bladder or other gas volume with regards to migratory fish, this category includes Atlantic salmon. These species are susceptible to barotrauma although hearing only involves particle motion, not sound pressure;
- Group 3 fish: fish in which hearing involves a swim bladder or other gas volume with regards to migratory fish, this category includes species such as Allis shad and Twaite shad. These species are susceptible to barotrauma and detect sound pressure as well as particle motion; and
- Fish eggs and larvae.

As detailed in Section 5.3.4 above, the migratory fish species which are qualifying interests of the European sites identified to have potential connectivity with the AoI are sea lamprey, river lamprey, Atlantic salmon and twaite shad. This SISAA Report has drawn upon the results of the underwater noise assessment presented in full in the accompanying Subsea Noise Technical Report to inform this assessment of underwater noise effects on migratory fish. The thresholds for harm to fish species have been based on the sound exposure guidelines for fish proposed by the ANSI-Accredited Standards Committee S3/SC 1, Animal Bioacoustics Working Group (Popper et al. 2014). The full details of this assessment have not been repeated here, but the main conclusions of the noise assessment relevant to the Appropriate Assessment screening and Annex II migratory fish are outlined below, without any mitigation applied.

- During parametric SBP surveys, fishes could experience auditory injury within 30 m of the sound source and could experience TTS within 150 m. Behavioural thresholds are exceeded within 660 m of the sound source.
- During chirper/pinger SBP surveys, fishes could experience auditory injury within <10 m of the sound source and could experience TTS within 30 m. Behavioural thresholds are exceeded within 620 m of the sound source.
- For sparker SBP/UHRS the subsea noise assessment concluded that, based on the Popper et al. (2014) criteria for exposure of fish to impulsive sources, fishes could experience auditory injury within <10 m of the source and TTS within 120 m of the source. Behavioural thresholds are exceeded within 630 m of the source.
- For boomer SBP the subsea noise assessment concluded that, based on the Popper et al. (2014) criteria for exposure of fish to impulsive sources, fishes could experience auditory injury within <10 m of

the source and TTS within 140 m of the source. Behavioural thresholds are exceeded within 720 m of the sound source.

- For all of the geotechnical surveys (borehole drilling, CPT and vibrocore surveys), the subsea noise assessment concluded that, based on the Popper et al. (2014) criteria, fishes could experience auditory injury within <10 m of the source and TTS within 30 m of the source. Behavioural thresholds are exceeded within 580 m of the source.
- For the ADCP survey, the subsea noise assessment concluded that, based on the Popper et al. (2014) criteria, fishes could experience auditory injury within 20 m of the source and TTS within 70 m of the source. Behavioural thresholds are exceeded within 200 m of the sound source, however, after adjusting for the hearing sensitivity of the receivers, the range at which the behavioural threshold for fish is only exceeded is <10 m.

# In summary, in the absence of mitigation, likely significant effects due to underwater noise disturbance cannot be excluded for all migratory fish SACs considered in this SISAA:

- River Barrow and River Nore SAC;
- Blackwater River (Cork/Waterford) SAC;
- Lower River Suir SAC; and,
- Slaney River Valley SAC.

#### 6.2.5 Birds

This section assesses the likelihood of significant effects on those SPAs where there is potential for connectivity with the AoI and the proposed SI works. The assessment is based on the precautionary principle and has been undertaken in the absence of mitigation.

The SPR assessment (Table 5.1) outlined the following potential sources of impacts to birds as a result of the SI works:

- Above water noise, vibration and lighting;
- Habitat loss, alteration and/ or fragmentation (including increased SSC/smothering); and,
- Underwater noise.

Relevant SPAs and QI bird species have been listed in Table 5.2 above. The following sections assess the likelihood for significant effects to these species and summarise the screening for relevant European sites.

European sites taken forward for assessment for bird species are listed in Table 6.5 below. The following sections assess the likelihood for significant effects to birds and summarise the screening for relevant European sites.

#### Table 6.5 European sites selected for consideration in the Screening for Appropriate Assessment for Birds

European Site (Code)	Distance from the Area of Interest (km)	List of Relevant Bird QI/ SCI <sup>11</sup>
Bannow Bay SPA (IE004033)	Within SPA boundary	Light-bellied Brent goose ( <i>Branta bernicla hrota</i> ) Shelduck ( <i>Tadorna tadorna</i> ) Pintail ( <i>Anas acuta</i> ) Oystercatcher ( <i>Haematopus ostralegus</i> ) Golden plover ( <i>Pluvialis apricaria</i> ) Grey plover ( <i>Pluvialis squatarola</i> ) Lapwing ( <i>Vanellus vanellus</i> ) Knot ( <i>Calidris canutus</i> ) Dunlin ( <i>Calidris alpina</i> ) Black-tailed godwit ( <i>Limosa limosa</i> )

<sup>&</sup>lt;sup>11</sup> QI/ SCI that have not been identified as relevant to this specific assessment are excluded from this table. A full list of QI/ SCI for each site considered is provided in Table 5.2, and in each of the receptor-specific assessments.

European Site (Code)	Distance from the Area of Interest (km)	List of Relevant Bird QI/ SCI <sup>11</sup>
		Bar-tailed godwit (Limosa lapponica)
		Curlew ( <i>Numenius arguata</i> )
		Redshank (Tringa totanus)
		Wetland and Waterbirds
Mid Waterford Coast SPA	Within SPA boundary	Cormorant (Phalacrocorax carbo)
(IE004193)	· · · · · · · · · · · · · · · · · · ·	Peregrine (Falco peregrinus)
()		Herring gull (Larus argentatus)
		Chough (Pvrrhocorax pvrrhocorax)
Ballycotton Bay SPA	Within SPA boundary	Teal (Anas crecca)
(IE004022)	Thank of A boardary	Ringed plover (Charadrius hiaticula)
		Golden plover (Pluvialis anricaria)
		Grev plover (Pluvialis squatarola)
		Lapwing (Vanellus vanellus)
		Black-tailed godwit (Limosa limosa)
		Back-tailed godwit (Limosa langanica)
		Curlew (Numenius arguata)
		Turnstone (Arenaria interpres)
		Notland and Materbirda
Kaaraah lalanda SDA	Within CDA houndary	Cormorant (Rhalaaraaray aarba)
(IE004118)	Within SPA boundary	Cormorant (Prialacrocorax carbo)
Seas off Wexford SPA	Within SPA boundary	Red-throated diver (Gavia stellata)]
(IE004237)		Fulmar ( <i>Fulmarus glacialis</i> )
		Manx shearwater (Puffinus puffinus)
		Gannet ( <i>Morus bassanus</i> )
		Cormorant (Phalacrocorax carbo)
		Shag (Phalacrocorax aristotelis)
		Common scoter (Melanitta nigra)
		Mediterranean gull (Larus melanocephalus)
		Black-headed gull (Chroicocephalus ridibundus)
		Lesser black-backed gull (Larus fuscus)
		Herring gull (Larus argentatus)
		Kittiwake ( <i>Rissa tridactyla</i> )
		Sandwich tern (Sterna sandvicensis)
		Roseate tern (Sterna dougallii)
		Common tern (Sterna hirundo)
		Arctic tern (Sterna paradisaea)
		Little tern (Sterna albifrons)
		Guillemot (Uria aalge)
		Razorbill (Alca torda)
		Puffin (Fratercula arctica)
Cork Harbour SPA	1	Little grebe (Tachybaptus ruficollis)
(IE004030)		Great crested grebe (Podiceps cristatus)
		Cormorant (Phalacrocorax carbo)
		Grev heron (Ardea cinerea)
		Shelduck (Tadorna tadorna)
		Wigeon (Anas penelope)
		Teal (Anas crecca)
		Pintail (Anas acuta)
		Shoveler (Anas clypeata)
		Red-breasted merganser (Mergus serrator)
		Ovstercatcher (Haematonus ostralagus)
		Golden plover (Pluvialis enriceria)
		Grev plover (Pluvialis equatorala)
		Grey plovel (Fluvialis squatalola)

European Site (Code)	Distance from the Area of Interest (km)	List of Relevant Bird QI/ SCI <sup>11</sup>
		Lapwing (Vanellus vanellus)
		Dunlin ( <i>Calidris alpi</i> na)
		Black-tailed godwit ( <i>Limosa limosa</i> )
		Bar-tailed godwit ( <i>Limosa lapponica</i> )
		Curlew ( <i>Numenius arqu</i> ata)
		Redshank ( <i>Tringa totanus</i> )
		Black-headed gull (Chroicocephalus ridibundus)
		Common gull (Larus canus)
		Lesser black-backed gull (Larus fuscus)
		Common tern (Sterna hirundo)
		Wetland and Waterbirds
Ballyteige Burrow SPA	1	Light-bellied Brent goose (Branta bernicla hrota)
(IE004020)		Shelduck (Tadorna tadorna)
		Golden plover ( <i>Pluvialis apricaria</i> )
		Grey plover ( <i>Pluvialis squatarola</i> )
		Lapwing (Vanellus vanellus)
		Black-tailed godwit ( <i>Limosa limosa</i> )
		Bar-tailed godwit (Limosa lapponica)
-		Wetland and Waterbirds
I ramore Back Strand SPA	1	Light-bellied Brent goose (Branta bernicia hrota)
(IE004027)		Golden plover ( <i>Pluvialis apricaria</i> )
		Grey plover ( <i>Pluvialis squatarola</i> )
		Lapwing (Vaneilus vaneilus)
		Dunlin ( <i>Calidris alpina</i> )
		Black-tailed godwit (Limosa limosa)
		Bar-talled godwit (Limosa lapponica)
		Curiew (Numerius arquata)
Ballymaaada Bay SDA	4	Wiggen (Ance nenelane)
	4	
(IE004023)		Piezed player (Charadrive histicule)
		Colden plover (Charadhus hialicula)
		Crow ployer (Pluvialis apricana)
		Lapwing (Vanellus vanellus)
		Sanderling (Calidris alba)
		Black-tailed godwit (Limosa limosa)
		Bar-tailed godwit (Limosa langonica)
		Curlew (Numenius arguata)
		Redshank (Tringa totanus)
		Turnstone (Arenaria interpres)
		Black-headed gull (Chroicocephalus ridibundus)
		Common gull (Larus canus)
		Lesser black-backed gull (Larus fuscus)
		Wetland and Waterbirds
Helvick Head to Ballyquin	5	Peregrine (Falco peregrinus)
SPA (IE004192)		Cormorant (Phalacrocorax carbo)
		Herring gull (Larus argentatus)
		Kittiwake ( <i>Rissa tridactyla</i> )
		Chough (Pyrrhocorax pyrrhocorax)
Dungarvan Harbour SPA	6	Great crested grebe (Podiceps cristatus)
(IE004032)		Light-bellied Brent goose (Branta bernicla hrota)
		Shelduck (Tadorna tadorna)
		Red-breasted merganser (Mergus serrator)
		Oystercatcher (Haematopus ostralegus)

European Site (Code)	Distance from the Area of Interest (km)	List of Relevant Bird QI/ SCI <sup>11</sup>
		Golden plover ( <i>Pluvialis aprica</i> ria)
		Grev plover ( <i>Pluvialis squatarola</i> )
		Lapwing (Vanellus vanellus)
		Knot (Calidris canutus)
		Dunlin (Calidris alnina)
		Black-tailed godwit (Limosa limosa)
		Bar-tailed godwit (Limosa Japponica)
		Curlew (Numenius arguata)
		Redshank (Tringa totanus)
		Turnstone (Arenaria internes)
		Wetland and Waterbirds
Saltao Islanda SBA	0	
	0	
(IE000707)		Gamerant (Declassional carbo)
		Comorani (Prialacrocorax carbo)
		Shag (Phalacrocorax ansiolens)
		Lesser black-backed gull (Larus luscus)
		Herring guil ( <i>Larus argentatus</i> )
		Kittiwake ( <i>Rissa tridactyla</i> )
		Guillemot ( <i>Uria aal</i> ge)
		Razorbill (Alca torda)
		Puttin (Fratercula arctica)
Sovereign Islands SPA (IE004124)	7	Cormorant (Phalacrocorax carbo)
Blackwater Estuary SPA	9	Wigeon (Anas penelope)
(IE004028)		Golden plover ( <i>Pluvialis apricaria</i> )
		Lapwing (Vanellus vanellus)
		Dunlin ( <i>Calidris alpina</i> )
		Black-tailed godwit ( <i>Limosa limosa</i> )
		Bar-tailed godwit (Limosa lapponica)
		Curlew (Numenius arguata)
		Redshank (Tringa totanus)
		Wetland and Waterbirds
Tacumshin Lake SPA	16	Little grebe (Tachybaptus ruficollis)
(IE004092)		Bewick's swan (Cvgnus columbianus bewickii)
· · · · · · · · · · · · · · · · · · ·		Whooper swan (Cvanus cvanus)
		Wigeon (Anas penelope)
		Gadwall (Anas strepera)
		Teal (Anas crecca)
		Pintail (Anas acuta)
		Shoveler (Anas clypeata)
		Tufted duck (Avthva fuliqula)
		Coot (Fulica atra)
		Golden plover ( <i>Pluvialis apricaria</i> )
		Grev plover (Pluvialis squatarola)
		Lanwing (Vanellus vanellus)
		Black-tailed andwit (Limosa limosa)
		Wotland and Waterbirds
Wayford Harbour and Plaha	17	little grabe (Tachybantus ruficellis)
	17	Creat created graphs (Padicana cristatus)
SFA (004070)		Great crested great (Fourceps cristalus)
		Grey neron (Ardea cinerea)
		Bewick's swan (Cygnus columbianus bewickii)
		vvnooper swan ( <i>Cygnus cygnus</i> )
		Light-bellied Brent goose (Branta bernicla hrota)
		Shelduck (Tadorna tadorna)

Supporting	Information	for	Screening	for	Appropriate	Assessment
Supporting	mormation	101	Screening	101	Appropriate	ASSESSIIICIII

European Site (Code)	Distance from the Area of Interest (km)	List of Relevant Bird QI/ SCI <sup>11</sup>
		Wigeon (Anas penelope)
		Teal (Anas crecca)
		Mallard (Anas platyrhynchos)
		Pintail (Anas acuta)
		Scaup ( <i>Aythya marila</i> )
		Goldeneye ( <i>Bucephala clangula</i> )
		Red-breasted merganser (Mergus serrator)
		Hen harrier ( <i>Circus cyaneus</i> )
		Coot ( <i>Fulica atra</i> )
		Oystercatcher (Haematopus ostralegus)
		Golden plover ( <i>Pluvialis apricaria</i> )
		Grey plover ( <i>Pluvialis squatarola</i> )
		Lapwing (Vanellus vanellus)
		Knot ( <i>Calidris canutus</i> )
		Sanderling (Calidris alba)
		Dunlin ( <i>Calidris alpina</i> )
		Black-tailed godwit (Limosa limosa)
		Bar-tailed godwit (Limosa lapponica)
		Curlew (Numenius arquata)
		Redshank (Tringa totanus)
		Black-headed gull (Chroicocephalus ridibundus)
		Lesser black-backed gull (Larus fuscus)
		Little tern (Sterna albifrons)
		Greenland white-fronted goose (Anser albifrons flavirostris)
		Wetland and Waterbirds
Old Head of Kinsale SPA	18	Kittiwake ( <i>Rissa tridactyla</i> )
(IE004021)		Guillemot (Uria aalge)

#### 6.2.5.1 Above water noise, vibration and lighting

Overwintering bird species favour wetland and intertidal habitats for foraging and roosting, and do not typically forage in the offshore marine environment. There will therefore be no spatial overlap between wintering birds and the offshore elements of the proposed SI works. Survey activities with the potential to interact with overwintering bird species are those in the nearshore and intertidal zones, namely:

- Coastal geophysical surveys;
- Coastal geotechnical surveys (trial pits);
- Marine geophysical, geotechnical and environmental surveys (in particular above-water noise, vibration and lighting from vessels and JUB);
- Deployment of metocean and acoustic devices (above-water noise, vibration and lighting from vessels);
- Coastal environmental surveys (habitat walkover surveys, intertidal core sampling, bat activity and roost assessment surveys, mammal and ornithology surveys); and,

Archaeological surveys. Most of the coastal surveys will involve a small team of surveyors walking along the beach or intertidal zone using non-intrusive hand-held equipment or minimally intrusive equipment such as pole-mounted devices or GPR and magnetometer equipment. With the exception of coastal geotechnical surveys (excavation of trial pits) and marine geotechnical sampling at the JUB close to shore (<15 m LAT), no above-water noise, vibration or light will be emitted beyond baseline levels at the potential landfall zones (all potential landfall zones are popular beaches where human recreational activities regularly occur). If these activities are undertaken in the overwintering period (usually October to March), likely significant effects due to disturbance cannot be excluded in the absence of mitigation. While Ballycotton Bay SPA and Bannow Bay SPA are the only SPAs for wintering birds that overlap with the proposed SI works, SPAs within 20 km designated for wintering swan and goose species should also be considered due to the potential for these species to travel to forage. **Therefore, the following SPAs for wintering species are screened in:** 

- Ballycotton Bay SPA
- Bannow Bay SPA
- Ballyteige Burrow SPA
- Tramore Back Strand SPA
- Dungarvan Harbour SPA
- Tacumshin Lake SPA
- Wexford Harbour and Slobs SPA

The physical presence of survey vessels in the marine environment, and the noise associated with the operation of survey equipment, could result in a limited degree of disturbance to birds in the vicinity of the survey vessel. Birds present on the surface waters near the survey vessels could be temporarily displaced from their chosen feeding/ resting locations. For all surveys, vessel activity in any one location will be of short duration with the vessels moving steadily forward along the transect lines (e.g. during geophysical surveys) or remaining stationary at sample locations for short durations (e.g. during geotechnical sampling and benthic sampling) before transitioning to the next location. This activity will not differ considerably to existing vessel activity in the region, which includes commercial shipping, ferries, fishing and recreational vessels and it is not anticipated that above-water noise emitted by the survey vessels and equipment will differ significantly from that emitted by vessels already using the area. Birds using the area are likely to be habituated to the baseline levels of activity and are unlikely to be significantly disturbed by the presence of a maximum of two survey vessels operating within the AoI and one RIB transporting workers to the JUB.

The operation of vessels and equipment in the nearshore areas of the AoI have the potential to disturb nesting/ breeding birds within coast SPAs which border the AoI, if the timing of the proposed surveys was to overlap with breeding periods. Therefore, based on the precautionary principle, **likely significant effects to breeding birds as a result of above-water disturbance cannot be excluded for breeding birds at Mid-Waterford Coast SPA and Keeragh Island SPA.** 

Although breeding common tern is a QI of Cork Harbour SPA (1 km from the AoI), as the breeding colonies and roost sites are located within the estuary away from the coast, it is considered that there is no likelihood of interaction with birds at nesting sites and therefore no likelihood of significant effects. All other SPAs that support nesting sites for breeding birds are at least 4 km from the boundary of the AoI, therefore significant above-water disturbance to nesting sites can be excluded.

# In summary, likely significant effects as a result of above-water disturbance cannot be excluded for the following SPAs:

- Ballycotton Bay SPA
- Bannow Bay SPA
- Mid-Waterford Coast SPA
- Keeragh Island SPA
- Ballyteige Burrow SPA
- Tramore Back Strand SPA
- Dungarvan Harbour SPA
- Tacumshin Lake SPA
- Wexford Harbour and Slobs SPA

# 6.2.5.2 Habitat loss, alteration and/ or fragmentation (including increased SSC/smothering)

The potential for loss of supporting habitat in relation to birds will be considered for the intertidal/ coastal and subtidal elements of the project in turn.

Wetlands habitat is a qualifying interest of the following sites for wintering birds which overlap with the AoI: Bannow Bay SPA and Ballycotton Bay SPA. Wetlands provide food, shelter and breeding habitat for many species. Habitat loss, alteration and/ or fragmentation to these wetlands has the potential to have a

significant effect on bird QIs for which these SPAs are designated. As outlined in Section 6.2.5.1 above, the majority of the intertidal survey work will consist of walkover, non-intrusive surveys. The survey methodologies with the potential to remove or alter SPA wetland habitats used by birds are the excavation of trial pits, borehole sampling and intertidal core sampling. A relatively limited number of samples are to be extracted from the beaches/ intertidal zones across seven possible landfall sites (up to six trial pits and 18 intertidal cores at each landfall zone, and three boreholes on the seaward side of each landfall zone). While the precise sampling locations are not known, they will be within or adjacent to the seven landfall zones, and regardless of the location of sampling within these areas, the conclusion remains that any disturbance is likely to be temporary and limited in nature. The sediment from trial pits and intertidal cores will be returned following sampling, and beaches/intertidal zones are dynamic sedimentary environments in constant flux, therefore, it is unlikely that these temporary survey works will adversely affect the supporting wetland habitats of SPAs and therefore the conservation objectives of these SPAs. Therefore, there is no likelihood for significant effects to any SPAs due to habitat loss, alteration or fragmentation of wetland or intertidal habitats.

The Aol overlaps with the following marine/subtidal SPAs: Keeragh Islands SPA, Seas off Wexford SPA, and provides foraging opportunities for seabirds from neighbouring SPAs: Mid-Waterford Coast SPA, Helvick Head to Ballyquin SPA, Saltee Islands SPA and Sovereign Islands SPA. There is potential for benthic habitat loss due to intrusive sampling methodologies (grab sampling, boreholes, vibrocoring and anchoring of metocean and acoustic devices), and smothering of benthic and pelagic prey species due to increased SSC. The Seas off Wexford SPA has been designated in order to protect foraging and roosting opportunities for a wide range of seabirds, most of which are ecologically connected to nearby coastal breeding SPAs (NPWS, 2024). The site-specific conservation objectives for seabirds at the Seas off Wexford SPA advise that the spatial distribution, extent, abundance and availability of foraging habitat should be sufficient for each species (NPWS, 2024).

The Aol is in an exposed location off the south coast of Ireland, and benthic habitats in the area are generally high energy (see Section 4.1), therefore it can be expected that habitats will recover quickly from relatively limited sediment extraction and suspension and settling of sediment. Similarly, it is likely that prey species such as invertebrates and benthic and pelagic fish are adapted to the high energy environment and as such will not be affected to a large extent by the temporary and spatially limited sediment sampling. The extent of sediment to be removed is relatively limited (maximum of 420 grab samples, 276 vibrocores, 29 boreholes), while the Seas off Wexford SPA covers an area of approximately 3,054 km<sup>2</sup> (NPWS, 2024), therefore there will be plenty of alternative foraging habitat available for temporarily displaced foraging birds. While the precise sampling locations are not known, they will be within the Aol, and regardless of the location of sampling, the conclusion remains the same. **Therefore, there is no likelihood for significant effects to any SPAs due to habitat loss, alteration or fragmentation of subtidal habitats.** 

#### 6.2.5.3 Underwater noise

There is potential for diving seabirds to interact with the marine surveys while underwater noise is being produced. The following SPAs are designated for the protection of diving species, including cormorant, gannet, shag, red-throated diver and common scoter:

- Seas off Wexford SPA
- Keeragh Islands SPA
- Mid-Waterford Coast SPA
- Helvick Head to Ballyquin SPA
- Saltee Islands SPA
- Sovereign Islands SPA

Hartley Anderson Limited (2020) provide a summary of the available evidence on the auditory abilities and effects of underwater noise of diving birds, however, this evidence is very limited. While seabird responses to approaching vessels are highly variable (e.g. Fliessbach et al. 2019), flushing disturbance would be expected to displace most diving seabirds from close proximity to the survey vessel and any towed equipment, thereby limiting their exposure to the highest sound pressures generated. Similarly, behavioural disturbance of seabirds due to acoustic survey activities is most likely to be temporary displacement associated with the physical presence of the vessel, comparable to that experienced by routine shipping traffic (Hartley Anderson Limited, 2020).

Given the limited extent of sound-producing activity, the limited time diving birds spend underwater, and given that birds are likely to be temporarily displaced to the surrounding area due to the presence of the vessel, it is considered that there is a very low likelihood of interaction between underwater noise sources and diving birds during the proposed SI works. Therefore, no likely significant effects to diving birds due to underwater noise are expected, and no further assessment is required.

# 6.3 In-combination effects

Even if projects are unlikely to have significant effects on their own, the effects in-combination with those of other plans or projects could be significant. An in-combination screening assessment has been carried out to identify other projects/plans that could act in-combination with the SI works to affect site conservation objectives (in accordance with OPR, 2021).

MARA has identified the following key steps for assessing in-combination effects:

- 1. Defining the Cumulative Effects Spatial Scope (CESS);
- 2. Defining the Cumulative Effects Temporal Scope (CETS);
- 3. Impact identification;
- 4. Pathway identification;
- 5. Prediction;
- 6. Identification of Plans or Projects that could act in combination;
- 7. Screening Stage Cumulative Effects Assessment conclusion; and
- 8. Managing cumulative impacts to be carried out as part of Stage 2 AA process.

### 6.3.1 Cumulative Effects Spatial Scope (CESS)

The CESS was based on the maximum impact range identified in this SISAA when considering impacts of the proposed SI works. Beyond this maximum distance, the proposed SI works will have no effect and therefore no potential pathway to in-combination effects with other plans or projects. The CESS was identified as 5km from the boundary of the AoI, based on the JNCC's guidance document for assessing noise disturbance for harbour porpoise SACs (JNCC, 2020). For geophysical surveys, the JNCC recommend that an effective deterrence range is 5 km. For all other proposed survey types, impact ranges are less than 5 km, therefore 5 km is considered to be the furthest distance at which other projects could act incombination with the SI works.

### 6.3.2 Cumulative Effects Temporal Scope (CETS)

The CETS was based on the potential for temporal overlap with the proposed SI works. As the proposed SI will have a five-year licence, plans or projects likely to take place within the next six years were identified as potentially relevant, allowing for a precautionary one-year buffer to allow for the time between submission of this MULA and an MUL being granted.

#### 6.3.3 Impact Identification

Potential impacts related to the proposed SI works are described in Section 5.2.1 of this SISAA Report. In the absence of mitigation, the proposed SI works individually have the potential to give rise to likely significant effects, due to above-water disturbance, habitat loss/disturbance and underwater noise disturbance. Additionally, no likely significant effects due to collision risk are anticipated as a result of the proposed SI works individually, however, this potential impact will be assessed in-combination with other plans and projects.

In order for other plans/ projects to act in-combination with the proposed SI works, they must also give rise to the above impacts.

## 6.3.4 Pathway Identification and Predication of Impacts

#### 6.3.4.1 Above-water disturbance

Above-water disturbance due to the presence of humans, vessels and equipment, noise, vibration and lighting has the potential to occur during the SI works. The SI works and related effects will be temporary and of relatively short duration and will be limited in range to within the AoI and at each of the seven potential landfall zones. Therefore, it is considered that only projects which also have the potential to cause above-water disturbance and which are likely to occur at the same time as the SI works, and are within the AoI or at the seven potential landfall zones have the potential to act in-combination.

It is considered unlikely that high-level plans have the potential to contribute to above-water disturbance occurring at the same time and in the same place as the SI works.

#### 6.3.4.2 Habitat loss and/or disturbance

There is potential for habitat loss and/or disturbance due to intrusive sampling methodologies in the marine environment and at the seven landfall zones, and during coastal geophysical and environmental walkover surveys at the landfall zones (including access, where relevant).

The SI works and related effects will be temporary and of relatively short duration and will occur only within the AoI and at each of the seven potential landfall zones. Therefore, it is considered that only projects occurring at the same time as the SI works and within the AoI and at the seven potential landfall zones have the potential to act in-combination.

It is considered unlikely that high-level plans have the potential to contribute directly to habitat loss and/or disturbance occurring at the same time and in the same place as the SI works.

#### 6.3.4.3 Underwater noise disturbance

The proposed SI works will give rise to underwater noise, which, in the absence of mitigation, will lead to likely significant effects. Therefore, other projects in the marine environment with the potential to emit underwater noise within the CESS should be considered in-combination with the proposed SI works.

It is considered unlikely that high-level plans have the potential to contribute directly to underwater noise disturbance occurring at the same time and in the same place as the SI works.

#### 6.3.4.4 Collision risk

The risk of collision due to survey vessel presence has been assessed in Section 6.2.3.4, and a conclusion of no likely significant effects has been drawn due to the existing baseline of vessel use within the AoI. As vessel traffic is a constant feature in the area within and surrounding the AoI, it is considered unlikely that the limited addition of vessels to the maritime area during proposed SI works has the potential to contribute significantly to background levels (and therefore the risk of collision with marine mammals), however, there is potential for other vessel-based works to act in-combination with the proposed SI works, therefore such projects will be considered.

It is considered unlikely that high-level plans have the potential to contribute directly to collision risk occurring at the same time and in the same place as the SI works.

#### 6.3.5 Identification of Plans or Projects

RPS undertook a desk study using internet searches, planning databases and other available sources, as outlined below, to identify other plans, projects and activities likely to overlap with the CESS and CETS of the proposed SI works, which have the potential to give rise to in-combination effects.

#### 6.3.5.1 Plans

Following the identification of likely pathways for in-combination impacts, it is considered that for a plan to be able to act in-combination with the proposed SI works, it must determine the precise location of a project or designate specific land uses. A review was undertaken of national, regional and local plans using planning

portals and expert knowledge. While the proposed PUOSC project aligns with the objectives of high-level plans such as the National Marine Planning Framework (NMPF) and the Offshore Renewable Energy Development Plan (OREDP), without geographically specific actions or objectives, there is no pathway to interaction with the proposed SI works that could lead to likely significant effects.

The SC-DMAP provides a plan-led approach for the development of offshore renewable energy (ORE) within its geographical area. The SC-DMAP identified four Maritime Areas for the future ORE development, including Area A - Tonn Nua, which is within the AoI for the proposed SI works. It is reasonable to assume that surveys will be undertaken within the Tonn Nua geographical area over the next decade, as development progresses. The SC-DMAP states that proposed future developments and associated transmission infrastructure within the geographical area will be subject to robust project-level environmental assessment. It is also noted that Regional Level Surveys will be carried out within the SC-DMAP area, to support in-combination assessments at project level. Such surveys will require an MUL and therefore, it is considered more appropriate to address the potential for in-combination effects at the project level, rather than at the plan level, where specific locations and survey details are unknown.

Other potentially relevant plans include Eirgrid's Transmission Development Plan 2023, Port of Cork Masterplan 2050 and Port of Waterford Masterplan 2044, however, given the temporary nature of the proposed SI works and the lack of specific detail available at the plan level, it is considered more appropriate to consider in-combination impacts with projects, as they are submitted to relevant consenting authorities.

There are no anticipated in-combination effects from plans and therefore plan-level in-combination effects are screened out from further assessment.

#### 6.3.5.2 Projects

Other projects could potentially give rise to either direct impacts on habitats or species (loss of habitat, disturbance to species) or indirect impacts (e.g., activities which could affect water quality or hydrology which could in turn affect the status/health of populations of water dependant habitats or species).

A search of foreshore licence and marine licence applications which could interact with the SI works was conducted using the relevant consenting authority websites (DHLGH - foreshore applications, MARA - Maritime Usage Licences (MULs), An Bord Pleanála (ABP) - Strategic Infrastructure Development (SID) - marine developments, Environmental Protection Agency (EPA) – Dumping at Sea (DaS) permits). A full list of all relevant consent application is available in Appendix A.

A number of DaS licences have been granted to Port of Waterford, Port of Cork and for Wexford Co. Council (S0012-03, S0030-01, S0013-03, FS007126) which occur within the CESS. Temporal overlap is possible as DaS permits are valid until 2031 in some cases. There is potential for in-combination effects due to habitat loss/disturbance, above-water disturbance effects with dredging and associated dumping within the AoI.

One MUL application and three foreshore licence applications within the CESS have been granted licences, as discussed below.

- DECC was granted an MUL (LIC240006) to undertake geophysical surveys in the SC-DMAP area to inform future ORE development. This licence has a period of one year from the commencement date (04/07/2024), and surveyed were due to take place between 6/07/2024 and 20/09/2024<sup>12</sup>. There is potential for temporal overlap with the proposed SI works, however, it is unlikely given the timelines involved.
- Energia was granted a foreshore licence (FS006982) to conduct SI works to determine design for a proposed ORE development off Helvick Head in Co. Waterford. This licence was for a term of five years from the commencement date (05/07/2021), therefore temporal overlap with the proposed SI works is possible, although unlikely, as geophysical and geotechnical surveys have been completed<sup>13</sup>.
- EirGrid's Celtic Interconnector project (FS006916) has been granted a licence of 40 years starting from 20/06/2022 for the installation of a submarine cable between Ireland and France making landfall at

<sup>&</sup>lt;sup>12</sup> www.gov.ie/pdf/?file=https://assets.gov.ie/295930/d7d57d42-066e-4c5e-94b5-1e1203814e0b.pdf#page=null [Accessed 23/10/2024]

<sup>&</sup>lt;sup>13</sup> <u>https://www.northcelticseawind.ie/energia-renewables-reaches-key-milestone-as-seabed-surveys-are-successfully-completed/</u> [Accessed 23/10/2024]

Claycastle Beach in Co. Cork. This project overlaps spatially and temporally with the AoI and proposed SI works.

 A licence was granted for the Greenlink Interconnector project (FS007050) for subsea and underground cables between Ireland and the UK, with landfall at Baginbun Beach Co. Wexford. This licence was granted for a period of 40 years from the commencement date in 01/09/2021. Therefore, there is potential for temporal overlap, however, this is considered unlikely as the project has been completed<sup>14</sup>.

Numerous undetermined foreshore licence applications for marine SI works also overlap with the CESS (FS007471, FS007471, FS007464, FS007488, FS007436, FS007431, FS007575, FS006983, FS006859, FS007139, FS007136, FS007404, FS007138, FS007318, FS007616, FS007621, FS007376). Geotechnical and geophysical survey activities have the potential to act in-combination with the proposed SI works. These applications were at early stages of application when Government policy changed to a plan-led approach for the development of offshore wind projects post Phase One. As a result, it is considered unlikely that any of the undetermined foreshore licences for developer-led SI works will be progressed within the CETS of the proposed SI works. Further details of these developer-led applications are provided in Appendix A.

Other MUL applications which overlap with the CESS but have not yet been determined are for dredging at Port of Waterford (LIC230025/FS005701), marine surveys for University College Cork and University College Dublin (MUL240013, MUL240018) and acoustic monitoring for Gas Networks Ireland (MUL240035). There is potential for these projects to overlap temporally as well as spatially with the proposed SI works when/if licences are granted.

#### 6.3.6 Screening Stage In-combination Effects Assessment Conclusion

Based on the above review of other projects occurring within the CESS and CETS of the proposed SI works, there is potential that the following projects could act in combination and likely significant effects incombination cannot be excluded at this stage.

- DaS permits: S0012-03, S0030-01, S0013-03, FS007126;
- DECC Surveys (LIC240006);
- Celtic Interconnector (FS006916);
- Port of Waterford Company Maintenance dredging (LIC230025/FS005701);
- University College Cork marine environmental survey (MUL240013);
- University College Dublin geophysical and sediment sampling survey (MUL240018);
- Gas Networks Ireland, Cork Harbour (MUL240035).

In the absence of mitigation measures, there is the potential for in-combination effects with other projects and therefore in-combination effects are screened in for further assessment.

<sup>&</sup>lt;sup>14</sup> Sumitomo completes Greenlink cable system - reNews - Renewable Energy News [Accessed 23/10/2024]

# 7 SUMMARY AND CONCLUSIONS

# 7.1 Summary

In accordance with the relevant legislation and the methodology followed, supporting information to inform a Stage 1 Screening for Appropriate Assessment was compiled. This SISAA report has been compiled in order to ascertain whether the proposed SI works are likely to have a significant effect on any European site.

Table 7.1 summarises the findings of this assessment and lists the 22 European sites for which likely significant effects cannot be excluded alone, or in-combination with other plans or projects, without further evaluation or analysis, or the application of mitigation measures. The relevant QI/ SCI of these 22 sites will be investigated in the applicant's Natura Impact Statement (NIS).

Table 7.1	Summary of European sites and relevant qualifying interests screened in for Likely Significant
	Effects

European Site	Distance to Area of Interest	Relevant QI/ SCI	Likely Significant Effect
Bannow Bay SAC	Within SAC boundary	Estuaries Mudflats and sandflats not covered by seawater at low tide Annual vegetation of drift lines Perennial vegetation of stony banks Salicornia and other annuals colonising mud and sand Atlantic salt meadows Mediterranean salt meadows Mediterranean and thermo-Atlantic halophilous scrubs Embryonic shifting dunes Shifting dunes along the shoreline with <i>Ammophila</i> <i>arenaria</i> (white dunes) Fixed coastal dunes with herbaceous vegetation (grey dunes)	Habitat loss, alteration or fragmentation, including increased SSC/smothering (for subtidal habitats).
Hook Head SAC	Within SAC boundary	Large shallow inlets and bays Reefs Vegetated sea cliffs of the Atlantic and Baltic coasts	Habitat loss, alteration or fragmentation, including increased SSC/smothering.
		Harbour porpoise ( <i>Phocoena phocoena</i> ) Bottlenose dolphin ( <i>Tursiops truncates</i> )	Underwater noise
River Barrow and River Nore SAC	Within SAC boundary	Estuaries Mudflats and sandflats not covered by seawater at low tide Reefs	Habitat loss, alteration or fragmentation, including increased SSC/smothering.
		Otter ( <i>Lutra lutra</i> ) River lamprey ( <i>Lampetra fluviatilis</i> ) Sea lamprey ( <i>Petromyzon marinus</i> ) Atlantic salmon ( <i>Salmo salar</i> ) Twaite shad ( <i>Alosa fallax fallax</i> )	Underwater noise disturbance
Saltee Islands SAC	3	Grey seal (Halichoerus grypus)	Underwater noise disturbance

European Site	Distance to Area of Interest	Relevant QI/ SCI	Likely Significant Effect
Blackwater River (Cork/Waterford) SAC	8	Otter ( <i>Lutra lutra</i> ) River lamprey ( <i>Lampetra fluviatilis</i> ) Sea lamprey ( <i>Petromyzon marinus</i> ) Atlantic salmon ( <i>Salmo salar</i> ) Twaite shad ( <i>Alosa fallax fallax</i> )	Underwater noise disturbance
Lower River Suir SAC	8	Otter ( <i>Lutra lutra</i> ) River lamprey ( <i>Lampetra fluviatilis</i> ) Sea lamprey ( <i>Petromyzon marinus</i> ) Atlantic salmon ( <i>Salmo salar</i> ) Twaite shad ( <i>Alosa fallax fallax</i> )	Underwater noise disturbance
Slaney River Valley SAC	17	Otter ( <i>Lutra lutra</i> ) Harbour seal ( <i>Phoca vitulina</i> ) River lamprey ( <i>Lampetra fluviatilis</i> ) Sea lamprey ( <i>Petromyzon marinus</i> ) Atlantic salmon ( <i>Salmo salar</i> ) Twaite shad ( <i>Alosa fallax fallax</i> )	Underwater noise disturbance
Carnsore Point SAC	20	Harbour porpoise (Phocoena phocoena)	Underwater noise disturbance
Blackwater Bank SAC	32	Harbour porpoise (Phocoena phocoena)	Underwater noise disturbance
Roaringwater Bay and Islands SAC	75	Grey seal ( <i>Halichoerus grypus</i> ) Harbour porpoise ( <i>Phocoena phocoena</i> )	Underwater noise disturbance
Glengarriff Harbour and Woodland SAC	81	Harbour seal (Phoca vitulina)	Underwater noise disturbance
Pembrokeshire Marine/ Sir Benfro Forol SAC	75	Grey seal (Halichoerus grypus)	Underwater noise disturbance
West Wales Marine / Gorllewin Cymru Forol SAC	81	Harbour porpoise ( <i>Phocoena phocoena)</i>	Underwater noise disturbance
Bannow Bay SPA	Within SPA boundary	Light-bellied Brent Goose ( <i>Branta bernicla hrota</i> ) Shelduck ( <i>Tadorna tadorna</i> ) Pintail ( <i>Anas acuta</i> ) Oystercatcher ( <i>Haematopus ostralegus</i> ) Golden Plover ( <i>Pluvialis apricaria</i> ) Grey Plover ( <i>Pluvialis squatarola</i> ) Lapwing ( <i>Vanellus vanellus</i> ) Knot ( <i>Calidris canutus</i> ) Dunlin ( <i>Calidris canutus</i> ) Dunlin ( <i>Calidris alpina</i> ) Black-tailed Godwit ( <i>Limosa limosa</i> ) Bar-tailed Godwit ( <i>Limosa lapponica</i> ) Curlew ( <i>Numenius arquata</i> ) Redshank ( <i>Tringa totanus</i> ) Wetland and Waterbirds	Above-water disturbance during coastal surveys
Ballycotton Bay SPA	Within SPA boundary	Teal ( <i>Anas crecca</i> ) Ringed Plover ( <i>Charadrius hiaticula</i> ) Golden Plover ( <i>Pluvialis apricaria</i> )	Above-water disturbance during coastal surveys

European Site	Distance to Area of Interes	Relevant QI/ SCI	Likely Significant Effect
		Grey Plover ( <i>Pluvialis squatarola</i> ) Lapwing ( <i>Vanellus vanellus</i> ) Black-tailed Godwit ( <i>Limosa limosa</i> ) Bar-tailed Godwit ( <i>Limosa lapponica</i> ) Curlew ( <i>Numenius arquata</i> ) Turnstone ( <i>Arenaria interpres</i> ) Common Gull ( <i>Larus canus</i> )	
		Lesser Black-backed Gull ( <i>Larus fuscus</i> ) Wetland and Waterbirds	
Mid Waterford Coast SPA	Within SPA boundary	Cormorant (Phalacrocorax carbo) Peregrine (Falco peregrinus) Herring Gull (Larus argentatus) Chough (Pyrrhocorax pyrrhocorax)	Above-water disturbance to breeding birds at the nest during marine surveys
Keeragh Islands SPA	Within SPA boundary	Cormorant (Phalacrocorax carbo)	Above-water disturbance to breeding birds at the nest during marine survey
Ballyteige Burrow SPA	1	Light-bellied Brent goose (Branta bernicla hrota)	Ex-situ above-water disturbance effects during coastal surveys
Tramore Back Strand SPA	1	Light-bellied Brent goose (Branta bernicla hrota)	Ex-situ above-water disturbance effects during coastal surveys
Dungarvan Harbour SPA	6	Light-bellied Brent goose (Branta bernicla hrota)	Ex-situ above-water disturbance effects during coastal surveys
Tacumshin Lake SPA	16	Bewick's swan ( <i>Cygnus columbianus bewickii</i> ) Whooper swan ( <i>Cygnus cygnus</i> )	Ex-situ above-water disturbance effects during coastal surveys
Wexford Harbour and Slobs SPA	17	Bewick's swan ( <i>Cygnus columbianus bewickii</i> ) Whooper swan ( <i>Cygnus cygnus</i> ) Light-bellied Brent goose ( <i>Branta bernicla hrota</i> )	Ex-situ above-water disturbance effects during coastal surveys

# 7.2 Conclusions

RPS has prepared this report to provide the necessary information to MARA for them to complete a Screening for Appropriate Assessment of the potential for likely significant effects on European sites, in view of their conservation objectives, arising from the SI works either individually or in combination with other plans or projects. The potential impacts of the SI works have been considered in the context of the European sites potentially affected, their QI/ SCI and their conservation objectives, through the application of the S-P-R model, which considered the potential extent of effects from the SI works and the potential in-combination effects with other plans or projects. Measures intended to avoid or reduce the harmful effects of the proposed development on European sites (i.e. "mitigation measures") have not been taken into account in this SISAA. The overall findings are as follows:

The SI works are not connected with or necessary to the management of the nature conservation interest of any European site.

In the absence of mitigation, as a result of above-water noise, vibration, lighting, and human presence associated with the SI works, disturbance of QI species is possible at the following European sites:

- Bannow Bay SPA (wintering waterbirds)
- Ballycotton Bay SPA (wintering waterbirds and gull species)
- Ballyteige Burrow SPA (wintering geese/swans)

- Tramore Back Strand SPA (wintering geese/swans)
- Dungarvan Harbour SPA (wintering geese/swans)
- Tacumshin Lake SPA (wintering geese/swans)
- Wexford Harbour and Slobs SPA (wintering geese/swans)
- Mid Waterford Coast SPA (breeding birds at the nest)
- Keeragh Islands SPA (breeding birds at the nest)

The SI works, in the absence of mitigation, have the potential to contribute to habitat loss, alteration, and/or fragmentation of Annex I habitats in:

- Bannow Bay SAC
- River Barrow and River Nore SAC
- Hook Head SAC.

In the absence of mitigation, the geophysical, geotechnical and metocean surveys will introduce subsea noise that has the potential to impact on otter, migratory fish species, bottlenose dolphin, harbour porpoise, harbour seal and grey seal at the following European sites:

- Hook Head SAC (bottlenose dolphin and harbour porpoise)
- River Barrow and River Nore SAC (otter and migratory fish)
- Saltee Islands SAC (grey seal)
- Blackwater River (Cork/Waterford) SAC (otter and migratory fish)
- Lower River Suir SAC (otter and migratory fish)
- Slaney River Valley SAC (harbour seal, otter and migratory fish)
- Carnsore Point SAC (harbour porpoise)
- Blackwater Bank SAC (harbour porpoise)
- Roaringwater Bay and Islands SAC (grey seal and harbour porpoise)
- Glengarriff Harbour and Woodland SAC (harbour seal)
- Pembrokeshire Marine/ Sir Benfro Forol SAC (grey seal)
- West Wales Marine / Gorllewin Cymru Forol SAC (harbour porpoise)

In the absence of mitigation measures, there is the potential for there to be in-combination effects with other projects and therefore in-combination effects are screened in for further assessment.

On the basis of objective information, it is our opinion that it cannot be excluded that the SI works, individually or in combination with other plans or projects, will have a significant effect on a European site. It is respectfully submitted that MARA should conduct an Appropriate Assessment and therefore a Natura Impact Statement (NIS) will be prepared to assist MARA in conducting an Appropriate Assessment.
### 8 **REFERENCES**

Arso Civil, M., Smout, S.C., Duck, C., Morris, C., Cummings, C., Langley, I., Law, A., Morton, C., Brownlow, A., Davison, N., Doeschate, M., Lacaze, J-P., McConnell, B., and Hall, A.J. (2018). Harbour Seal Decline – vital rates and drivers. Report to Scottish Government HSD2. Sea Mammal Research Unit, University of St Andrews, pp. 63.

BCI (2024). [online] Available at: https://www.batconservationireland.org/. Accessed September 2024.

Bellman, K., Bennett, S., James-Hussey, A., Watson, L., Ottaway, A., & Sayer, S. (2019). Please do not disturb! The growing threat of seal disturbance in the United Kingdom. The Seal Alliance. https://www.cornwallsealgroup.co.uk/wp-content/ uploads/2020/04/Disturbance-National-DO-NOT-DISTURB-public-report-for-release.pdf

Berrow, S. D., Holmes, B. and Kiely, O. (1996) Distribution and Abundance of Bottle-nosed Dolphins Tursiops truncatus (Montagu) in the Shannon Estuary, Ireland. Proceedings of the Royal Irish Academy Biology and Environment 96B (1), 1-9.

Berrow, S.D. (2001) Biological diversity of cetaceans (whales, dolphin and porpoises) in Irish waters. In Marine Biodiversity in Ireland and Adjacent waters. Proceedings of a conference 26-27 April, 2001 Ed. Nunn, J.D. Ulster Museum, Belfast, 115-119.

C.D. Morris & C.D. Duck (2019) Aerial thermal-imaging survey of seals in Ireland, 2017 to 2018. Irish Wildlife Manuals, No. 111 National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht, Ireland.

Carter, M. I. D. et al. (2020) Habitat-based predictions of at-sea distribution for grey and harbour seals in the British Isles. Sea Mammal Research Unit, University of St Andrews, Report to BEIS, OESEA-16-76/OESEA-17-78.

Carter, MI, Boehme, L, Cronin, MA, Duck, C, James Grecian, W, Hastie, GD, Jessopp, MJ, Matthiopoulos, J, McConnell, BJ, Morris, CD, Moss, SEW, Thompson, D, Thompson, P & Russell, DJF (2022), 'Sympatric seals, satellite tracking and protected areas: habitat-based distribution estimates for conservation and management', Frontiers in Marine Science, vol. 9, 875869. https://doi.org/10.3389/fmars.2022.875869

Chanin, P (2003): Ecology of the European Otter, Conserving Natura 2000 Rivers Ecology Series No. 10. English Nature

Cronin, Michelle & Gregory, Susan & Rogan, Emer. (2013). Moulting phenology of the harbour seal in southwest Ireland. Journal of the Marine Biological Association of the United Kingdom. 94. 1079-1086. 10.1017/S0025315413000106.

DECC (2024). Climate Action Plan 2024; Government of Ireland.

Department of Arts, Heritage and the Gaeltacht (DAHG) (2014) Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Waters. Dublin, Ireland, Department of Arts, Heritage and the Gaeltacht, 58pp.

Department of the Environment, Heritage and Local Government (DEHLG) (2009). Conservation Plan for Cetaceans in Irish waters. NPWS. Available at:

https://www.npws.ie/sites/default/files/publications/pdf/2009\_Cetaceans\_CP.pdf

Department of the Environment, Heritage and Local Government (DoEHLG) (2009, rev. 2010). Appropriate Assessment of Plans and Projects in Ireland Guidance for Planning Authorities. Government of Ireland.

EC (2000). Communication from the Commission on the Precautionary Principle. Office for Official Publications of the European Communities, Luxembourg;

EC (2002). Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg. European Commission;

EC (2007). Guidance document on the strict protection of animal species of Community interest under the Habitats Directive 92/43/EEC. European Commission

EC (2013). Interpretation Manual of European Union Habitats. Version EUR 28. European Commission, Luxembourg;

EC (2018). European Commission Notice C (2018) 7621 'Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC', Office for Official Publications of the European Communities, Luxembourg;

EC (2021). European Commission Notice C (2021) 6913 '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', Office for Official Publications of the European Communities, Luxembourg

EMODnet (2024) Map Viewer. Available at: https://emodnet.ec.europa.eu/geoviewer/ . Accessed September 2024.

Environmental Protection Agency (EPA) (2022) Guidelines on the information to be contained in Environmental Impact Assessment Reports; Wexford. Ireland.

Finneran James j. (2024)/NOAA (2024). Marine mammal auditory weighting functions and exposure functions for US Navy Phase 4 acoustic effects analyses [Report]. - [s.l.] : NOAA, 2024.

Fliessbach, Katharina & Borkenhagen, Kai & Guse, Nils & Markones, Nele & Schwemmer, Philipp & Garthe, Stefan. (2019). A Ship Traffic Disturbance Vulnerability Index for Northwest European Seabirds as a Tool for Marine Spatial Planning. Frontiers in Marine Science. 6. 10.3389/fmars.2019.00192.

Giralt Paradell, O., Cañadas, A., Bennison, A., Todd, N., Jessopp, M., Rogan, E. (2024). Aerial surveys of cetaceans and seabirds in Irish waters: Occurrence, distribution and abundance in 2021-2023. Department of the Environment, Climate & Communications and Department of Housing, Local Government & Heritage, Ireland. 260pp

Hartley Anderson Limited. 2020. Underwater acoustic surveys: review of source characteristics, impacts on marine species, current regulatory framework and recommendations for potential management options. NRW Evidence Report No: 448, 136pp, NRW, Bangor, UK.

IAMMWG, (2015). Management units for cetaceans in UK waters (January 2015). JNCC Report No. 547, JNCC Peterborough. Available from: <u>https://data.jncc.gov.uk/data/f07fe770-e9a3-418d-af2c-44002a3f2872/JNCC-Report-547FINAL-WEB.pdf</u>

IAMMWG. (2023). Review of Management Unit boundaries for cetaceans in UK waters (2023). JNCC Report 734, JNCC, Peterborough, ISSN 0963-8091. <u>https://hub.jncc.gov.uk/assets/b48b8332-349f-4358-b080-b4506384f4f7</u>.

JNCC (2020). Guidance for assessing the significance of noise disturbance against Conservation Objectives of harbour porpoise SACs (England, Wales & Northern Ireland). JNCC Report No. 654, JNCC, Peterborough, ISSN 0963- 8091.

Laist, D.W., Knowlton, A.R., Mead, J.G., Collet, A.S. and Podesta, M. (2001). Collisions between ships and whales. Marine Mammal Science 17: 35-75.

Limpens, H., Lagerveld, S., Ahlen, I., Anxionnat, D., Aughney, T., Baagoe, H., Bach, L., Bach, P., Boshamer, J., Boughey, K., Le Campion, T.,, Christensen, M., Douma, T., Dubourg-Savage, M-J., Durinck, J., Elmeros, M., Haarsma, A-J., Haddow, J., Hargreaves, D., Hurst, J., Jansen, E., Johansen, T., de Jong, J., Jouan, D., van der Kooji, J., Kyheroinen, E., Mathews, F., Michaelsen, T., Moller, J., Pettersons, G., Roche, N., Rodrigues, L., Russ, J., Smits, Q., Swift, S., Fjederholt, E., Twisk, P., Vandendriesche, B. and Schillemans, M. (2017) Migrating bats at the southern North Sea approach to an estimation of migration populations of bats at the southern North Sea. Technical Report Zoodiervereniging (Dutch Mammal Society).

M. A. Cronin, M. J. Jessopp & D. Del Villar (2011). Tracking grey seals on Irelands' continental shelf. Report to National Parks & Wildlife Service, Department of Arts, Heritage and Gaeltacht. Coastal & Marine Research Centre University College Cork Ireland.

Mueller-Blenkle, C., McGregor, P.K., Gill, A.B., Andersson, M.H., Metcalfe, J., Bendall, V., Sigray, P., Wood, D.T. & Thomsen, F. (2010) Effects of Pile-driving Noise on the Behaviour of Marine Fish. COWRIE Ref: Fish 06-08, Technical Report. 31st March 2010.

Mullen, E., Marnell, F. & Nelson, B. (2021) Strict Protection of Animal Species. National Parks and Wildlife Service Guidance, No. 2. National Parks and Wildlife Service, Department of Housing. Local Government and Heritage

NPWS (2009). Background to the conservation assessment for the otter *Lutra lutra*. Available at: <u>Microsoft</u> <u>Word - 1355\_Lutra\_lutra\_Report.doc (npws.ie)</u>

NPWS (2011a) Conservation Objectives: River Barrow and River Nore SAC 002162. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2011b) Conservation Objectives: Hook Head SAC 000764. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2012) Conservation Objectives: Bannow Bay SAC 000697. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2014a). Site synopsis Bannow Bay SAC (000697). Available at: <u>https://www.npws.ie/sites/default/files/protected-sites/synopsis/SY000697.pdf</u>

NPWS (2014b) Conservation Objectives: Ballyteige Burrow SAC 000696. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2014c). Site synopsis Ballyteige Burrow SPA (004020). Available at: SITE SYNOPSIS (npws.ie)

NPWS (2014c). Site synopsis Keeragh Islands SPA (004118). Available at: SITE SYNOPSIS (npws.ie)

NPWS (2014d). Site synopsis Bannow Bay SPA (004033). Available at: SITE SYNOPSIS (npws.ie)

NPWS (2015a). Site Synopsis: Slaney River Valley SAC 000781. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2015b). Site synopsis Mid-Waterford Coast SPA (004193). Available at: SITE SYNOPSIS (npws.ie)

NPWS (2015c). Site synopsis Ballycotton Bay SPA (004022). Available at: SITE SYNOPSIS (npws.ie)

NPWS (2015d). Site synopsis Cork Harbour SPA (004030). Available at: SITE SYNOPSIS (npws.ie)

NPWS (2019). The Status of EU Protected Habitats and Species in Ireland. Volume 3: Species Assessments. Unpublished NPWS report.

NPWS (2024). Site synopsis Seas Off Wexford cSPA (004237). Available at: SY004237.pdf (npws.ie)

Nykänen, M., Dillane, E., Englund, A., Foote, A.D., Ingram, S.N., Louis, M., Mirimin, L., Oudejans, M. and Rogan, E., 2018. Quantifying dispersal between marine protected areas by a highly mobile species, the bottlenose dolphin, Tursiops truncatus. Ecology and Evolution 8:9241–9258. DOI: 10.1002/ece3.4343

Ó Cadhla, O., Keena, T., Strong, D., Duck, C. and Hiby, L. (2013). Monitoring of the breeding population of grey seals in Ireland, 2009 – 2012. Irish Wildlife Manuals, No. 74. National Parks and Wildlife Service, Department of the Arts, Heritage and the Gaeltacht, Dublin, Ireland.

Ó Cadhla, O., Strong, D., O'Keeffe, C., Coleman, M., Cronin, M., Duck, C., Murray, T., Dower, P., Nairn, R., Murphy, P., Smiddy, P., Saich, C., Lyons, D. & Hiby, A.R. (2007). Grey seal breeding population assessment in the Republic of Ireland: 2005. National Parks & Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin, Ireland. 50pp.

O'Brien, Joanne & Berrow, Simon & Ryan, Conor & Mcgrath, David & O'Connor, Ian & Pesante, P & Burrows, Gary & Massett, Nick & Klötzer, V & Whooley, Pádraig. (2009). A note on long-distance matches of bottlenose dolphins (Tursiops truncatus) around the Irish coast using photo-identification. Journal of Cetacean Research and Management. 11. 71-76. 10.47536/jcrm.v11i1.632.

O'Cadhla, O., Mackey, M., Aguilar de Soto, N., Rogan, E. and Connolly, N. (2004) Cetaceans and seabirds of Ireland's Atlantic margin. Volume II—Cetacean distribution and abundance. Report on research carried out under the Irish Infrastructure Programme (PIP): Rockall Studies Group (RSG) projects 98/6 and 00/13, Porcupine Studies Group project P00/15 and Offshore Support Group (OSG) project 99/38.

Oliver Ó Cadhla & Denis Strong (2007). Grey seal moult population survey in the Republic of Ireland, 2007.

OPR (2021). Practice Note PN01: Appropriate Assessment Screening for Development Management. Office of the Planning Regulator, Dublin Ireland.

Philip S. Hammond, Kelly Macleod, Per Berggren, David L. Borchers, Louise Burt, Ana Cañadas, Geneviève Desportes, Greg P. Donovan, Anita Gilles, Douglas Gillespie, Jonathan Gordon, Lex Hiby, Iwona Kuklik, Russell Leaper, Kristina Lehnert, Mardik Leopold, Phil Lovell, Nils Øien, Charles G.M. Paxton, Vincent Ridoux, Emer Rogan, Filipa Samarra, Meike Scheidat, Marina Sequeira, Ursula Siebert, Henrik Skov, René Swift, Mark L. Tasker, Jonas Teilmann, Olivier Van Canneyt, José Antonio Vázquez, (2021). Cetacean abundance and distribution in European Atlantic shelf waters to inform conservation and management, Biological Conservation, Volume 164, ISSN 0006-3207, <a href="https://doi.org/10.1016/j.biocon.2013.04.010">https://doi.org/10.1016/j.biocon.2013.04.010</a>.

Popper, A.N. and Hastings, M.C. (2009), The effects of anthropogenic sources of sound on fishes. Journal of Fish Biology, 75: 455-489. <u>https://doi.org/10.1111/j.1095-8649.2009.02319.x</u>

Popper, Arthur & Hawkins, Anthony & Fay, Richard & Mann, David & Bartol, Soraya & Carlson, Thomas & Coombs, Sheryl & Ellison, William & Gentry, Roger & Halvorsen, Michele & Løkkeborg, Svein & Rogers, Peter & Southall, Brandon & Zeddies, David & Tavolga, William. (2014). Sound Exposure Guidelines. 10.1007/978-3-319-06659-2\_7.

Ransijn,J. M.,Hammond,P. S.,Leopold,M. F.,Sveegaard,S., &Smout,S. C.(2021). Integrating disparate datasets to model the functional response of a marine predator: A case study of harbour porpoises in the southern North Sea. *Ecology and Evolution*,11,17458–17470. <u>https://doi.org/10.1002/ece3.8380</u>

Reid, N., Hayden, B., Lundy, M.G., Pietravalle, S., McDonald, R.A. & Montgomery, W.I., 2013. National Otter Survey of Ireland 2010/12. Irish Wildlife Manuals No. 76. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.

Robinson, Kevin & O'Brien, Joanne & Berrow, Simon & Cheney, Barbara & Costa, Marina & Eisfeld-Pierantonio, Sonja & Haberlin, Damien & Mandleberg, Laura & O'Donovan, Mairéad & Oudejans, Machiel & Ryan, Conor & Stevick, Peter & Thompson, Peter & Whooley, Pádraig. (2012). Discrete or not so discrete: Long distance movements by coastal bottlenose dolphins in UK and Irish waters. Journal of Cetacean Research and Management. 12. 365-371. 10.47536/jcrm.v12i3.569.

Rogan, E., Breen, P., Mackey, M., Cañadas, A., Scheidat, M., Geelhoed, S. & Jessopp, M. (2018). Aerial surveys of cetaceans and seabirds in Irish waters: Occurrence, distribution and abundance in 2015-2017. Department of Communications, Climate Action & Environment and National Parks and Wildlife Service (NPWS), Department of Culture, Heritage and the Gaeltacht, Dublin, Ireland. 297pp.

Russell D.J.F. and McConnell B. (2014). Seal at-sea distribution, movements and behaviour. Report to DECC. Sea Mammal Research Unit. March 2014. 72pp.

Ryan, C., Rogan, E., & Cross, T. (2010). The use of Cork Harbor by bottlenose dolphins (Tursiops truncatus [Montagu]). Irish Naturalists' Journal, 31(1), 1-9.

SCOS. (2021). Scientific advice on matters related to the management of seal populations: 2021. 266 pp.

Scottish Natural Heritage; SNH (2016). Assessing Connectivity with Special Protection Areas (SPAs) Guidance. Version 3 – June 2016.

Southall, BL, Finneran, JJ, Reichmuth, C, Nachtigall, PE, Ketten, DR, Bowles, AE, Ellison, WT, Nowacek, DP & Tyack, PL (2019). 'Marine mammal noise exposure criteria: updated scientific recommendations for residual hearing effects', Aquatic Mammals, vol. 45, no. 2, pp. 125-232. https://doi.org/10.1578/AM.45.2.2019.125

Van Waerebeek, Koen & Baker, Alan & Félix, Fernando & Gedamke, Jason & Iñiguez, Miguel & Sanino, Gian & Secchi, Eduardo & Sutaria, Dipani & van Helden, Anton & Wang, Yamin. (2007). Vessel collisions

with small cetaceans worldwide and with large whales in the Southern Hemisphere, an initial assessment. Latin American Journal of Aquatic Mammals. 6. 43-69. 10.5597/lajam00109.

Wall, D., Murray, C., O'Brien, J., Kavanagh, L., Wilson, C., Glanville, B., Williams, D., Enlander, I., Ryan, C., O'Connor, I., McGrath, D., Whooley, P. and Berrow, S. (2013) Atlas of the distribution and relative abundance of marine mammals in Irish offshore waters: 2005 – 2011. Irish Whale and Dolphin Group.

Woodward, I., Thaxter, C.B., Owen, E. & Cook, A.S.C.P., (2019). Desk-based revision of seabird foraging ranges used for HRA screening, Report of work carried out by the British Trust for Ornithology on behalf of NIRAS and The Crown Estate, ISBN 978-1-912642-12-0.

## Appendix A List of Projects for In-combination Assessment

# Table A.1 List of projects identified as potential in-combination projects following a search of the relevant databases undertaken on the 24/10/2024.

No.	Application reference no.	Project	Approximate Distance from Aol	Project Status	Cumulative Effect
1	S0012-03 (x3 permits)	Port of Waterford Company Dredging Campaigns	0	Permit end date 31/12/2025	Spatial overlap with Aol at the entrance to Waterford Estuary for three dredge permits which end in 2025. Within the Cumulative Effects Spatial Scope (CESS). Possible temporal overlap.
2	S0030-01	Wexford County Council	0	Permit end date 31/05/2027	Spatial overlap with Aol off Bannow Bay (c. 11 km off Kilmore Quay). Within the CESS. Possible temporal overlap.
3	S0013-03	Port of Cork Company	0	Permit end date 31/12/2030	Spatial overlap with AOI at the entrance to Cork Port Within the CESS. Possible temporal overlap.
4	S0013-03	Port of Cork Company	0	Permit end date 31/12/2030	Spatial overlap with AOI c. 7 km off Powers Head. Within the CESS. Possible temporal overlap.
5	S0012-03 (x3 permits)	Port of Cork Company	0	Permit end date 31/12/2025	No spatial overlap with AOI. Within the CESS. Possible temporal overlap.
6	FS006916	EirGrid Public Limited Company (Celtic Interconnector)	Overlaps	Determination 30/08/2022	Spatial overlap with AOI. Within the CESS. Possible temporal overlap.
7	LIC240006	Department of the Environment, Climate & Communications Deployment of the Marine Institute's R.V. to undertake a geophysical survey in the South Coast DMAP to inform future offshore renewable energy development.	Overlaps with AOI	Determined	Spatial overlap with AOI. Within the CESS. Possible temporal overlap.
8	FS006982	Energia site investigations for wind farm off Helvick Head	Overlaps with AOI	Determination 28/09/2021	Spatial overlap with AOI. Within the CESS. Possible temporal overlap.

#### Supporting Information for Screening for Appropriate Assessment

No.	Application reference no.	Project	Approximate Distance from Aol	Project Status	Cumulative Effect
9	FS007126	Port of Cork Maintenance Dredging	Overlaps with AOI	Determination 08/09/2023	Spatial overlap with AOI. Within the CESS. Possible temporal overlap.
10	FS007050	Greenlink Interconnector	Overlaps with AOI	Determination 03/09/2021	Spatial overlap with AOI. Within the CESS.
11	FS007471	Floating Cork Offshore Wind Ltd Site investigations	Overlaps with AOI	Proposed – Foreshore licence submitted 22/09/22	Spatial overlap with AOI. Within the CESS. Possible temporal overlap.
12	FS007445	Blackwater OWL Offshore Wind Ltd. marine surveys off the Wexford coast	Overlaps with AOI	Proposed – Foreshore licence submitted 09/05/22	Spatial overlap with AOI. Within the CESS. Possible temporal overlap.
13	FS007464	Bore Array Ltd site investigations for wind farm off Co. Wexford	Overlaps with AOI	Proposed – Foreshore licence submitted 08/04/22	Spatial overlap with AOI. Within the CESS. Possible temporal overlap.
14	FS007488	Celtic Offshore Renewable Energy site investigation off the coast of Wexford and Waterford	Overlaps with AOI	Proposed – Foreshore licence submitted 22/04/22	Spatial overlap with AOI. Within the CESS. Possible temporal overlap.
15	FS007436	Voyage Offshore Array Ltd. site investigations off coast of Wexford and Waterford	Overlaps with AOI	Proposed – Foreshore licence submitted 14/02/22	Spatial overlap with AOI. Within the CESS. Possible temporal overlap.
16	FS007431	Tulca Offshore Array Ltd: site investigations off County Cork	Overlaps with AOI	Proposed – Foreshore licence submitted 14/02/22	Spatial overlap with AOI. Within the CESS. Possible temporal overlap.
17	FS007575	Kinsale Offshore Wind Ltd site investigations off County Cork	Overlaps with AOI	Proposed – Foreshore licence submitted 26/08/22	Spatial overlap with AOI. Within the CESS. Possible temporal overlap.
18	FS006983	SSE Renewables Celtic Sea site investigations off County Cork	Overlaps with AOI	Proposed – Foreshore licence submitted 19/03/19	Spatial overlap with AOI. Within the CESS. Possible temporal overlap.
19	FS006859	DP Energy Site Investigations at Inis Ealga	Overlaps with AOI	Consultation 21/10/2019	Spatial overlap with AOI. Within the CESS. Possible temporal overlap.
20	FS007139	Emerald Offshore Wind Limited Site Investigations for possible Floating Offshore Wind project off Kinsale	Overlaps with AOI	Consultation 22/05/2020	Spatial overlap with AOI. Within the CESS. Possible temporal overlap.
21	FS007136	ESB Wind Development Limited Site Investigations off Waterford and Cork	Overlaps with AOI	Consultation 18/12/2020	Spatial overlap with AOI. Within the CESS. Possible temporal overlap.

#### Supporting Information for Screening for Appropriate Assessment

No.	Application reference no.	Project	Approximate Distance from Aol	Project Status	Cumulative Effect
		Coasts - Helvick Head Offshore Wind			
22	FS007404	Inis Ealga Marine Energy Park (IEMEP) site investigations off County Cork	Overlaps with AOI	Consultation	Spatial overlap with AOI. Within the CESS. Possible temporal overlap.
23	FS007138	ESB Celtic Offshore Wind - Site Investigations off Waterford and Cork	Overlaps with AOI	Consultation 20/12/2020	Spatial overlap with AOI. Within the CESS. Possible temporal overlap.
24	FS007318	RWE Renewables Ireland East Celtic Ltd site investigations for proposed offshore wind park	Overlaps with AOI	Proposed – Foreshore licence 10/03/2021	Spatial overlap with AOI. Within the CESS. Possible temporal overlap.
25	FS007616	Ruby Offshore Energy Site Investigations for Offshore Wind Farm, off the coast of Counties Wexford, Waterford and cork	Overlaps with AOI	Proposed – Foreshore licence 23/02/23	Spatial overlap with AOI. Within the CESS. Possible temporal overlap.
26	FS007621	Péarla Offshore Wind Ltd.Site investigations for export cable for proposed offshore wind farm	Overlaps with AOI	Proposed – Foreshore licence 24/10/22	Spatial overlap with AOI. Within the CESS. Possible temporal overlap.
27	FS007376	Uisce Éireann ADCP Surveys at Cork Harbour	Overlaps with AOI	Proposed – Foreshore licence 30/09/2022	Spatial overlap with AOI. Within the CESS. Possible temporal overlap.
28	LIC230025/FS005701	Port of Waterford Company Maintenance dredging of accumulated sediments to maintain the port's navigational trade areas.	Overlaps at Creedan Head	Proposed – Foreshore licence	Spatial overlap with AOI. Within the CESS. Possible temporal overlap.
29	MUL240013	University College Cork marine environmental survey for the purpose of scientific research and discovery aims to shed light at the palaeo-channel network of the Celtic Sea and assess potentially important benthic habitats.	Overlaps	Proposed – Foreshore licence	Spatial overlap with AOI. Within the CESS. Possible temporal overlap.

#### Supporting Information for Screening for Appropriate Assessment

No.	Application reference no.	Project	Approximate Distance from Aol	Project Status	Cumulative Effect
30	MUL240018	University College Dublin geophysical and sediment sampling survey off the south coast of Ireland to inform environmental and geological studies in relation to Blue Carbon potential of marine sediments.	Overlaps	Proposed – Foreshore licence	Spatial overlap with AOI. Within the CESS. Possible temporal overlap.
31	MUL240035	Gas Networks Ireland, Cork Harbour The surveys require the deployment and retrieval of static acoustic monitoring (SAM) devices and up to two acoustic doppler current profilers (ADCP) within the study area	300 m	Proposed – Foreshore licence	Spatial overlap with AOI. Within the CESS. Possible temporal overlap.
32	S0013-02	Port of Cork Company	2	Permit end date 01/08/2023	No spatial overlap with AOI. Within the CESS. Possible temporal overlap
33	S0013-03	Port of Cork Company	2	Permit end date 31/12/2034	No spatial overlap with AOI. Within the CESS. Possible temporal overlap.
34	S0013-02	Port of Cork Company	2	Permit end date 01/08/2021	No spatial overlap with AOI. Within the CESS. No temporal overlap.
35	S0013-02	Port of Cork Company	2	Permit end date 01/08/2022	No spatial overlap with AOI. Within the CESS. No temporal overlap.
36	S0013-03	Port of Cork	4	Permit end date	No spatial overlap with AOI. Within the CESS.
37	S0013-03	Port of Cork Company	5	Permit end date 31/12/2031	No spatial overlap with AOI. Within the CESS. Possible temporal overlap.