MERC Consultants
environmental and conservation services

Supporting Information for Screening for Appropriate Assessment Report

Uisce Éireann South East Coast Strategic Model

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1. Introduction

Uisce Éireann wish to conduct a strategic modelling study of water currents and bathymetry along the South East coast of Ireland. The study requires the deployment of up to nine static Acoustic Doppler Current Profilers (ADCPs) at separate locations within the study area. Ancillary instruments, to collect salinity and temperature data, may also be contained within the trawl resistant frames in which the ADCPs will be deployed. Boat based ADCP surveys and a bathymetric survey (multibeam and single beam) are also required.

This document constitutes Supporting Information for Screening for Appropriate Assessment (SISAA) to assist the Competent Authority in undertaking a screening exercise for Appropriate Assessment (AA). The screening exercise will aim to assess, in view of the best scientific knowledge, if the proposed project, individually or in combination with other plans or projects, is likely to significantly affect any European sites, considering their conservation objectives.

2. Statement of authority

This report was prepared by MERC Consultants. MERC are a specialist marine ecological survey and consultancy firm. Core staff have more than 60 years of combined experience and specialist knowledge in relation to Irish aquatic habitats and species in addition to the assessment and management of conservation interests. MERC were responsible for preparing the NPWS national monitoring of marine Annex I habitats for compliance under Article 17 of the EU Habitats Directive in the period 2015-2019. In this context MERC were responsible for the assessment and reporting of marine Annex I habitats in Ireland and were the authors of all Article 17 reports and overarching site monitoring reports. MERC are currently engaged in conducting surveys and preparing the relevant reports for the current (2022-2025) monitoring cycle.

In addition to their scientific expertise MERC have an in-depth knowledge of Irish and European Environmental legislation and policy. In 2011 MERC prepared the text describing Activities Requiring Consent (ARCs) for inclusion in a handbook detailing the regulatory framework for all developments within designated sites in Ireland on behalf of the National Parks and Wildlife Service. They have also produced numerous Conservation Management Plans for the same department. To-date MERC have conducted in excess of 200 ecological reports in support of Appropriate Assessment under Article 6(3) of the EU Habitats Directive.

3. Methods

3.1 Guidelines and legislation

This report has been prepared with reference to the following European Directives, national legislation and guidance on the appropriate assessment of projects and plans with regard to the implementation of the provisions of Article 6(3) and (4) of the EU Habitats Directive 92/43/EEC.

- Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild flora and fauna. Official Journal of the European Communities.
- Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds (codified version).
- European Communities (Birds and Natural Habitats) Regulations 2011. SI No. 477 of 2011.
- Managing Natura 2000 sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC. Commission Notice C(2018) 7621 final, Brussels, 21.11.2018.
- Assessment of plans and projects in relation to Natura 2000 sites-Methodological Guidance on the provisions of Articles 6(3) and (4) of the Habitats Directive 92/43/EEC 2021/C 437/01-Publication office of the EU (europa.eu).
- Appropriate Assessment Screening for Development Management. OPR Practice Note PN01. Office of the Planning Regulator. March 2021.
- Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Waters. Department of Arts, Heritage and the Gaeltacht, 2014.
- JNCC. 2023. JNCC guidance for the use of Passive Acoustic Monitoring in UK waters for minimising the risk of injury to marine mammals from offshore activities. JNCC, Peterborough.

3.2 Description of the proposed project and its associated scope of works

A description of the proposed project was compiled and is set out in section 4. The description details all works required to carry out the proposed project.

To fully understand the receiving environment, relative to project related effects, the literature consulted included the available National Parks and Wildlife Service (NPWS) data sources for all European sites within the Zone of Influence (ZoI) of the proposed project. This included the individual site synopsis for the relevant European sites, conservation objectives and GIS layers (habitats and species). Further data was obtained from the following sources (non-exhaustive):

- Biodiversity Data Centre species maps.
- Irish Whale and Dolphin Group live sightings.
- ObSERVE Aerial Surveys
- INFOMAR Seabed and sediment data.

3.3 Impact Assessment approach

The zone of influence (ZoI) of a project is the area over which ecological features may be affected by biophysical changes as a result of the proposed project and associated activities. In the context of Appropriate Assessment Screening, the ZoI is the area over which a plan or project could affect the receiving environment such that it could potentially have significant effects on the conservation status of European Sites. Within the ZoI those receptors that are sensitive to change must be identified and considered.

To define the ZoI of a project, the potential for project related effects on sensitive receptors must first be established. For this purpose, a **Source-Path-Receptor (SPR)** model was applied. The SPR model is a well-

established model frequently applied to the analysis of project related impacts on ecosystems and is the one which we have applied to the assessment of the proposed project.

Using this approach all elements of the proposed project were reviewed to assess potential pathways and receptors which might be affected so that a ZoI could be established. This process involved the following steps:

- The identification of sources of potential impacts and their pathways from the proposed project site to European Sites.
- Consideration of sensitive receptors and their dependent ecosystems within the aforementioned European sites.
- Identifying and characterising project related impacts and their likely effects, direct, indirect and cumulative on the identified sensitive receptors.

Once the ZoI was established, the following steps were taken to assess the potential for likely significant effects on sensitive receptors:

1. The scale and scope of the project was examined.
2. A desk review of the available literature describing the habitats and species known to occur at the proposed project site and surrounding area was undertaken.
3. Any project related activities likely to affect migratory or highly mobile species was considered.
4. Any use of the proposed project site by mobile species that make regular movements to, from, or across the site was assessed.
5. An assessment was carried out of the key ecological processes and species activity periods including seasonal variations in distribution, abundance and activity.

3.4 Review of European sites

Once the ZoI of the proposed project was determined, European sites within this ZoI were documented and an analysis of the sensitivity of ecological receptors therein was conducted. In determining the sensitivity of ecological receptors consideration was given to the scale, scope and location of the proposed project relative to the aforementioned receptors.

4. Details of the proposed project

4.1 Location

The proposed project is located off the South East coast between Dungarvan, Co. Waterford and Greystones, Co. Wicklow (Figure 1).

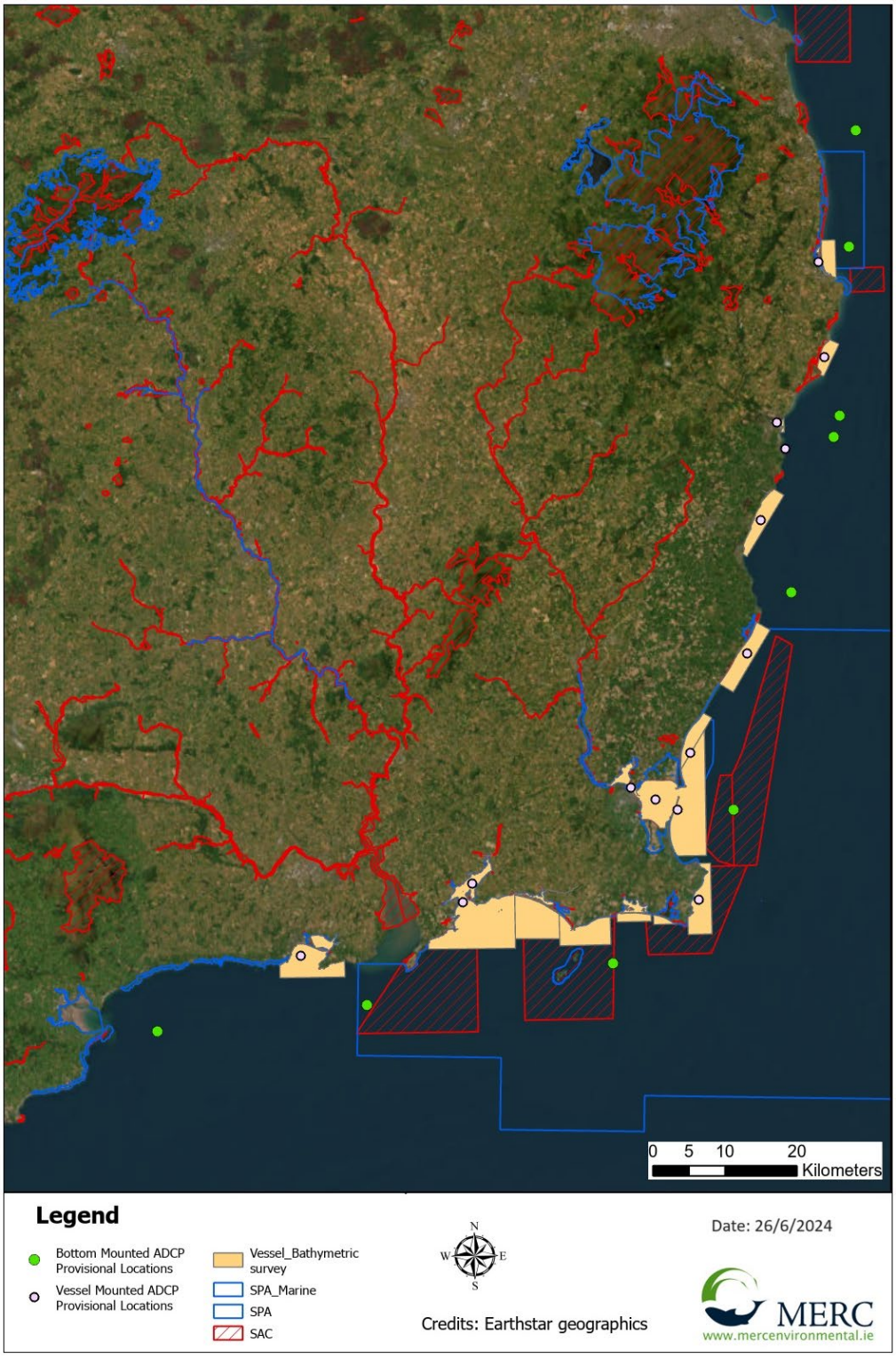

Figure 1. Proposed survey location

4.2 Scope of works

The project consists of the deployment of up to nine (9) bottom deployed ADCPs. Ancillary instruments, to collect salinity and temperature data, may also be contained within the trawl resistant frames in which the ADCPs will be deployed. The project also includes vessel based assessment of water currents and bathymetry using a combination of vessel based ADCP's, single-beam and multibeam surveys, and potentially, the deployment of tidal gauges. See **Table 1** for all survey and deployment locations.

A description of the proposed survey equipment is summarised in **Table 1** and described below.

4.2.1 Multibeam echosounder

A multibeam echosounder (MBES) is a type of sonar frequently used to map bathymetry. It operates by emitting an acoustic wave in a fan shape beneath the point of its transceiver attached the hull of the vessel or more typically mounted on a tow-fish. The time it takes for the sound waves to bounce off the seabed and return to the transceiver is used to calculate the water depth within the arc of the fan. A typical multibeam echo sounder operates at a sound pressure level of between 200-220 dB re 1µPa at 1m with a peak frequency between 300-500 kHz (300,000-500,000 Hz).

4.2.2 Single-beam sonar

Single-beam sonar (SBS) operates in a similar way to multibeam but with a narrower band width in the regions of a 2-15 degree beam. They are typically used in shallow waters for smaller areas where the time required to achieve 100% insonification with a multibeam sonar is considered unnecessary depending on the purpose the bathymetry is being gathered for.

4.2.3 Vessel mounted and static Acoustic Doppler Current Profiler ADCP) surveys

An Acoustic Doppler Current Profiler (ADCP) is a hydroacoustic current meter that measures water current velocities over a depth range using the Doppler effect of sound waves scattered back from particles within the water column. It is proposed that nine ADCDs are deployed on the seabed as shown in Figure 1. Due to the shallow depth in some areas, vessel mounted ADCP surveys are proposed as part of the current programme of works. Vessel mounted (VM) ADCPs work on the same principle as the fixed ADCPs but obtain less data. VMADCP measurements would be taken every half-hour and averaged over 13 hours of a mean spring and mean neap tidal cycle.

4.2.4 Tidal gauges

Tidal gauges are used to gather precise tidal height data for discrete fixed points. The resulting data can then be extrapolated to a wider area. For the proposed project it is proposed that the tidal gauge would be mounted on either a galvanized steel pole to the side of a suitable pier or other permanent fixed structure. Installation would take place on a very low tide so that the mountings can be attached as low as possible down the pier wall to ensure the sensor is below chart datum.

4.2.5 Ancillary data collection

Additional ancillary data may be collected. This may include the collection of water samples, and data on temperature & Conductivity/Salinity collected through the deployment of a small overboard conductivity, temperature and depth (CTD) meter.

4.2.6 Vessel

To facilitate ADCP deployment, multibeam and single beam surveys and the collection of ancillary data (e.g. CTD data, deployment of tidal gauges) a shallow draft vessel approximately 16m in length will be contracted. An appropriate vessel of this size would typically operate with an inboard diesel engine within a capacity of up to 400hp/300 kW.

Table 1. Proposed survey equipment

Element	Method	Frequency	Location
Fixed ADCP	Fixed ADCP surveys will be conducted using a Nortek AWAC 600 Khz or 1 Mhz unit (or equivalent) deployed on seabed mounted frames. ADCP frames will be equipped with a recovery line attached to a small rigid buoy that is held in place by an acoustic release, which releases the buoy once triggered by a deck unit. Housed within the frame is the battery canister(s) for the ADCP along with lead ballast to prevent movement on the seabed in high energy tidal and wave environments. An acoustic pinger is mounted on the frame to aid in the recovery of the frame in the event of the acoustic release not firing.	32 days. A sampling rate of 1-minute average every 10 minutes for each ADCP sensor is required.	Indicative locations provided in figure 1
Vessel Based ADCP	The Vessel mounted ADCP (VMADCP) surveys will be conducted using a TRDI WH Monitor 600kHz ADCP (or similar) to an aluminium pole that will be mounted to the side of the vessel ensuring the ADCP is deployed below the surface of the water. Measurements will be taken periodically at set stations as part of a transect with is repeatedly transversed over a tidal cycle, or taken continuously as the vessel remains on station over a tidal cycle.	13 hours of surveying on 1no spring and 1no neap tide. A sampling rate of a minimum of 1-minute average every 10 minutes for each ADCP	Within MUL Area (figure 1); limited to marine navigable areas
Water Sampling	Water sampling will be undertaken concurrently with the VMADCP surveys. Periodically samples will be taken from the surface layer of the water column via bucket and telescopic arm, and collected and stored for subsequent analyses	Periodically over 13 hours of surveying on 1no spring and 1no neap tide	Within MUL Area (Figure 1); limited to marine navigable areas
Conductivity, Temperature and depth (CTD) and Dissolved Oxygen (DO) Monitoring	Concurrently with the VMADCP surveys CTD and DO surveys will take place from the vessel. This will involve deploying a Sonde at set intervals for the duration of the tidal survey at each VMADCP location. The sonde will be lowered to just below the surface of the water from the vessel, the sonde will be allowed to settle at the surface of the water before being lowered to the seabed, where the instrument will be lifted from the seabed and allow the values returned to the hand-held device to settle. Once the values from the sonde have settled it will be slowly lifted back to the sea surface and back onboard the vessel.	Periodically over 13 hours of surveying on 1no spring and 1no neap tide	Within MUL Area (figure 1); limited to marine navigable areas
Bathymetry	Surveying of bathymetry may require a combination of methods including; Multibeam Echosounders and singlebeam.	n/a	Within MUL Area
Tide Gauge	The inshore tide gauge will be mounted on either a galvanized steel pole to the side of a suitable pier or other permanent fixed structure. Installation will take place on a very low tide so mountings can be attached as low as possible down the pier wall to ensure the sensor is below chart datum.	Installed for a minimum of 3 months, coinciding with all other sampling	Within Wicklow and Courtown Harbours
Vessel details	A small survey vessel, likely to be no larger than 16m length, 6m beam and 2m draught will be used.		

5. Receiving environment

The proposed target survey area encompasses an area from Dungarvan in Co. Waterford to Greystones, Co. Wicklow (Figure 1). There is a spatial overlap between the proposed project area and the following European Sites:

- Tramore Dunes and Backstrand SAC (000671)
- Hook Head SAC (000764)
- Bannow Bay SAC (000697)
- Saltee Islands SAC (000707)
- Carnsore Point SAC (002269)
- Slaney River Valley SAC (000781)
- Raven Point Nature Reserve SAC (000710)
- Blackwater Bank SAC (002953)
- Seas off Wexford SPA (004237)
- Tramore Back Strand SPA (004027)
- Bannow Bay SPA (004033)
  Keeragh Islands SPA (004118)
- Ballyteigue Burrow SPA (004020)
- Lady's Island Lake SPA (004009)
- Wexford Harbour and Slobs SPA (004076)
- The Raven SPA (004019)
- The Murrough SPA (004186)

5.1 Benthic habitats

Infomar survey mapping indicates that a mosaic of different sediment types are recorded for this area. These include shallow sublittoral sand, shallow sublittoral mixed sediment, shallow sublittoral coarse sediment, shallow sublittoral mud and shallow sublittoral rock and biogenic reef (note infomar does not distinguish between rock and biogenic reef habitats).

Within the overlapping SAC areas, NPWS marine community mapping provides greater detail and accuracy of the benthic habitats within the following SACs:

- Hook Head SAC
- Bannow Bay SAC
- Saltee Islands SAC
- Carnsore Point SAC
- Slaney River Valley SAC
- Raven Point Nature Reserve SAC
- Blackwater Bank SAC

These include a range of sediment and reef community types within the following Annex I marine habitats: Large shallow inlets and Bays, Mudflats and Sandflats not covered by seawater at low tide, Estuaries, Sandbanks and Reef.

5.2 Marine mammals

Data derived from the IWDG live sightings database and the ObSERVE aerial survey programme indicates a diverse range of cetaceans utilise this area of the coast. These are listed in the Annex IV Risk assessment (IWDG, 2024) which accompanies this report. The survey area and surrounding waters also provides foraging habitat for Grey Seal, Harbour Seal and otter associated with adjacent SACs.

5.3 Avifauna

The sheltered bays of this area of the coast (between Dungarvan and Raven Point) provides extensive intertidal foraging habitat for a range of wintering water birds. While the Saltee Islands SPA and Kerragh Island SPA provide important habitat for breeding colonies of seabirds including Cormorant, Gannet, Fulmar, Puffin, Razorbill, Kittiwake and Shag. The Seas off Wexford SPA provides foraging habitat for the aforementioned and additional seabird species from the wider area.

5.4 Fish

Four Annex II fish species (Sea Lamprey, River Lamprey, Twaite Shad and Atlantic salmon) are associated with the River Barrow and River Nore SAC , adjacent to the proposed project site and Slaney River Valley SAC within the proposed project site.

6. Zone of Influence

The determination of the ZoI was based on the scale and scope of the project, hydrological corridors of connectivity (direct and indirect source-path-receptor links) and potential cumulative impacts for the duration of the proposed project, see Table 2.

Based on the area of impact for the individual project components, documented in Table 2 , it is concluded that the proposed project has a maximum direct area of impact extending to the outermost boundary of the survey area. There is no potential for impact (no SPR link) to any SAC that does not have a direct connection to the marine. Therefore SACs designated for terrestrial and coastal habitats and species, or freshwater habitats upstream of a hydrological gradient are considered outside of the ZoI. With due consideration to the precautionary principle the ZoI for direct effects has been extended out to 20km from the outermost boundary of the survey area, which is considered an appropriate distance relative to the scale and scope of the project.

In the case of mobile species, that may be transiting through or using the potential area of impact, including breeding seabirds and Annex II marine mammals, the ZoI of the project is taken to include all European sites where the potential for either a direct or indirect connection between such species and these sites is possible.

Table 2. Source-Path-Receptor matrix

Element	Potential Source (pressure)	Path	Receptor	Area of impact (Direct)
Survey and deployment				
Vessel presence	Disturbance, harm or injury as a result of vessel operations	Water, air	Marine mammals, birds, fish	Entire area of proposed licence area where vessel is operating.
Vessel	Accidental spillage of hydrocarbons	Water	Benthic habitats, marine mammals, birds, fish	Entire area of proposed licence area where vessel is operating.
Deployment of ADCPs	Sediment disturbance/mobilisation, benthic species damage	Water	Benthic habitats and species	100m
Operation				
ADCP operation	None identified	N/A	N/A	N/A
Multibeam and single beam echosounder	Disturbance, harm or injury as a result of underwater noise	Water	Marine mammals, Birds, fish	**Marine mammals:** Entire area of proposed licence area where MBES and SBS will be deployed. **Annex II Fish:** Entire area of proposed licence area where MBES and SBS will be deployed. **Birds:** Entire area of proposed licence area where MBES and SBS will be deployed.
Recovery				
ADCP recovery	Sediment disturbance, mobilisation benthic species damage due to recovery of ADCPs, particularly if grapple method is required.	Water	Benthic habitats and species, fish.	100m
Vessel	As for deployment			

7. European sites

The maximum area of direct impact is estimated to the survey area within which all activities are proposed (Figure 1). However, indirect impacts may encompass greater distances in the case of European sites for which mobile species are included as a Qualifying Interest (QI).

Seabirds foraging ranges are well studied and vary widely between species (see appendix 13). For deeper diving seabird species during the summer breeding months, the zone of influence is considered to extend to all those SPAs within foraging range of the proposed project site. We have undertaken a screening exercise using the mean max foraging distances published in Woodward *et al*. (2019). This brings in a large number of SPAs for those species with a wide foraging range such as Manx Shearwater, Gannet and Fulmar.

The foraging ranges for Grey seal can be large, travelling up to several hundred kilometres from their breeding areas (Kiely *et al*, 2000, Carter, *el al*, 2022) while the foraging distance travelled by Harbour seals is generally less, it can also extend for 100's of kilometres (Vance *et al,* 2021, Carter, *el al*, 2022). Harbour porpoise and Bottlenose dolphin are wide ranging and highly mobile, although some populations do appear to be relatively site faithful. However, it can be assumed they travel many 100's of kilometres depending on prey availability and distribution.

It is not appropriate to give definitive foraging areas for any of the aforementioned species. However, based on the documented foraging ranges of grey seal (448km) and Harbour seal (273km) we have applied these ranges to our assessment.

In the case of Annex II cetaceans (Harbour porpoise and Bottlenose dolphin), European sites which lie within the Management Unit (MU) for that species have also been included within the ZoI.

Table 3 shows all European sites considered to be within the ZoI and further assessed in this report.

Table 3. European sites within the ZoI (20km), or greater distance for mobile species, which have been screened for further assessment.

European site	Distance (nearest point) to Site (km)		SPR link
Ardmore Head SAC	22	Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]	No (No SPR link)
		European dry heaths [4030]	No (No SPR link)
Helvick head SAC	6.3	Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]	No (No SPR link)
		European dry heaths [4030]	No (No SPR link)
Tramore Dunes and Backstrand SAC	Spatial overlap	Mudflats and sandflats not covered by seawater at low tide [1140]	Yes (SPR link)
		Annual vegetation of drift lines [1210]	No (No SPR link)
		Perennial vegetation of stony banks [1220]	No (No SPR link)
		Salicornia and other annuals colonising mud and sand [1310]	No (No SPR link)
		Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]	No (No SPR link)
		Mediterranean salt meadows (Juncetalia maritimi) [1410]	No (No SPR link)
		Embryonic shifting dunes [2110]	No (No SPR link)
		Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120]	No (No SPR link)
		Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	No (No SPR link)
River Barrow and River Nore SAC	12.6	Estuaries [1130]	Yes (SPR link)
		Mudflats and sandflats not covered by seawater at low tide [1140]	Yes (SPR link)
		Reefs [1170]	No (No SPR link)
		Salicornia and other annuals colonising mud and sand [1310]	No (No SPR link)
		Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]	No (No SPR link)
		Mediterranean salt meadows (Juncetalia maritimi) [1410]	No (No SPR link)
		Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260]	No (No SPR link)
		European dry heaths [4030]	No (No SPR link)
		Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430]	No (No SPR link)
		Petrifying springs with tufa formation (Cratoneurion) [7220]	No (No SPR link)
		Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]	No (No SPR link)

		Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0]	No (No SPR link)
		Vertigo moulinsiana (Desmoulin's Whorl Snail) [1016]	No (No SPR link)
		Margaritifera margaritifera (Freshwater Pearl Mussel) [1029]	No (No SPR link)
		Austropotamobius pallipes (White-clawed Crayfish) [1092]	No (No SPR link)
		Petromyzon marinus (Sea Lamprey) [1095]	Yes (SPR link)
		Lampetra planeri (Brook Lamprey) [1096]	No (No SPR link)
		Lampetra fluviatilis (River Lamprey) [1099]	Yes (SPR link)
		Alosa fallax fallax (Twaite Shad) [1103]	Yes (SPR link)
		Salmo salar (Salmon) [1106]	Yes (SPR link)
		Lutra lutra (Otter) [1355]	Yes (SPR link)
		Trichomanes speciosum (Killarney Fern) [1421]	No (No SPR link)
Hook Head SAC	Spatial Overlap	Large shallow inlets and bays [1160]	Yes (SPR link)
		Reefs [1170]	No (No SPR link)
		Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]	No (No SPR link)
		Tursiops truncatus (Common Bottlenose Dolphin) [1349]	Yes (SPR link)
		Phocoena phocoena (Harbour Porpoise) [1351]	Yes (SPR link)
Bannow Bay SAC	Spatial Overlap	Estuaries [1130]	Yes (SPR link)
		Mudflats and sandflats not covered by seawater at low tide [1140]	Yes (SPR link)
		Annual vegetation of drift lines [1210]	No (No SPR link)
		Perennial vegetation of stony banks [1220]	No (No SPR link)
		Salicornia and other annuals colonising mud and sand [1310]	No (No SPR link)
		Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]	No (No SPR link)
		Mediterranean salt meadows (Juncetalia maritimi) [1410]	No (No SPR link)
		Mediterranean and thermo-Atlantic halophilous scrubs (Sarcocornetea fruticosi) [1420]	No (No SPR link)
		Embryonic shifting dunes [2110]	No (No SPR link)
		Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120]	No (No SPR link)
		Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	No (No SPR link)
Ballyteigure Burrow SAC	Spatial Overlap	Estuaries [1130]	Yes (SPR link)
		Mudflats and sandflats not covered by seawater at low tide [1140]	Yes (SPR link)

		Coastal lagoons [1150]	No (No SPR link)
		Annual vegetation of drift lines [1210]	No (No SPR link)
		Perennial vegetation of stony banks [1220]	No (No SPR link)
		Salicornia and other annuals colonising mud and sand [1310]	No (No SPR link)
		Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]	No (No SPR link)
		Mediterranean salt meadows (Juncetalia maritimi) [1410]	No (No SPR link)
		Mediterranean and thermo-Atlantic halophilous scrubs (Sarcocornetea fruticosi) [1420]	No (No SPR link)
		Embryonic shifting dunes [2110]	No (No SPR link)
		Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120]	No (No SPR link)
		Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	No (No SPR link)
		Atlantic decalcified fixed dunes (Calluno-Ulicetea) [2150]	No (No SPR link)
		Humid dune slacks [2190	No (No SPR link)
Saltee Islands SAC	Spatial overlap	Mudflats and sandflats not covered by seawater at low tide [1140]	Yes (SPR link)
		Large shallow inlets and bays [1160]	Yes (SPR link)
		Reefs [1170]	No (No SPR link)
		Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]	No (No SPR link)
		Submerged or partially submerged sea caves [8330]	No (No SPR link)
		Halichoerus grypus (Grey Seal) [1364]	Yes (SPR link)
Tacumshin Lake SAC	Spatial overlap	Coastal lagoons [1150]	No (No SPR link)
		Annual vegetation of drift lines [1210]	No (No SPR link)
		Perennial vegetation of stony banks [1220]	No (No SPR link)
		Embryonic shifting dunes [2110]	No (No SPR link)
		Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120]	No (No SPR link)
Lady's Island Lake SAC	Spatial overlap	Coastal lagoons [1150]	No (No SPR link)
		Reefs [1170]	No (No SPR link)
		Perennial vegetation of stony banks [1220]	No (No SPR link)
Carnsore Point SAC	Spatial overlap	Mudflats and sandflats not covered by seawater at low tide [1140]	Yes (SPR link)
		Reefs [1170]	No (No SPR link)

		Phocoena phocoena (Harbour Porpoise) [1351]	Yes (SPR link)
Slaney River Valley SAC	Spatial overlap	Estuaries [1130]	Yes (SPR link)
		Mudflats and sandflats not covered by seawater at low tide [1140]	Yes (SPR link)
		Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]	No (No SPR link)
		Mediterranean salt meadows (Juncetalia maritimi) [1410]	No (No SPR link)
		Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260]	No (No SPR link)
		Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]	No (No SPR link)
		Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0]	No (No SPR link)
		Margaritifera margaritifera (Freshwater Pearl Mussel) [1029]	No (No SPR link)
		Petromyzon marinus (Sea Lamprey) [1095]	Yes (SPR link)
		Lampetra planeri (Brook Lamprey) [1096]	No (No SPR link)
		Lampetra fluviatilis (River Lamprey) [1099]	Yes (SPR link)
		Alosa fallax fallax (Twaite Shad) [1103]	Yes (SPR link)
		Salmo salar (Salmon) [1106]	Yes (SPR link)
		Lutra lutra (Otter) [1355]	Yes (SPR link)
		Phoca vitulina (Harbour Seal) [1365]	Yes (SPR link)
Raven Point Nature Reserve SAC	Spatial overlap	Mudflats and sandflats not covered by seawater at low tide [1140]	Yes (SPR link)
		Annual vegetation of drift lines [1210]	No (No SPR link)
		Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]	No (No SPR link)
		Embryonic shifting dunes [2110]	No (No SPR link)
		Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120]	No (No SPR link)
		Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	No (No SPR link)
		Dunes with Salix repens ssp. argentea (Salicion arenariae) [2170]	No (No SPR link)
		Humid dune slacks [2190]	No (No SPR link)
Long Bank SAC	Spatial overlap	Sandbanks	Yes (SPR link)
Blackwater Bank SAC	0.13	Sandbanks	Yes (SPR link)
		Phocoena Phocoena Harbour Porpoise [1351]	Yes (SPR link)

Kilmuckridge-Tinnaberna Sandhills SAC	Spatial overlap	Embryonic shifting dunes [2110]	No (No SPR link)
		Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120]	No (No SPR link)
		Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	No (No SPR link)
Cahore Polders and Dunes SAC	Spatial overlap	Annual vegetation of drift lines [1210]	No (No SPR link)
		Embryonic shifting dunes [2110]	No (No SPR link)
		Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120]	No (No SPR link)
		Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	No (No SPR link)
		Humid dune slacks [2190]	No (No SPR link)
Kilpatrick Sandhills SAC	0.91	Annual vegetation of drift lines [1210]	No (No SPR link)
		Embryonic shifting dunes [2110]	No (No SPR link)
		Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120]	No (No SPR link)
		Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	No (No SPR link)
		Atlantic decalcified fixed dunes (Calluno-Ulicetea) [2150]	No (No SPR link)
Buckroney-Brittas Duens and fen SAC	Adjacent	Annual vegetation of drift lines [1210]	No (No SPR link)
		Perennial vegetation of stony banks [1220]	No (No SPR link)
		Mediterranean salt meadows (Juncetalia maritimi) [1410]	No (No SPR link)
		Embryonic shifting dunes [2110]	No (No SPR link)
		Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120]	No (No SPR link)
		Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	No (No SPR link)
		Atlantic decalcified fixed dunes (Calluno-Ulicetea) [2150]	No (No SPR link)
		Dunes with Salix repens ssp. argentea (Salicion arenariae) [2170]	No (No SPR link)
		Humid dune slacks [2190]	No (No SPR link)
		Alkaline fens [7230]	No (No SPR link)
Magherabeg Dunes SAC	1.7	Annual vegetation of drift lines [1210]	No (No SPR link)
		Embryonic shifting dunes [2110]	No (No SPR link)
		Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120]	No (No SPR link)

		Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	No (No SPR link)
		Petrifying springs with tufa formation (Cratoneurion) [7220]	No (No SPR link)
Wicklow Reef SAC	1.9	Reef [1170]	No (No SPR link)
The Murrough Wetlands SAC	Spatial overlap	Annual vegetation of drift lines [1210]	No (No SPR link)
		Perennial vegetation of stony banks [1220]	No (No SPR link)
		Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]	No (No SPR link)
		Mediterranean salt meadows (Juncetalia maritimi) [1410]	No (No SPR link)
		Calcareous fens with Cladium mariscus and species of the Caricion davallianae [7210]	No (No SPR link)
		Alkaline fens [7230]	No (No SPR link)
Codling fault zone SAC	26.8	Submarine structures made by leaking gases	No (No SPR link)
		Harbour Porpoise	Yes (SPR link)
Bray Head SAC	6.7	Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]	No (No SPR link)
		European dry heaths [4030]	No (No SPR link)
Rockabill to Dalkey Islands SAC	10	Reefs [1170]	No (No SPR link)
		Phocoena phocoena (Harbour Porpoise) [1351]	Yes (SPR link)
South Dublin Bay SAC	19	Mudflats and sandflats not covered by seawater at low tide [1140]	No (No SPR link)
		Annual vegetation of drift lines [1210]	No (No SPR link)
		Salicornia and other annuals colonising mud and sand [1310]	No (No SPR link)
		Embryonic shifting dunes [2110]	No (No SPR link)
		Perennial vegetation of stony banks [1220]	No (No SPR link)
Lambay Island SAC	**(35km)** Within MU for Harbour porpoise/foraging range (448km) for Grey Seal	Reefs [1170]	No (No SPR link)
		Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]	No (No SPR link)
		Phocoena phocoena (Harbour Porpoise) [1351]	Yes (SPR link)
		Halichoerus grypus (Grey Seal) [1364]	Yes (SPR link)
		Phoca vitulina (Harbour Seal) [1365]	Yes (SPR link)
West Connacht Coast SAC	**(602Km)** Within MU for Harbour porpoise	Tursiops truncatus (Common Bottlenose Dolphin) [1349]	SPR link too weak
		Phocoena phocoena (Harbour Porpoise) [1351]	Yes (within MU)
Blasket Islands SAC	**(274km)** Within MU for Harbour	Reefs [1170]	No (No SPR link)
		Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]	No (No SPR link)
		European dry heaths [4030]	No (No SPR link)

	Porpoise/foraging range (448km) for Grey Seal	Submerged or partially submerged sea caves [8330]	No (No SPR link)
		Phocoena phocoena (Harbour Porpoise) [1351]	Yes (within MU)
		Halichoerus grypus (Grey Seal) [1364]	Yes (within foraging range)
Inishbofin and Inishshark SAC	**(315km)** Within foraging range (448km) for Grey Seal	Coastal lagoons [1150]	No (No SPR link)
		Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) [3110]	No (No SPR link)
		Northern Atlantic wet heaths with Erica tetralix [4010]	No (No SPR link)
		European dry heaths [4030]	No (No SPR link)
		Halichoerus grypus (Grey Seal) [1364]	Yes (within foraging range)
Roaringwater Bay and Islands SAC	**(173km**) Within MU for Harbour Porpoise/foraging range (448km) for Grey Seal	Large shallow inlets and bays [1160]	No (No SPR link)
		Reefs [1170]	No (No SPR link)
		Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]	No (No SPR link)
		European dry heaths [4030]	No (No SPR link)
		Submerged or partially submerged sea caves [8330]	No (No SPR link)
		Phocoena phocoena (Harbour Porpoise) [1351]	Yes (within MU)
		Lutra lutra (Otter) [1355]	No (No SPR link)
		Halichoerus grypus (Grey Seal) [1364]	Yes (within foraging range)
Kenmare River SAC	**(269km)** Within MU for Harbour Porpoise/foraging range (273km) for Harbour Seal	Large shallow inlets and bays [1160]	No (No SPR link)
		Reefs [1170]	No (No SPR link)
		Perennial vegetation of stony banks [1220]	No (No SPR link)
		Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]	No (No SPR link)
		Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]	No (No SPR link)
		Mediterranean salt meadows (Juncetalia maritimi) [1410]	No (No SPR link)
		Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120]	No (No SPR link)
		Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	No (No SPR link)
		European dry heaths [4030]	No (No SPR link)
		Juniperus communis formations on heaths or calcareous grasslands [5130]	No (No SPR link)
		Calaminarian grasslands of the Violetalia calaminariae [6130]	No (No SPR link)
		Submerged or partially submerged sea caves [8330]	No (No SPR link)
		Vertigo angustior (Narrow-mouthed Whorl Snail) [1014]	No (No SPR link)
		Rhinolophus hipposideros (Lesser Horseshoe Bat) [1303]	No (No SPR link)
		Phocoena phocoena (Harbour Porpoise) [1351]	Yes (within MU)

		Lutra lutra (Otter) [1355]	No (No SPR link)
		Phoca vitulina (Harbour Seal) [1365]	Yes (within foraging range)
Lleyn Peninsula and the Sarnau SAC	Within MU	Bottlenose dolphin	Yes (within MU)
Cardigan Bay SAC	Within MU	Bottlenose dolphin	Yes (within MU)
North Anglesey Marine SAC [U	Within MU	Harbour porpoise	Yes (within MU)
West Wales Marine SAC [UK0030397]	Within MU	Harbour porpoise	Yes (within MU)
Bristol Channel Approaches SAC	Within MU	Harbour porpoise	Yes (within MU)
Abers – Côte des legends	Within MU	Harbour porpoise/Grey seal	Yes (within MU)/foraging range
Ouessant Molène	Within MU	Harbour porpoise/Grey seal	Yes (within MU)/foraging range
Nord Bretagne DH	Within MU	Harbour porpoise	Yes (within MU)
Cote de Granit Rose-Sept Iles	Within MU	Harbour porpoise/Grey seal	Yes (within MU)/foraging range
Tregor Goëlo	Within MU	Harbour porpoise	Yes (within MU)
Côtes de Crozon	Within MU	Harbour porpoise	Yes (within MU)
Chaussée de Sein	Within MU	Harbour porpoise	Yes (within MU)
Récifs du talus du golfe de Gascogne	Within MU	Harbour porpoise	Yes (within MU)
Récifs et landes de la Hague	Within MU	Harbour porpoise	Yes (within MU)
Anse de Vauville	Within MU	Harbour porpoise	Yes (within MU)
Baie de SaintBrieuc – Est	Within MU	Harbour porpoise	Yes (within MU)
Banc et récifs de Surtainville	Within MU	Harbour porpoise	Yes (within MU)
Baie de Lancieux, Baie de l'Arguenon, Archipel de Saint Malo et Dinard	Within MU	Harbour porpoise	Yes (within MU)
Chausey	Within MU	Harbour porpoise	Yes (within MU)
Estuaire de la Rance	Within MU	Harbour porpoise	Yes (within MU)
Baie du Mont Saint Michel	Within MU	Harbour porpoise	Yes (within MU)
Cap d'Erquy-Cap Fréhel	Within MU	Harbour porpoise	Yes (within MU)
Baie de Morlaix	Within MU	Harbour porpoise/Grey seal	Yes (within MU)/foraging range
SPAs			
Seas off Wexford SPA	Spatial overlap	Mediterranean Gull (Larus melanocephalus) [A176] Black-headed Gull (Chroicocephalus ridibundus) [A179] Lesser Black-backed Gull (Larus fuscus) [A183] Herring Gull (Larus argentatus) [A184]	No

		Kittiwake (Rissa tridactyla) [A188] Guillemot (Uria aalge) [A199] Sandwich Tern (Sterna sandvicensis) [A191] Roseate Tern (Sterna dougallii) [A192] Common Tern (Sterna hirundo) [A193] Arctic Tern (Sterna paradisaea) [A194] Little Tern (Sterna albifrons) [A195]	
		Red-throated Diver (Gavia stellata) [A001] Fulmar (Fulmarus glacialis) [A009] Manx Shearwater (Puffinus puffinus) [A013] Gannet (Morus bassanus) [A016] Cormorant (Phalacrocorax carbo) [A017] Shag (Phalacrocorax aristotelis) [A018] Common Scoter (Melanitta nigra) [A065] Razorbill (Alca torda) [A200] Puffin (Fratercula arctica) [A204]	Yes – diving species within foraging range
Tramore Back Strand SPA	Spatial overlap	Light-bellied Brent Goose (Branta bernicla hrota) [A046] Golden Plover (Pluvialis apricaria) [A140] Grey Plover (Pluvialis squatarola) [A141] Lapwing (Vanellus vanellus) [A142] Dunlin (Calidris alpina) [A149] Black-tailed Godwit (Limosa limosa) [A156] Bar-tailed Godwit (Limosa lapponica) [A157] Curlew (Numenius arquata) [A160] Wetland and Waterbirds [A999]	Yes-disturbance
Mid-Waterford Coast SPA	Adjacent	Peregrine (Falco peregrinus) [A103] Herring Gull (Larus argentatus) [A184] Chough (Pyrrhocorax pyrrhocorax) [A346]	No
		Cormorant (Phalacrocorax carbo) [A017]	Yes – diving species within foraging range
Bannow Bay SPA	Spatial overlap	Light-bellied Brent Goose (Branta bernicla hrota) [A046] Shelduck (Tadorna tadorna) [A048] Pintail (Anas acuta) [A054] Oystercatcher (Haematopus ostralegus) [A130] Golden Plover (Pluvialis apricaria) [A140] Grey Plover (Pluvialis squatarola) [A141]	Yes-disturbance

		Lapwing (Vanellus vanellus) [A142] Knot (Calidris canutus) [A143] Dunlin (Calidris alpina) [A149] Black-tailed Godwit (Limosa limosa) [A156] Bar-tailed Godwit (Limosa lapponica) [A157] Curlew (Numenius arquata) [A160] Redshank (Tringa totanus) [A162] Wetland and Waterbirds [A999]		
Keeragh Islands SPA	Spatial overlap	Cormorant (Phalacrocorax carbo) [A017]	Yes – diving species within foraging range	
Ballyteigue Burrow SPA	Spatial overlap	Light-bellied Brent Goose (Branta bernicla hrota) [A046] Shelduck (Tadorna tadorna) [A048] Golden Plover (Pluvialis apricaria) [A140] Grey Plover (Pluvialis squatarola) [A141] Lapwing (Vanellus vanellus) [A142] Black-tailed Godwit (Limosa limosa) [A156] Bar-tailed Godwit (Limosa lapponica) [A157] Wetland and Waterbirds [A999]	Yes-disturbance	
Saltee Islands SPA	0.46	Lesser Black-backed Gull (Larus fuscus) [A183 Herring Gull (Larus argentatus) [A184]	No	
		Fulmar (Fulmarus glacialis) [A009] Gannet (Morus bassanus) [A016] Cormorant (Phalacrocorax carbo) [A017] Shag (Phalacrocorax aristotelis) [A018] Kittiwake (Rissa tridactyla) [A188] Guillemot (Uria aalge) [A199] Razorbill (Alca torda) [A200] Puffin (Fratercula arctica) [A204]	Yes – diving species within foraging range	
Tacumshin Lake SPA	Spatial overlap	Little Grebe (Tachybaptus ruficollis) [A004] Bewick's Swan (Cygnus columbianus bewickii) [A037] Whooper Swan (Cygnus cygnus) [A038] Wigeon (Anas penelope) [A050] Gadwall (Anas strepera) [A051] Teal (Anas crecca) [A052] Pintail (Anas acuta) [A054] Shoveler (Anas clypeata) [A056]	Yes – diving species within foraging range	

		Tufted Duck (Aythya fuligula) [A061] Coot (Fulica atra) [A125] Golden Plover (Pluvialis apricaria) [A140] Grey Plover (Pluvialis squatarola) [A141] Lapwing (Vanellus vanellus) [A142] Black-tailed Godwit (Limosa limosa) [A156] Wetland and Waterbirds [A999]	
Lady's Island Lake SPA	Adjacent	Gadwall (Anas strepera) [A051] Black-headed Gull (Chroicocephalus ridibundus) [A179] Sandwich Tern (Sterna sandvicensis) [A191] Roseate Tern (Sterna dougallii) [A192] Common Tern (Sterna hirundo) [A193] Arctic Tern (Sterna paradisaea) [A194] Wetland and Waterbirds [A999]	No
Wexford Harbour and Slobs SPA	Spatial overlap	Little Grebe (Tachybaptus ruficollis) [A004] Great Crested Grebe (Podiceps cristatus) [A005] Cormorant (Phalacrocorax carbo) [A017] Grey Heron (Ardea cinerea) [A028] Bewick's Swan (Cygnus columbianus bewickii) [A037] Whooper Swan (Cygnus cygnus) [A038] Light-bellied Brent Goose (Branta bernicla hrota) [A046] Shelduck (Tadorna tadorna) [A048] Wigeon (Anas penelope) [A050] Teal (Anas crecca) [A052] Mallard (Anas platyrhynchos) [A053] Pintail (Anas acuta) [A054] Scaup (Aythya marila) [A062] Goldeneye (Bucephala clangula) [A067] Red-breasted Merganser (Mergus serrator) [A069] Hen Harrier (Circus cyaneus) [A082] Coot (Fulica atra) [A125] Oystercatcher (Haematopus ostralegus) [A130] Golden Plover (Pluvialis apricaria) [A140] Grey Plover (Pluvialis squatarola) [A141] Lapwing (Vanellus vanellus) [A142] Knot (Calidris canutus) [A143]	Yes-disturbance

		Sanderling (Calidris alba) [A144] Dunlin (Calidris alpina) [A149] Black-tailed Godwit (Limosa limosa) [A156] Bar-tailed Godwit (Limosa lapponica) [A157] Curlew (Numenius arquata) [A160] Redshank (Tringa totanus) [A162] Black-headed Gull (Chroicocephalus ridibundus) [A179[Lesser Black-backed Gull (Larus fuscus) [A183] Little Tern (Sterna albifrons) [A195] Greenland White-fronted Goose (Anser albifrons flavirostris) [A395] Wetland and Waterbirds [A999]	
The Raven SPA	Spatial overlap	Red-throated Diver (Gavia stellata) [A001] Cormorant (Phalacrocorax carbo) [A017] Common Scoter (Melanitta nigra) [A065]	Yes – diving species within foraging range
		Grey Plover (Pluvialis squatarola) [A141] Sanderling (Calidris alba) [A144] Greenland White-fronted Goose (Anser albifrons flavirostris) [A395] Wetland and Waterbirds [A999]	Yes-disturbance
Cahore Marshes SPA	Adjacent	Wigeon (Anas penelope) [A050] Golden Plover (Pluvialis apricaria) [A140] Lapwing (Vanellus vanellus) [A142] Greenland White-fronted Goose (Anser albifrons flavirostris) [A395] Wetland and Waterbirds [A999]	No
Wicklow head SPA	Adjacent	Kittiwake (Rissa tridactyla) [A188]	No
The Murrough SPA	Spatial overlap	Red-throated Diver (Gavia stellata) [A001	Yes – diving species within foraging range
		Greylag Goose (Anser anser) [A043] Light-bellied Brent Goose (Branta bernicla hrota) [A046] Wigeon (Anas penelope) [A050] Teal (Anas crecca) [A052] Black-headed Gull (Chroicocephalus ridibundus) [A179] Herring Gull (Larus argentatus) [A184]	Yes-disturbance

		Little Tern (Sterna albifrons) [A195] Wetland and Waterbirds [A999]	
Lambay Island SPA	35	Fulmar (Fulmarus glacialis) [A009] Guillemot (Uria aalge) [A199] Razorbill (Alca torda) [A200] Puffin (Fratercula arctica) [A204]	Yes– diving species within foraging range
		Cormorant (Phalacrocorax carbo) [A017] Shag (Phalacrocorax aristotelis) [A018] Greylag Goose (Anser anser) [A043] Lesser Black-backed Gull (Larus fuscus) [A183] Herring Gull (Larus argentatus) [A184] Kittiwake (Rissa tridactyla) [A188]	No
Puffin Island SPA	345	Fulmar (Fulmarus glacialis) [A009] Manx Shearwater (Puffinus puffinus) [A013] Storm Petrel (Hydrobates pelagicus) [A014]	Yes– diving species within foraging range
		Lesser Black-backed Gull (Larus fuscus) [A183] Razorbill (Alca torda) [A200] Puffin (Fratercula arctica) [A204]	No
Skelligs SPA	273	Fulmar (Fulmarus glacialis) [A009] Manx Shearwater (Puffinus puffinus) [A013] Storm Petrel (Hydrobates pelagicus) [A014] Gannet (Morus bassanus) [A016]	Yes– diving species within foraging range
		Kittiwake (Rissa tridactyla) [A188] Guillemot (Uria aalge) [A199] Puffin (Fratercula arctica) [A204]	No
Deenish Island and Scariff Island SPA	268	Fulmar (Fulmarus glacialis) [A009] Manx Shearwater (Puffinus puffinus) [A013] Storm Petrel (Hydrobates pelagicus) [A014]	Yes– diving species within foraging range
		Lesser Black-backed Gull (Larus fuscus) [A183] Arctic Tern (Sterna paradisaea) [A194]	No

Beara Peninsula SPA	245	Fulmar (Fulmarus glacialis) [A009]	Yes– diving species within foraging range
		Chough (Pyrrhocorax pyrrhocorax) [A346]	No
Iveragh Peninsula SPA	268	Fulmar (Fulmarus glacialis) [A009]	Yes– diving species within foraging range
		Peregrine (Falco peregrinus) [A103] Kittiwake (Rissa tridactyla) [A188] Guillemot (Uria aalge) [A199] Chough (Pyrrhocorax pyrrhocorax) [A346]	No
Dingle Peninsula SPA	300	Fulmar (Fulmarus glacialis) [A009]	Yes– diving species within foraging range
		Chough (Pyrrhocorax pyrrhocorax) [A346] Peregrine (Falco peregrinus) [A103]	No
Kerry Head SPA	420	Fulmar (Fulmarus glacialis) [A009]	Yes– diving species within foraging range
		Chough (Pyrrhocorax pyrrhocorax) [A346]	No
Cliffs of Moher SPA	496	Fulmar (Fulmarus glacialis) [A009]	Yes– diving species within foraging range
		Kittiwake (Rissa tridactyla) [A188] Guillemot (Uria aalge) [A199] Razorbill (Alca torda) [A200] Puffin (Fratercula arctica) [A204] Chough (Pyrrhocorax pyrrhocorax) [A346]	No
Bull and Cows Rocks SPA	245	Storm Petrel (Hydrobates pelagicus) [A014] Gannet (Morus bassanus) [A016]	Yes– diving species within foraging range
		Puffin (Fratercula arctica) [A204]]	No

8. Assessment of potential impacts and likely significant effects

This section further considers the potential impacts (identified in table 2) and their possible effects; direct and indirect, on the conservation status of the QIs and SCIs for all sites within the ZoI by reference to their defined attributes, measures and targets as set out by NPWS in the relevant site specific Conservation objectives for each site.

The results of the SPR analysis (Table 2) indicated that Likely significant Effects (LSEs) resulting from the vessel presence and noise, including underwater noise associated with the use of acoustic instrumentation, had the potential to lead to LSEs on the conservation objectives for marine mammals, birds and fish. These potential effects are further assessed below. Cumulative effects are considered under section 9.

8.1. Accidental spillage of hydrocarbons

Due to the size of the required vessel the volume of hydrocarbons (fuel) carried is low. The extent of dispersal of hydrocarbons in marine waters is governed by a number of factors including spreading, drifting, evaporation, dissolution, photolysis, biodegradation and formation of both oil-in-water and water-in-oil emulsions. Diesel has a relatively narrow boiling range, meaning that, when spilled on water, most of the oil component will evaporate or naturally disperse within a few days or less. Therefore, due to the low volume of fuel and likely rapid dispersion, together with general vessel fuel management to avoid accidental spillage, no LSEs are considered possible.

No potential for Likely significant effects.

8.2 Underwater noise and vessel presence

Marine mammal sensory systems are adapted to life in the water or, in the case of seals, both in water and on land. Marine mammals rely on sound to navigate, to communicate with one another and to sense and interpret their surroundings. Behavioural responses of marine mammals to a sound are known to be strongly influenced by the context of the event and individual factors such as the animal's experience, motivation, conditioning and activity (Nowacek *et al*, 2007, Southall *et al*, 2007, 2019) and Wartzok, *et al* 2004). Healthy new-born and younger animals may have the greatest hearing sensitivity while individual hearing ability declines progressively with age and prior exposure to harmful sound levels, disease, etc. Such features and variability may also require consideration in the case-specific assessment of impact on marine mammals from introduced sound sources (NPWS 2014).

Southall *et al* (2007) divided Marine mammals into different functional hearing groups as shown in Table 4.

Table 4. Marine mammal functional hearing groups (after NPWS, 2014)

	Low frequency	**Mid frequency**	**High Frequency**	**Pinnipeds (Underwater)**
Range	7Hz-22kHz	150Hz-160kHz	200Hz-180kHz	75Hz-75Khz
Examples species	Minke whale Humpback whale	Bottlenose dolphin	Harbour porpoise	Grey seal, Harbour seal

Southall *et al* (2019) reclassified the above mid-frequency level to High frequency and High Frequency to very high frequency.

Depending on the exposure levels from underwater noise, auditory injury to marine mammals can occur. This may result in temporary loss in hearing sensitivity, known as Temporary Threshold Shift (TTS) or more permanent damage, known as Permanent Threshold Shift (PTS). The potential for auditory injury is related to the noise frequency relative to the hearing bandwidth of the marine mammal, and is also influenced by the duration of exposure. The level of impact on an individual is a function of the Sound Exposure Level (SEL) that an individual receives as a result of underwater noise.

Table 5. Sound pressure levels associated with Temporary Threshold Shift (TTS) and Permanent Threshold Shift (PTS)

Functional group	**Injury Criteria (based on single pulse)**	
	TTS	**PTS**
Low frequency cetaceans	224dB re: 1µPa (peak	230dB re: 1µPa (peak
Mid frequency cetaceans	224dB re: 1µPa (peak)	230dB re: 1µPa (peak)
High frequency cetaceans	224dB re: 1µPa (peak)	230dB re: 1µPa (peak
Pinnipeds (in water)	212dB re: 1µPa (peak)	218 dB re: 1µPa (peak

The proposed MBES and SBS may be operating in the range of 300 to 500 KHz and as such are outside of the recorded auditory range of pinnipeds. Therefore, there is no potential for TTS or PTS to seals. However, with due regard to the precautionary principle it is possible that some behavioural disturbance may occur.

This frequency is within the range of Bottlenose dolphin and Harbour porpoise and may lead to temporary behavioural changes should they be in the area during surveys. This is highly unlikely to lead to any significant effects to the conservation objectives of either species due to the large area of alternative foraging habitat in the surrounding area. However, with due regard to the precautionary principle temporary effects on Bottlenose dolphin and Harbour porpoise have been screened in. The underwater noise level resulting from ADCP deployment is outside of the auditory range of cetaceans and pinnipeds and no behavioural responses of these species due to the operation of ADCPs have been observed (Coakley, 2011).

The proposed survey vessel will, by necessity of the geography of the project area, be no larger than 16m length, 6m beam and 2m draught. Vessels of this size are a constant feature of the area, typically being used for fishing and potting in the survey area. Bottlenose dolphin, Harbour porpoise and seals will be habituated to such vessel traffic in this area. Furthermore, the risk of collision is negligible as the vessel will be moving at very low speeds as necessitated by the survey. However, the presence of the vessel in close proximity to haul out sites for grey or harbour seal does have the potential to lead to disturbance related effects on these species within their sites.

Vessels produce what is referred to as non-pulse (non-impulsive) sounds with acoustic characteristics represented by single or multiple discrete sound events within 24 hrs with a continuous sound event without a rapid pulse rise time. As such noise related impacts from the vessel are considered to be insignificant and will not result in any significant disturbance harm or injury to any cetacean or pinniped species.

Potential for Likely significant effects.

Otter (*Lutra lutra*) hearing is not adapted to water and functional hearing in otters in water is poorly known. Voight *et al* 2019 reported that their hearing range in air is within the range of 200 Hz to 32 kHz, with lowest thresholds around 4 kHz. Stepien (2020) reported behaviour changes in *Lutra lutra*

underwater at frequencies of both 1Khz and 14KHz. Otter utilise the marine environment for foraging, generally remaining relatively close to sources of freshwater. In Ireland, the territory of female otters in mesotrophic rivers is approximately 7.5 ± 1.5km in length (Ó Néill *et al*. 2008, cited in Reid *et al*, 2013) and 6.5 ± 1.0km in coastal environments (de Jongh *et al*. 2010 cited in Reid *et al*, 2013). Therefore, based on the precautionary principle, otter are considered to utilise habitat with a linear length of 20km along the coastline. The only European site designated for otter, which either spatially overlaps with the proposed survey area, or is within a 20km shore length of it is the Slaney River Valley SAC. No barriers to the extent of otter habitat or connectivity to it will result due to project related activities. The project is fully marine based and therefore does not have the potential to lead to declines of otter holts or coach sites.

Temporary disturbance and/or behavioural changes to otter may occur should they be foraging in marine waters when the vessel is close to shore. However, no significant impacts are considered possible as the survey will be temporary and of short duration.

No potential for Likely significant effects.

Fish are susceptible to underwater noise due to anthropogenic sources, which have been shown to cause widespread effects on fish. Underwater noise has the potential to alter an individual's physiology, causing stress, and shifts in hearing thresholds in a number of species (Smith et al., 2004; Wysocki et al., 2006). While exposure to very intense sounds (e.g. seismic guns) may result in mortal injuries, less intense sounds that are detectable by fishes may affect their behaviour, causing them to move away from their migration routes or leave favoured habitats (Normandeau Associates, Inc., 2012). Hearing range and sensitivity varies considerably among fish species depending on the hearing mechanism of the species e.g. whether a swim bladder is involved in the hearing mechanism or not. Furthermore, within that class, some species with a swim bladder are sound pressure-sensitive at higher frequencies while others having a swim bladder are not e.g. Atlantic salmon (Hawkins, 1978).

The U.S. National Marine Fisheries Service (NMFS, 2018), as well as other agencies, currently uses 150 dB re 1 µPa (rms) as the sound pressure level that may result in onset of behavioural effects (Caltrans, 2015). Sound pressure above the 150 dB_{rms} level are expected to cause temporary changes in behaviour and these might include startle responses, feeding disruption, area avoidance, etc. Popper *et al* (2014).

Popper *et al* (2014) gives guidelines for estimating the effects of continuous noise sources on a range of potential injuries and behavioural responses in fish. Table 6 provides the guidelines for fish such as Atlantic salmon.

Table 6. Guidelines for noise Atlantic salmon

Fish type	Mortality and potential mortal injury	Recoverable injury	TTS	Masking	Behaviour
Swim bladder not involved in hearing (particle motion detection) e.g. Atlantic salmon	(N) Low (I) Low (F) Low	(N) Low (I) Low (F) Low	(N) Moderate (I) Low (F) Low	(N) High (I) High (F) Moderate	(N) Moderate (I) Moderate (F) Low
Relative risk given has high, moderate or low relative to distance from the sound source. N = near, I = Intermediate, F = Far					

Lamprey lack a swim bladder and therefore are not susceptible to sound pressure effects. Therefore, no potential for project related impacts on lamprey are considered possible.

The swim bladder in salmon is located within the ear and, as indicated in table 6, the potential for injury is low but for behavioural response it is considered to be moderate. Data for mortality and injury related to low-and mid-frequency sonar showed no effect on the ear or non-auditory tissues when the maximum received sound pressure levels were at 193 dB re 1 µPa rms for low frequency sonar, and at 210 dB re 1 µPa rms for mid-frequency sonar.

It is considered possible that while some behavioural response in salmon may occur should they be migrating through the Slaney River Valley SAC, where a spatial overlap with the proposed project occurs, this would not have any likely significant effects on their migration.

No potential for Likely significant effects.

Birds

Due to the scale and scope of the project, impacts on deeper diving seabirds due to vessel and acoustic operations is considered to be negligible. Bathymetric surveys are proposed for intertidal and very shallow subtidal areas which would not provide optimal foraging habitat for these species. Furthermore, Any seabirds present in the area would be temporarily displaced by the presence of the vessel and the effects therefore, would be the same as vessel displacement i.e. as few seabirds would be present, impacts on their fitness will not lead to any population-level effects at the SPAs or other adjacent colonies.

Foraging wintering waterbirds may be disturbed due to vessel presence close to their intertidal foraging areas during acoustic survey operations. This is more likely to occur near low tide when waders have followed the tide out to the low water mark, causing them to be displaced from their foraging area.

Potential for Likely significant effects.

8.3 Deployment and recovery of ADCPS

Deployment of ADCPS may take place within the following Annex I Habitats within

Benthic habitats and their associated species can be impacted by direct physical damage and/or sediment mobilisation. The extent to which sediments will mobilise is dependent on the nature of the sediment (coarse sediments settle out rapidly following disturbance), the exposure of the site (sediments in exposed sites will frequently be subject to natural disturbance due to wave action), the tidal regime of the area (tide swept sediments are generally devoid of “fines”). The impact of sediment mobilisation on benthic habitats and their constituent species is dependent on the sensitivity of those species to burial and smothering resulting from sediment mobilisation and transport. The species found in exposed sediments are generally robust specialists capable of withstanding disturbance and smothering. The impacts of physical disturbance on the species associated with highly exposed coarse sediments are generally low and greatest in areas of low natural disturbance where the species present are less well adapted to withstand physical stress. On the other hand, the epifaunal species associated with geogenic and biogenic reef habitat, while able to withstand natural exposure from wave and swell action, are generally sensitive to abrasion and damage.

The only contact with the seabed will be through the deployment of nine (9) fixed ADCPs. All of the nine ADCPs will be located on one or more of the following habitats: shallow sublittoral coarse sediment, shallow sublittoral sand and shallow sublittoral mixed sediment. No ADCP will be deployed on reef habitat as it is not a suitable substrate for deployment. While temporary sediment mobilisation around the deployment site will occur during deployment and recovery the impact on the seabed will be temporary, insignificant and undetectable within days. There are no species communities recorded for this area that are known to be sensitive to physical damage/abrasion or disturbance.

No potential for Likely significant effects.

8.4 Assessment of potential for Likely Significant Effects on QIs or SCIs

Based on the assessment of LSEs given in section 8 it is considered that the project as proposed has the potential to lead to Likely Significant Effects on the Conservation Objectives (COs) of a number of European sites.

Table 7 present summary of all European Sites considered in this report and an assessment of their potential for LSEs relative to their Conservation objectives.

Table 7. Assessment of LSE on the Conservation Objectives for all sites within the ZoI

Tramore Dunes and Backstrand SAC		
Mudflats and sandflats not covered by seawater at low tide:		**Potential for LSEs (Yes/No)**
No element of the proposed project has the potential to interact with any of the attributes or targets set to maintain the favourable conservation condition Conservation objective for this habitat. There will be no physical interaction with the seabed in this SAC and no project related impacts that could lead to LSEs on this habitat have been identified.		No
River Barrow and River Nore SAC		No
Estuaries, Mudflats and sandflats not covered by seawater at low tide, *Sea lamprey* (*Petromyzon marinus*), *River lamprey* (*Lampetra fluviatilis*), *Atlantic Salmon* (*Salmo salar*), *Twaite Shad (Alosa fallax), Allis Shad (Alosa alosa),* Otter (*Lutra lutra)*		
No spatial overlap with the site. SPR link too weak to cause LSEs to any of the conservation objectives for this site.		No
Hook Head SAC (Note CO's for West Connacht Coast SAC used as a proxy for Hook Head (bottlenose dolphin) and Rockabill to Dalkey Islands SAC for Harbour porpoise as CO's for Hook head SAC have yet to be published)		
***Tursiops truncatus* (Common Bottlenose Dolphin) [1349]. NOTE: Conservation objectives apply only to this species within the site**		
Attribute	**Assessment**	**Potential for LSEs (Yes/No)**
Access to suitable habitat: Species range within the site should not be restricted by artificial barriers to site use	Potential for creation of artificial barriers resulting from MBES.	**Yes**
Disturbance: Human activities should occur at levels that do not adversely affect the bottlenose dolphin population at the site	Potential for disturbance resulting from MBES.	**Yes**
***Phocoena phocoena* (Harbour Porpoise) [1351] NOTE: Conservation objectives apply only to this species within the site**		
Attribute	**Assessment**	**Potential for LSEs (Yes/No)**
Access to suitable habitat: Species range within the site should not be restricted by artificial barriers to site use	Potential for creation of artificial barriers resulting from MBES.	**Yes**
Disturbance: Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site	Potential for disturbance resulting from MBES.	**Yes**
Large shallow inlets and bays		

No element of the proposed project has the potential to interact with any of the attributes or targets set to maintain the favourable conservation condition Conservation objective for this habitat. There will be no physical interaction with the seabed in this SAC and no project related impacts that could lead to LSEs on this habitat have been identified.		No
Bannow Bay SAC		
Estuaries, Mudflats and sandflats not covered by seawater at low tide		
No element of the proposed project has the potential to interact with any of the attributes or targets set to maintain the favourable conservation condition Conservation objective for this habitat. There will be no physical interaction with the seabed in this SAC and no project related impacts that could lead to LSEs on this habitat have been identified.		No
Ballyteige Burrow SAC		
Estuaries, Mudflats and sandflats not covered by seawater at low tide		
No element of the proposed project has the potential to interact with any of the attributes or targets set to maintain the favourable conservation condition Conservation objective for this habitat. There will be no physical interaction with the seabed in this SAC and no project related impacts that could lead to LSEs on this habitat have been identified.		No
Saltee Islands SAC		
Mudflats and sandflats not covered by seawater at low tide [1140]		
Habitat area: The permanent habitat area is stable or increasing, subject to natural processes	ADCP deployment within this site does not have the potential to impact habitat area.	No
Community distribution: Conserve the following community type in a natural condition: Intertidal sand to muddy sand dominated polychaetes community complex	This discrete area of the northern section of this site is not suitable for ADCP deployment. Community type not sensitive to temporary disturbance.	No
Large shallow inlets and bays		
Habitat area: The permanent habitat area is stable or increasing, subject to natural processes	ADCP deployment within this site does not have the potential to impact habitat area.	No
Community distribution: The following community should be maintained in a natural condition: Coarse sediment with Pomatoceros spp. and Pisidia longicornis community.	ADCP deployment within this site does not have the potential to impact community type. Community type not sensitive to temporary disturbance.	No
***Halichoerus grypus* (Grey Seal) [1364]. NOTE: Conservation objectives apply only to this species within the site**		

Access to suitable habitat: Species range within the site should not be restricted by artificial barriers to site use	MBES outside of auditory range for this species	No
Breeding behaviour: The breeding sites should be maintained in a natural condition	The proposed project does not have the potential to effect the condition of the breeding sites.	No
Moulting behaviour: The moult haul-out sites should be maintained in a natural condition	The proposed project does not have the potential to impact condition of the moult haul-out sites. No survey activity will take place close to moult haul-out sites.	No
Resting behaviour: The resting haul-out sites should be maintained in a natural condition	The proposed project does not have the potential to impact the rest haul-out sites. No survey activity will take place close to moult haul-out sites.	No
Population composition: The grey seal population occurring within this site should contain adult, juvenile and pup cohorts annually	N/A. The proposed project does not have the potential to impact population structure.	No
Disturbance: Human activities should occur at levels that do not adversely affect the grey seal population at the site	The survey vessel may have the potential to temporarily cause disturbance to grey seals.	**Yes**
Slaney River Valley SAC		
***Phoca vitulina* (Harbour Seal) [1364]. NOTE: Conservation objectives apply only to this species within the site**		
Access to suitable habitat: Species range within the site should not be restricted by artificial barriers to site use	MBES outside of auditory range for this species	No
Breeding behaviour: The breeding sites should be maintained in a natural condition	The proposed project does not have the potential to effect the condition of the breeding sites.	No
Moulting behaviour: The moult haul-out sites should be maintained in a natural condition	The proposed project does not have the potential to effect the condition of the moulting sites.	No
Resting behaviour: The resting haul-out sites should be maintained in a natural condition	The proposed project does not have the potential to effect the condition of the resting sites.	No
Disturbance: Human activity should occur at levels that do not adversely affect the harbour seal population at the site	The survey vessel may have the potential to temporarily cause disturbance to harbour seals.	**Yes**
***Sea lamprey* (*Petromyzon marinus*), *River lamprey* (*Lampetra fluviatilis*),**		
Distribution: Extent of anadromy Greater than 75% of main stem length of rivers accessible from estuary	The proposed project does not have the potential to lead to LSEs on this attribute.	No
Population structure of juveniles: At least three age/size groups present.	The proposed project does not have the potential to lead to LSEs on this attribute.	No

Juvenile density in fine sediment: Juvenile density at least 1/m^2	The proposed project does not have the potential to lead to LSEs on this attribute.	No
Extent & distribution of spawning habitat: No decline in extent and distribution of spawning beds. Improved dispersal of spawning beds into areas upstream of barriers	The proposed project does not have the potential to lead to LSEs on this attribute.	No
Availability of juvenile habitat: More than 50% of sample sites positive	The proposed project does not have the potential to lead to LSEs on this attribute.	No
***River lamprey* (*Lampetra fluviatilis*)**		
Distribution: Extent of anadromy Grater than 75% of main stem and major tributaries down to second order accessible from estuary.	The proposed project does not have the potential to lead to LSEs on this attribute.	No
Population structure of juveniles: At least three age/size groups present.	The proposed project does not have the potential to lead to LSEs on this attribute.	No
Juvenile density in fine sediment: Mean catchment juvenile density of river/brook lamprey at least 2/m²	The proposed project does not have the potential to lead to LSEs on this attribute.	No
Extent & distribution of spawning habitat: No decline in extent and distribution of spawning beds	The proposed project does not have the potential to lead to LSEs on this attribute.	No
Availability of juvenile habitat: More than 50% of sample sites positive	The proposed project does not have the potential to lead to LSEs on this attribute.	No
***Atlantic Salmon* (*Salmo salar*)**		
Distribution: Extent of anadromy: 100% of river channels watercourses down to second order accessible from estuary	The proposed project does not have the potential to lead to LSEs on this attribute.	No
Adult spawning fish number: Conservation limit (CL) for each system constantly exceeded.	The proposed project does not have the potential to lead to LSEs on this attribute.	No

Salmon fry abundance: Maintain or exceed 0+ fry mean catchment wide abundance threshold value. Currently set at 17 fry/15 minute sampling.	The proposed project does not have the potential to lead to LSEs on this attribute.	No
Out-migrating smolt abundance: No significant decline	The proposed project does not have the potential to lead to LSEs on this attribute.	No
Number and distribution of redds: No decline in number and distribution of spawning redds due to anthropogenic causes.	The proposed project does not have the potential to lead to LSEs on this attribute.	No
Water quality: At least Q4 at all sites sampled by EPA	The proposed project does not have the potential to lead to LSEs on this attribute.	No
Twaite Shad (Alosa fallax) and Allis Shad (Alosa alosa)		
Distribution: Extent of anadromy: Grater than 75% of river accessible from estuary.	The proposed project does not have the potential to lead to LSEs on this attribute.	No
Population structure - age classes: More than one age class present	The proposed project does not have the potential to lead to LSEs on this attribute.	No
Extent & distribution of spawning habitat: No decline in extent and distribution of spawning habitats	The proposed project does not have the potential to lead to LSEs on this attribute.	No
Water quality – oxygen levels: No lower than $5mgl^{-1}$	The proposed project does not have the potential to lead to LSEs on this attribute.	No
Spawning habitat quality: Filamentous algae; macrophytes; sediment : Maintain stable gravel substrate with very little fine material, free of filamentous algal (macroalgae) growth and macrophyte (rooted higher plants) growth.	The proposed project does not have the potential to lead to LSEs on this attribute.	No
Otter (*Lutra lutra)*		
Distribution: No significant decline	The proposed project does not have the potential to lead to LSEs on this attribute.	No
Extent of terrestrial habitats: No significant decline.	The proposed project does not have the potential to lead to LSEs on this attribute.	No

Extent of marine habitat: No significant decline.	The proposed project does not have the potential to lead to LSEs on this attribute.	No
Extent of freshwater (river) habitat: No significant decline.	The proposed project does not have the potential to lead to LSEs on this attribute.	No
Extent of freshwater (lake) habitat: No significant decline.	The proposed project does not have the potential to lead to LSEs on this attribute.	No
Couching sites and holts: No significant decline.	The proposed project does not have the potential to lead to LSEs on this attribute.	No
Fish biomass available: No significant decline.	The proposed project does not have the potential to lead to LSEs on this attribute.	No
Barriers to connectivity: No significant increase	The proposed project does not have the potential to lead to LSEs on this attribute.	No
Estuaries [1130], Mudflats and sandflats not covered by seawater at low tide [1140]		
No element of the proposed project has the potential to interact with any of the attributes or targets set to maintain the favourable conservation condition Conservation objective for this habitat. There will be no physical interaction with the seabed in this SAC and no project related impacts that could lead to LSEs on this habitat have been identified.		No
Carnsore Point SAC		
Mudflats and sandflats not covered by seawater at low tide [1140]		
No element of the proposed project has the potential to interact with any of the attributes or targets set to maintain the favourable conservation condition Conservation objective for this habitat. There will be no physical interaction with the seabed in this SAC and no project related impacts that could lead to LSEs on this habitat have been identified.		No
***Phocoena phocoena* (Harbour Porpoise) [1351]. NOTE: Conservation objectives apply only to this species within the site**		
Access to suitable habitat: Species range within the site should not be restricted by artificial barriers to site use	Potential for creation of artificial barriers resulting from MBES.	Yes
Disturbance: Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site	Potential for disturbance resulting from MBES.	Yes
Long Bank SAC		
Sandbanks which are slightly covered by sea water all the time [1110]		

No element of the proposed project has the potential to interact with any of the attributes or targets set to maintain the favourable conservation condition Conservation objective for this habitat. There will be no physical interaction with the seabed in this SAC and no project related impacts that could lead to LSEs on this habitat have been identified.		No
Blackwater Bank SAC		
Sandbanks which are slightly covered by sea water all the time [1110]		
Habitat Area: Species range within the site should not be restricted by artificial barriers to site use	A single ADCP may be temporarily deployed in this SAC. No impact on habitat area possible	No
Habitat distribution: The distribution of sandbanks is stable or increasing, subject to natural processes	A single ADCP may be temporarily deployed in this SAC. No impact on habitat distribution area possible	No
Community distribution: Conserve the following community type in a natural condition: Sand with Nephtys cirrosa and Bathyporeia elegans community complex	A single ADCP may be temporarily deployed in this SAC. No impact on community distribution area possible. Robust community which would recover within short time period (weeks)	No
***Phocoena phocoena* (Harbour Porpoise) [1351]. Species within ZoI. NOTE: Conservation objectives apply only to this species within the site**		
Access to suitable habitat: Species range within the site should not be restricted by artificial barriers to site use	Artificial barriers resulting from the proposed surveys do not have the potential to impact the range of harbour porpoise within this site. The range of any artificial barriers created is too far distant (at least 3.8 km) from the site for the potential for any impact on species range within the site.	No
Disturbance: Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site	Due to the distance of the proposed surveys from the site there is no potential for any project related activities to lead to disturbance to harbour porpoise within the site.	No
Codling fault zone SAC		
***Phocoena phocoena* (Harbour Porpoise) [1351]. Species within ZoI. NOTE: Conservation objectives apply only to this species within the site**		
Access to suitable habitat: Species range within the site should not be restricted by artificial barriers to site use	Artificial barriers resulting from the proposed surveys do not have the potential to impact the range of harbour porpoise within this site. The range of any artificial barriers created is too far distant (at least 40 km) from the site for the potential for any impact on species range within the site.	No
Disturbance: Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site	Due to the distance of the proposed surveys from the site there is no potential for any project related activities to lead to disturbance to harbour porpoise within the site.	No
Submarine structures made by leaking gases [1180]		

No Impact predicted. No spatial overlap with the site. SPR link too weak to cause LSEs on COs for this habitat		No
Rockabill to Dalkey Islands SAC		
***Phocoena phocoena* (Harbour Porpoise) [1351]. Species within ZoI. NOTE: Conservation objectives apply only to this species within the site**		
Access to suitable habitat: Species range within the site should not be restricted by artificial barriers to site use	Artificial barriers resulting from the proposed surveys do not have the potential to impact the range of harbour porpoise within this site. The range of any artificial barriers created is too far distant (at least 24 km) from the site for the potential for any impact on species range within the site.	No
Disturbance: Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site	Due to the distance of the proposed surveys from the site there is no potential for any project related activities to lead to disturbance to harbour porpoise within the site.	No
Lambay Island SAC		
***Phocoena phocoena* (Harbour Porpoise) [1351]. Species within ZoI. NOTE: Conservation objectives apply only to this species within the site**		
Access to suitable habitat: Species range within the site should not be restricted by artificial barriers to site use	Artificial barriers resulting from the proposed surveys do not have the potential to impact the range of harbour porpoise within this site. The range of any artificial barriers created is too far distant (at least 50 km) from the site for the potential for any impact on species range within the site.	No
Disturbance: Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site	Due to the distance of the proposed surveys from the site there is no potential for any project related activities to lead to disturbance to harbour porpoise within the site.	No
***Phoca vitulina* (Harbour Seal) [1365]. Species within ZoI NOTE: Conservation objectives apply only to this species within the site**		
Access to suitable habitat: Species range within the site should not be restricted by artificial barriers to site use	Species hearing range outside of range of MBES surveys.	No
Breeding behaviour: The breeding sites should be maintained in a natural condition	SPR link to Breeding sites too weak.	No
Moulting behaviour: The moult haul-out sites should be maintained in a natural condition	SPR link to Breeding sites too weak.	No
Resting behaviour: The resting haul-out sites should be maintained in a natural condition	SPR link to Breeding sites too weak.	No
Disturbance: Human activities should occur at levels that do not adversely affect the harbour seal population at the site	SPR link to Breeding sites too weak.	No
***Halichoerus grypus* (Grey Seal) [1364]. NOTE: Conservation objectives apply only to this species within the site**		

Access to suitable habitat: Species range within the site should not be restricted by artificial barriers to site use	Species hearing range outside of range of MBES surveys.	No
Breeding behaviour: The breeding sites should be maintained in a natural condition	SPR link to Breeding sites too weak.	No
Moulting behaviour: The moult haul-out sites should be maintained in a natural condition	SPR link to Breeding sites too weak.	No
Resting behaviour: The resting haul-out sites should be maintained in a natural condition	SPR link to Breeding sites too weak.	No
Population composition: The grey seal population occurring within this site should contain adult, juvenile and pup cohorts annually	SPR link to Breeding sites too weak.	No
Disturbance: Human activities should occur at levels that do not adversely affect the grey seal population at the site	SPR link to Breeding sites too weak.	No
West Connacht Coast SAC		
***Phocoena phocoena* (Harbour Porpoise) [1351]. Species within ZoI. NOTE: Conservation objectives apply only to this species within the site**		
Access to suitable habitat: Species range within the site should not be restricted by artificial barriers to site use	The ZoI caused by artificial barriers (acoustic noise) do not extend to this site. The source path receptor link is therefore too weak to cause impacts on the species range **within** the site.	No
Disturbance: Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site	Due to the distance of the proposed surveys from the site there is no potential for any project related activities to lead to disturbance to harbour porpoise within the site.	No
***Tursiops truncatus* (Common Bottlenose Dolphin) [1349]. NOTE: Conservation objectives apply only to this species within the site**		
Attribute	**Assessment**	**Potential for LSEs (Yes/No)**
Access to suitable habitat: Species range within the site should not be restricted by artificial barriers to site use	The ZoI caused by artificial barriers (acoustic noise) do not extend to this site. The source path receptor link is therefore too weak to cause impacts on the species range **within** the site.	No
Disturbance: Human activities should occur at levels that do not adversely affect the bottlenose dolphin population at the site	Due to the distance of the proposed surveys from the site there is no potential for any project related activities to lead to disturbance to harbour porpoise within the site.	No
Blasket Islands SAC		
***Phocoena phocoena* (Harbour Porpoise) [1351]. NOTE: Conservation objectives apply only to this species within the site**		
Access to suitable habitat: Species range within the site should not be restricted by artificial barriers to site use	The ZoI caused by artificial barriers (acoustic noise) do not extend to this site. The source path receptor link is therefore	No

	too weak to cause impacts on the species range **within** the site.	
Disturbance: Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site	Due to the distance of the proposed surveys from the site there is no potential for any project related activities to lead to disturbance to harbour porpoise within the site.	No
***Halichoerus grypus* (Grey Seal) [1364]. NOTE: Conservation objectives apply only to this species within the site**		
Access to suitable habitat: Species range within the site should not be restricted by artificial barriers to site use	Species hearing range outside of range of MBES surveys.	No
Breeding behaviour: The breeding sites should be maintained in a natural condition	SPR link to Breeding sites too weak.	No
Moulting behaviour: The moult haul-out sites should be maintained in a natural condition	SPR link to Breeding sites too weak.	No
Resting behaviour: The resting haul-out sites should be maintained in a natural condition	SPR link to Breeding sites too weak.	No
Population composition: The grey seal population occurring within this site should contain adult, juvenile and pup cohorts annually	SPR link to Breeding sites too weak.	No
Disturbance: Human activities should occur at levels that do not adversely affect the grey seal population at the site	SPR link to Breeding sites too weak.	No
Inishbofin and Inishshark SAC		
***Halichoerus grypus* (Grey Seal) [1364]. NOTE: Conservation objectives apply only to this species within the site**		
Access to suitable habitat: Species range within the site should not be restricted by artificial barriers to site use	Species hearing range outside of range of MBES surveys.	No
Breeding behaviour: The breeding sites should be maintained in a natural condition	SPR link to Breeding sites too weak.	No
Moulting behaviour: The moult haul-out sites should be maintained in a natural condition	SPR link to Breeding sites too weak.	No
Resting behaviour: The resting haul-out sites should be maintained in a natural condition	SPR link to Breeding sites too weak.	No
Population composition: The grey seal population occurring within this site should contain adult, juvenile and pup cohorts annually	SPR link to Breeding sites too weak.	No
Disturbance: Human activities should occur at levels that do not adversely affect the grey seal population at the site	SPR link to Breeding sites too weak.	No
Roaringwater Bay and Islands SAC		
***Phocoena phocoena* (Harbour Porpoise) [1351]. NOTE: Conservation objectives apply only to this species within the site**		

Access to suitable habitat: Species range within the site should not be restricted by artificial barriers to site use	The ZoI caused by artificial barriers (acoustic noise) do not extend to this site. The source path receptor link is therefore too weak to cause impacts on the species range **within** the site.	No
Disturbance: Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site	Due to the distance of the proposed surveys from the site there is no potential for any project related activities to lead to disturbance to harbour porpoise within the site.	No
***Halichoerus grypus* (Grey Seal) [1364]. NOTE: Conservation objectives apply only to this species within the site**		
Access to suitable habitat: Species range within the site should not be restricted by artificial barriers to site use	Species hearing range outside of range of MBES surveys.	No
Breeding behaviour: The breeding sites should be maintained in a natural condition	SPR link to Breeding sites too weak.	No
Moulting behaviour: The moult haul-out sites should be maintained in a natural condition	SPR link to Breeding sites too weak.	No
Resting behaviour: The resting haul-out sites should be maintained in a natural condition	SPR link to Breeding sites too weak.	No
Population composition: The grey seal population occurring within this site should contain adult, juvenile and pup cohorts annually	SPR link to Breeding sites too weak.	No
Disturbance: Human activities should occur at levels that do not adversely affect the grey seal population at the site	SPR link to Breeding sites too weak.	No
Kenmare River SAC		
***Phoca vitulina* (Harbour Seal) [1365]. Species within ZoI NOTE: Conservation objectives apply only to this species within the site**		
Access to suitable habitat: Species range within the site should not be restricted by artificial barriers to site use	Species hearing range outside of range of MBES surveys.	No
Breeding behaviour: The breeding sites should be maintained in a natural condition	SPR link to Breeding sites too weak.	No
Moulting behaviour: The moult haul-out sites should be maintained in a natural condition	SPR link to Breeding sites too weak.	No
Resting behaviour: The resting haul-out sites should be maintained in a natural condition	SPR link to Breeding sites too weak.	No
Disturbance: Human activities should occur at levels that do not adversely affect the harbour seal population at the site	SPR link to Breeding sites too weak.	No

UK areas within MU for Bottlenose Dolphin or Harbour Porpoise overlapping with proposed project site or within foraging range of grey or harbour seal. **Note:** These sites are no longer part of the Natura 2000 network of European sites. While we consider the distance to these area too great and the SPR too weak, these sites have been screened in to align within MARA policy.	
Lleyn Peninsula and the Sarnau SAC	Bottlenose dolphin
Cardigan Bay SAC	Bottlenose dolphin
North Anglesey Marine SAC [U	Harbour porpoise
West Wales Marine SAC [UK0030397]	Harbour porpoise
Bristol Channel Approaches SAC	Harbour porpoise
EU sites within MU for Bottlenose Dolphin or Harbour Porpoise which overlap with proposed project site or within forging range of Grey seal or Common Seal. Note: While we consider the distance to these area too great and the SPR too weak, these sites have been screened in to align within MARA policy.	
Abers – Côte des legends	Harbour porpoise/ Grey Seal
Ouessant Molène	Harbour porpoise/ Grey Seal
Nord Bretagne DH	Harbour porpoise
Cote de Granit Rose-Sept Iles	Harbour porpoise/ Grey Seal
Tregor Goëlo	Harbour porpoise
Côtes de Crozon	Harbour porpoise
Chaussée de Sein	Harbour porpoise
Récifs du talus du golfe de Gascogne	Harbour porpoise
Récifs et landes de la Hague	Harbour porpoise
Anse de Vauville	Harbour porpoise
Baie de SaintBrieuc – Est	Harbour porpoise
Banc et récifs de Surtainville	Harbour porpoise
Baie de Lancieux, Baie de l'Arguenon, Archipel de Saint Malo et Dinard	Harbour porpoise
Chausey	Harbour porpoise
Estuaire de la Rance	Harbour porpoise
Baie du Mont Saint Michel	Harbour porpoise
Cap d'Erquy-Cap Fréhel	Harbour porpoise
Baie de Morlaix	Harbour porpoise/ Grey Seal

SPAs			
Site name	**Distance**	**SCIs**	**Potential for LSEs (Yes/No)**
Seas off Wexford SPA	Spatial overlap	Mediterranean Gull (Larus melanocephalus) [A176] Black-headed Gull (Chroicocephalus ridibundus) [A179] Lesser Black-backed Gull (Larus fuscus) [A183] Herring Gull (Larus argentatus) [A184] Kittiwake (Rissa tridactyla) [A188] Guillemot (Uria aalge) [A199] Sandwich Tern (Sterna sandvicensis) [A191] Roseate Tern (Sterna dougallii) [A192] Common Tern (Sterna hirundo) [A193] Arctic Tern (Sterna paradisaea) [A194] Little Tern (Sterna albifrons) [A195]	No. No potential for project related activity identified.
		Red-throated Diver (Gavia stellata) [A001] Fulmar (Fulmarus glacialis) [A009] Manx Shearwater (Puffinus puffinus) [A013] Gannet (Morus bassanus) [A016] Cormorant (Phalacrocorax carbo) [A017] Shag (Phalacrocorax aristotelis) [A018] Common Scoter (Melanitta nigra) [A065] Razorbill (Alca torda) [A200] Puffin (Fratercula arctica) [A204]	No. Deeper diving species. However. LSE not considered possible due to location of proposed bathymetric survey area and magnitude of any potential impact
Tramore Back Strand SPA	Spatial overlap	Light-bellied Brent Goose (Branta bernicla hrota) [A046] Golden Plover (Pluvialis apricaria) [A140] Grey Plover (Pluvialis squatarola) [A141] Lapwing (Vanellus vanellus) [A142] Dunlin (Calidris alpina) [A149] Black-tailed Godwit (Limosa limosa) [A156] Bar-tailed Godwit (Limosa lapponica) [A157] Curlew (Numenius arquata) [A160] Wetland and Waterbirds [A999]	Yes-disturbance
Mid-Waterford Coast SPA	Adjacent	Peregrine (Falco peregrinus) [A103] Herring Gull (Larus argentatus) [A184] Chough (Pyrrhocorax pyrrhocorax) [A346]	No. No potential for project related activity identified

		Cormorant (Phalacrocorax carbo) [A017]	No. Deeper diving species. However. LSE not considered possible due to location of proposed bathymetric survey area and magnitude of any potential impact
Bannow Bay SPA	Spatial overlap	Light-bellied Brent Goose (Branta bernicla hrota) [A046] Shelduck (Tadorna tadorna) [A048] Pintail (Anas acuta) [A054] Oystercatcher (Haematopus ostralegus) [A130] Golden Plover (Pluvialis apricaria) [A140] Grey Plover (Pluvialis squatarola) [A141] Lapwing (Vanellus vanellus) [A142] Knot (Calidris canutus) [A143] Dunlin (Calidris alpina) [A149] Black-tailed Godwit (Limosa limosa) [A156] Bar-tailed Godwit (Limosa lapponica) [A157] Curlew (Numenius arquata) [A160] Redshank (Tringa totanus) [A162] Wetland and Waterbirds [A999]	Yes-disturbance
Keeragh Islands SPA	Spatial overlap	Cormorant (Phalacrocorax carbo) [A017]	No. Deeper diving species. However. LSE not considered possible due to location of proposed bathymetric survey area and magnitude of any potential impact
Ballyteigue Burrow SPA	Spatial overlap	Light-bellied Brent Goose (Branta bernicla hrota) [A046] Shelduck (Tadorna tadorna) [A048] Golden Plover (Pluvialis apricaria) [A140] Grey Plover (Pluvialis squatarola) [A141] Lapwing (Vanellus vanellus) [A142] Black-tailed Godwit (Limosa limosa) [A156] Bar-tailed Godwit (Limosa lapponica) [A157] Wetland and Waterbirds [A999]	Yes-disturbance
Saltee Islands SPA	0.46	Lesser Black-backed Gull (Larus fuscus) [A183 Herring Gull (Larus argentatus) [A184]	No. No potential for project related activity identified

		Fulmar (Fulmarus glacialis) [A009] Gannet (Morus bassanus) [A016] Cormorant (Phalacrocorax carbo) [A017] Shag (Phalacrocorax aristotelis) [A018] Kittiwake (Rissa tridactyla) [A188] Guillemot (Uria aalge) [A199] Razorbill (Alca torda) [A200] Puffin (Fratercula arctica) [A204]	No. Deeper diving species. However. LSE not considered possible due to location of proposed bathymetric survey area and magnitude of any potential impact
Tacumshin Lake SPA	Spatial overlap	Little Grebe (Tachybaptus ruficollis) [A004] Bewick's Swan (Cygnus columbianus bewickii) [A037] Whooper Swan (Cygnus cygnus) [A038] Wigeon (Anas penelope) [A050] Gadwall (Anas strepera) [A051] Teal (Anas crecca) [A052] Pintail (Anas acuta) [A054] Shoveler (Anas clypeata) [A056] Tufted Duck (Aythya fuligula) [A061] Coot (Fulica atra) [A125] Golden Plover (Pluvialis apricaria) [A140] Grey Plover (Pluvialis squatarola) [A141] Lapwing (Vanellus vanellus) [A142] Black-tailed Godwit (Limosa limosa) [A156] Wetland and Waterbirds [A999]	Yes-disturbance
Lady's Island Lake SPA	Adjacent	Gadwall (Anas strepera) [A051] Black-headed Gull (Chroicocephalus ridibundus) [A179] Sandwich Tern (Sterna sandvicensis) [A191] Roseate Tern (Sterna dougallii) [A192] Common Tern (Sterna hirundo) [A193] Arctic Tern (Sterna paradisaea) [A194] Wetland and Waterbirds [A999]	No. No potential for project related activity identified
Wexford Harbour and Slobs SPA	Spatial overlap	Little Grebe (Tachybaptus ruficollis) [A004] Great Crested Grebe (Podiceps cristatus) [A005] Cormorant (Phalacrocorax carbo) [A017] Grey Heron (Ardea cinerea) [A028] Bewick's Swan (Cygnus columbianus bewickii) [A037] Whooper Swan (Cygnus cygnus) [A038]	Yes-disturbance

		Light-bellied Brent Goose (Branta bernicla hrota) [A046] Shelduck (Tadorna tadorna) [A048] Wigeon (Anas penelope) [A050] Teal (Anas crecca) [A052] Mallard (Anas platyrhynchos) [A053] Pintail (Anas acuta) [A054] Scaup (Aythya marila) [A062] Goldeneye (Bucephala clangula) [A067] Red-breasted Merganser (Mergus serrator) [A069] Hen Harrier (Circus cyaneus) [A082] Coot (Fulica atra) [A125] Oystercatcher (Haematopus ostralegus) [A130] Golden Plover (Pluvialis apricaria) [A140] Grey Plover (Pluvialis squatarola) [A141] Lapwing (Vanellus vanellus) [A142] Knot (Calidris canutus) [A143] Sanderling (Calidris alba) [A144] Dunlin (Calidris alpina) [A149] Black-tailed Godwit (Limosa limosa) [A156] Bar-tailed Godwit (Limosa lapponica) [A157] Curlew (Numenius arquata) [A160] Redshank (Tringa totanus) [A162] Black-headed Gull (Chroicocephalus ridibundus) [A179[Lesser Black-backed Gull (Larus fuscus) [A183] Little Tern (Sterna albifrons) [A195] Greenland White-fronted Goose (Anser albifrons flavirostris) [A395] Wetland and Waterbirds [A999]	
The Raven SPA	Spatial overlap	Red-throated Diver (Gavia stellata) [A001] Cormorant (Phalacrocorax carbo) [A017] Common Scoter (Melanitta nigra) [A065]	No. Deeper diving species. However. LSE not considered possible due to location of proposed bathymetric survey area and magnitude of any potential impact
		Grey Plover (Pluvialis squatarola) [A141] Sanderling (Calidris alba) [A144]	Yes-disturbance

		Greenland White-fronted Goose (Anser albifrons flavirostris) [A395] Wetland and Waterbirds [A999]	
Cahore Marshes SPA	Adjacent	Wigeon (Anas penelope) [A050] Golden Plover (Pluvialis apricaria) [A140] Lapwing (Vanellus vanellus) [A142] Greenland White-fronted Goose (Anser albifrons flavirostris) [A395] Wetland and Waterbirds [A999]	No. No potential for project related activity identified
Wicklow head SPA	Adjacent	Kittiwake (Rissa tridactyla) [A188]	No. No potential for project related activity identified
The Murrough SPA	Spatial overlap	Red-throated Diver (Gavia stellata) [A001	No. Deeper diving species. However. LSE not considered possible due to location of proposed bathymetric survey area and magnitude of any potential impact
		Greylag Goose (Anser anser) [A043] Light-bellied Brent Goose (Branta bernicla hrota) [A046] Wigeon (Anas penelope) [A050] Teal (Anas crecca) [A052] Black-headed Gull (Chroicocephalus ridibundus) [A179] Herring Gull (Larus argentatus) [A184] Little Tern (Sterna albifrons) [A195] Wetland and Waterbirds [A999]	Yes-disturbance
Lambay Island SPA	35	Fulmar (Fulmarus glacialis) [A009] Guillemot (Uria aalge) [A199] Razorbill (Alca torda) [A200] Puffin (Fratercula arctica) [A204]	No. Deeper diving species. However. LSE not considered possible due to location of proposed bathymetric survey area and magnitude of any potential impact.
		Cormorant (Phalacrocorax carbo) [A017] Shag (Phalacrocorax aristotelis) [A018] Greylag Goose (Anser anser) [A043] Lesser Black-backed Gull (Larus fuscus) [A183] Herring Gull (Larus argentatus) [A184] Kittiwake (Rissa tridactyla) [A188]	No. Species outside of ZoI.

Puffin Island SPA	345	Fulmar (Fulmarus glacialis) [A009] Manx Shearwater (Puffinus puffinus) [A013] Storm Petrel (Hydrobates pelagicus) [A014]	No. Deeper diving species. However. LSE not considered possible due to location of proposed bathymetric survey area and magnitude of any potential impact.
		Lesser Black-backed Gull (Larus fuscus) [A183] Razorbill (Alca torda) [A200] Puffin (Fratercula arctica) [A204]	No. Species outside of ZoI.
Skelligs SPA	273	Fulmar (Fulmarus glacialis) [A009] Manx Shearwater (Puffinus puffinus) [A013] Storm Petrel (Hydrobates pelagicus) [A014] Gannet (Morus bassanus) [A016]	No. Deeper diving species. However. LSE not considered possible due to location of proposed bathymetric survey area and magnitude of any potential impact.
		Kittiwake (Rissa tridactyla) [A188] Guillemot (Uria aalge) [A199] Puffin (Fratercula arctica) [A204]	No. Species outside of ZoI.
Deenish Island and Scariff Island SPA	268	Fulmar (Fulmarus glacialis) [A009] Manx Shearwater (Puffinus puffinus) [A013] Storm Petrel (Hydrobates pelagicus) [A014]	No. Deeper diving species. However. LSE not considered possible due to location of proposed bathymetric survey area and magnitude of any potential impact
		Lesser Black-backed Gull (Larus fuscus) [A183] Arctic Tern (Sterna paradisaea) [A194]	No. Species outside of ZoI.
Beara Peninsula SPA	245	Fulmar (Fulmarus glacialis) [A009]	No. Deeper diving species. However. LSE not considered possible due to location of proposed bathymetric survey area and magnitude of any potential impact
		Chough (Pyrrhocorax pyrrhocorax) [A346]	No. Species outside of ZoI.
Iveragh Peninsula SPA	268	Fulmar (Fulmarus glacialis) [A009]	No. Deeper diving species. However. LSE not considered

			possible due to location of proposed bathymetric survey area and magnitude of any potential impact
		Peregrine (Falco peregrinus) [A103] Kittiwake (Rissa tridactyla) [A188] Guillemot (Uria aalge) [A199] Chough (Pyrrhocorax pyrrhocorax) [A346]	No. Species outside of ZoI.
Dingle Peninsula SPA	300	Fulmar (Fulmarus glacialis) [A009]	No. Deeper diving species. However. LSE not considered possible due to location of proposed bathymetric survey area and magnitude of any potential impact
		Chough (Pyrrhocorax pyrrhocorax) [A346] Peregrine (Falco peregrinus) [A103]	No. Species outside of ZoI.
Kerry Head SPA	420	Fulmar (Fulmarus glacialis) [A009]	No. Deeper diving species. However. LSE not considered possible due to location of proposed bathymetric survey area and magnitude of any potential impact
		Chough (Pyrrhocorax pyrrhocorax) [A346]	No. Species outside of ZoI.
Cliffs of Moher SPA	496	Fulmar (Fulmarus glacialis) [A009]	No. Deeper diving species. However. LSE not considered possible due to location of proposed bathymetric survey area and magnitude of any potential impact
		Kittiwake (Rissa tridactyla) [A188] Guillemot (Uria aalge) [A199] Razorbill (Alca torda) [A200] Puffin (Fratercula arctica) [A204] Chough (Pyrrhocorax pyrrhocorax) [A346]	No. Species outside of ZoI.

Bull and Cows Rocks SPA	245	Storm Petrel (Hydrobates pelagicus) [A014] Gannet (Morus bassanus) [A016]	No. Deeper diving species. However. LSE not considered possible due to location of proposed bathymetric survey area and magnitude of any potential impact
		Puffin (Fratercula arctica) [A204]]	No. Species outside of ZoI.

9. In-combination Effects

9.1 Approach to identification of in-combination effects

While a single development may not in itself cause a significant impact on the conservation objectives of a site, a combination of projects within a localised area may cause a negative impact on a site. Therefore, the cumulative impacts of a project or plan in association with other projects and plans must be taken into consideration when assessing the possible impacts of a development.

Potential project related impacts were identified in section 6 (table 2) of this SISAA, and included potential pressures resulting from: vessel presence, acoustic surveys and benthic surveys. Additional projects identified as having potential to act in-combination with the proposed project are considered to be those projects most likely to contribute to these pressures and generate additional underwater noise, vessel disturbance and impacts on benthic habitats.

The following approach to the identification of cumulative impacts has been taken:

- The geographic boundaries of the proposed project as clearly set out in section 4 were reviewed.
- An assessment of the magnitude and extent of potential project related impacts was carried out.
- The Cumulative Effects Spatial Scope (CESS) of the project was estimated.

  As the proposed project is solely marine based, a search for projects with a marine component or the ability to impact the marine environment through a SPR link were considered relative to the potential for cumulative effects. In this regard all additional projects **within 5km** of the proposed project area were considered in this review. This distance was considered appropriate based on the scale and scope of the project and magnitude of any potential project related impacts.
- The Cumulative Effects Temporal Scope (CETS) was set to 1 year as proposed for the Marine Usage Licence (MUL)
- The search was focused on applications listed on the websites of the Maritime Area Regulatory Authority (MARA) for post 17th July 2023 applications and the Foreshore unit of the Department of Housing Local Government and Heritage for applications pre 17th July 2023. Further information available through the Department of Agriculture, Food and the Marine with regard to foreshore functions relating to fishery harbour centres, aquaculture and sea-fishing and the EPA regarding Dumping at Sea (DAS) permits were examined.
- Projects with the potential to impact the structure and function of all European sites within the ZoI of the proposed project were identified.
- The significance of any impact identified was determined

9.2 Assessment of In-combination effects

Table 8 presents a list of projects identified through searches of the aforementioned databases which may have the potential to act in combination with the proposed project. This assessment indicated a total of nine projects with potential to lead to in-combination effects.

Table 8. Search of additional projects within or adjacent to ZoI

Project No.	Application licence no.	Applicant	Description	Location	Potential for cumulative impact
1	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.	N/A	N/A Project now completed
2	FS007616	Ruby Offshore Energy Ltd	Site Investigation for Offshore Wind Farm, off the coast of Counties Wexford, Waterford, Cork	<5km	Potential for temporal overlap
3	FS007445	Blackwater OWL Offshore Wind Ltd. marine surveys off the Wexford coast	Geophysical, geotechnical, environmental and metocean site investigations	Spatial overlap	Potential for temporal overlap
4	FS006982	Energia site investigations for wind farm off Helvick Head	Geophysical, Geotechnical, Archaeological, Ecological, Oceanographic and Meteorological investigations	Spatial overlap	Potential for temporal overlap
5	FS007384	Celtic Horizon Offshore Wind Farm Ltd site investigations off the coast of Wexford and Waterford	geophysical, geotechnical, archaeological, ecological, metocean and benthic surveys	Spatial overlap	Potential for temporal overlap
6	FS007464	Bore Array Ltd site investigations for wind farm off Co. Wexford	site investigation works to determine the suitability for cable routeing, and positioning of turbines and other electrical infrastructure associated with the development of an OWF	Spatial overlap	Potential for temporal overlap
7	FS007488	Celtic Offshore Renewable Energy site investigation off the coast of Wexford and Waterford	geotechnical, environmental and metocean site investigations	Spatial overlap	Potential for temporal overlap
8	FS007621	Péarla Offshore Wind Ltd.Site investigations for export cable for	Geophysical, Geotechnical, Archaeological, Ecological, Oceanographic and Meteorological investigations	Spatial overlap	Potential for temporal overlap

		proposed offshore wind farm			
9	FS007436	Voyage Offshore Array Ltd. Site investigations off coast of Wexford & Waterford	Geophysical, Geotechnical, Archaeological, Ecological, Oceanographic and Meteorological investigations	Spatial overlap	Potential for temporal overlap
Plans					
1	The Climate Action Plan 2023	These plans promote sustainable development in the maritime environment, improvement of Environmental status and mitigation of climate change	No element of the proposed project has the potential to act in-combination with any of the 3 identified plans to result in any negative in-combination effects. Rather, the proposed project may contribute towards positive sustainable development in the maritime environment and improvement in environmental status without the potential to contribute towards negative impacts on any European site.		
2	River Basin Management Plans (RBMP)				
3	Designated Maritime Area Plans(DMAPs)				

10. Transboundary effect

Transboundary effects relate to the likelihood of significant effects on a site which is part of the Natura 2000 network but outside our national boundaries. This SISAA has determined the ZoI of the proposed project and concluded no potential for impacts alone or in-combination with other projects or plans on any European site. Therefore, transboundary impacts are not considered possible.

Since 1 January 2021 nature conservation areas in the UK (including Northern Ireland) are no longer part of the Natura 2000 network. On this basis, the nearest European sites outside of Ireland's national boundaries are on mainland Europe.

11. Screening Statement

Following a review of the proposed project, information to support a screening assessment, following the guidelines of *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 has been prepared.

It cannot be excluded on the basis of objective scientific information, following the preparation of this SISAA, that the proposed project, individually or in combination with other projects, will have a significant effect on a European Site.

The assessment concludes that, the proposed project may give rise to Likely Significant Effects on the Conservation Objectives European sites listed below. Accordingly, it is concluded that Appropriate Assessment of the proposed project is required.

- Hook Head SAC
- Saltee Islands SAC
- Carnsore Point SAC
- Slaney River Valley SAC
- Tramore Back Strand SPA
- Bannow Bay SPA
- Ballyteigue Burrow SPA
- Tacumshin Lake SPA
- Wexford Harbour and Slobs SPA
- The Raven SPA
- The Murrough SPA

Additional sites in the UK and France have brough forward to the NIS prepared for this project as they fall within foraging range for grey seal or are within a management unit for Bottlenose Dolphin or Harbour Porpoise.

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13. Appendix 1 Foraging ranges for breeding seabirds

Foraging ranges for breeding seabirds. After Woodward et al. (2019).

Species	Foraging Range - Mean Max (km)*	SPAs where species is qualifying feature
Kittiwake	156.1	Wicklow Head SPA
		Saltee Islands SPA
		Ireland's Eye SPA
		Howth Head Coast SPA
		Lambay Island SPA
		Helvick Head to Ballyquin SPA
Gannet	315.2	Saltee Islands SPA
		The Bull and The Cow Rocks SPA
		Skelligs SPA
Fulmar	542.3	Saltee Islands SPA
		Lambay Island SPA
		Puffin Island SPA
		Skelligs SPA
		Deenish Island and Scariff Island SPA
		Beara Peninsula SPA
		Blasket Islands SPA
		Iveragh Peninsula SPA
		Dingle Peninsula SPA
		Kerry Head SPA
		Cliffs of Moher SPA
Cormorant	25.6	The Raven SPA
		Wexford Harbour and Slobs
Shag	13.2	NA
Guillemot	73.2	Saltee Islands SPA
		Ireland's Eye SPA
Razorbill	88.7	Saltee Islands SPA
		Ireland's Eye SPA
		Lambay Island SPA
Puffin	137.1	Saltee Islands SPA
		Lambay Island SPA
Black-headed gull	18.5	Wexford Harbour and Slobs SPA
Roseate tern	12.6	NA
Common tern	18	NA
Arctic tern	25.7	Lady's Island Lake SPA
Sandwich tern	34.3	Lady's Island Lake SPA
Red-throated diver	9	The Raven SPA
Herring gull	58.8	Saltee Islands SPA
		The Murrough SPA
Little tern	5	NA
Lesser black-backed gull	127	Ballymacoda Bay SPA
		Lambay Island SPA
		Saltee Islands SPA
		Poulaphouca Reservoir SPA
		Wexford Harbour and Slobs SPA
Manx shearwater	1346.8	Deenish Island and Scariff Island SPA
		Skelligs SPA
		Puffin Island SPA
		Blasket Islands SPA

		Cruagh Island SPA
Storm petrel	336	The Bull and The Cow Rocks SPA
		Deenish Island and Scariff Island SPA
Great black-backed gull	73	NA
Common gull	50	NA
Med gull	20	NA
Great skua	443.3	NA
Arctic skua	NA	NA
Common Scoter	8	