MERC Consultants
environmental and conservation services

Supporting Information for Screening for Appropriate Assessment Report

Uisce Éireann Sligo and Donegal Strategic Model

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1. Introduction

Uisce Éireann wish to conduct a strategic modelling study of water currents within Donegal Bay, Sligo Bay, Killala Bay and their adjoining waters. A foreshore license application for this modelling was submitted in 2022 (Foreshore refence number: FS007553). The original licence application was for the deployment of Acoustic Doppler Current Profilers (ADCPs) and associated ancillary instrumentation. Uisce Éireann now wish to expand the survey to include the gathering of bathymetric and tidal data.

The proposed programme of surveys includes vessel based assessment of bathymetry using a combination of single-beam, multibeam and LiDAR surveys, surface water sampling and the deployment of tidal gauges.

This screening exercise aims 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 European sites, considering their conservation objectives. This document constitutes Supporting Information for Screening for Appropriate Assessment (SISAA) of the proposed project to assist the competent authority to undertake Appropriate Assessment Screening.

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 Relevant 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. European Commission 2019. 7621 final. Office for Official Publications of the European Communities, Luxembourg.
- Assessment of plans and projects significantly affecting Natura 2000 sites; Methodological Guidance on the provisions of Articles 6(3) and (4) of the Habits Directive 92/43/EEC. European Commission, 2002;
- Appropriate Assessment of Plans and Projects in Ireland, Guidance for Planning Authorities. DoEHLG, 2009.
- 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.

3.2 Description of the proposed project

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.

3.3 Description of the receiving environment

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 Natura 2000 sites within the zone of influence (ZOI) of the proposed project (see section 3.4 for methods used to determine the ZOI). This included the individual site synopsis for European sites, conservation objectives and GIS layers (habitats and species). Further data was obtained from the following sources (non-exhaustive):

- INFOMAR bathymetric mapping
- INFOMAR sediment classification
- Water Framework Directive benthic monitoring programme
- NPWS Marine monitoring and community mapping data
- BirdWatch Ireland I-Webs data
- Biodiversity Data Centre species maps

3.4 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.

3.5 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 Project location

The proposed project is located within five separate locations off the coast of counties Sligo and Donegal, labelled areas A, B,C, D and E here for ease of reference (Figure 1).

Area A covers an area from Carrigan Head east to Dorrin Point, encompassing Fintra Bay, McSwynes Bay, Iver Bay and the adjacent waters out to approximately the 50m contour.

Area B covers an area of Donegal Bay from Dorrin Point south to Aughrus Point and adjacent waters out to approximately the 30m contour.

Area C Includes the area running from Mullaghmore Head south to Streedadh Point and adjacent water out to the 30m contour at its furthest point.

Area D Includes Sligo Bay, including Sligo Harbour and Ballysadare Bay out to the 20 m contour at its furthest point.

Area E Covers Killala Bay out to just beyond the 30m contour.

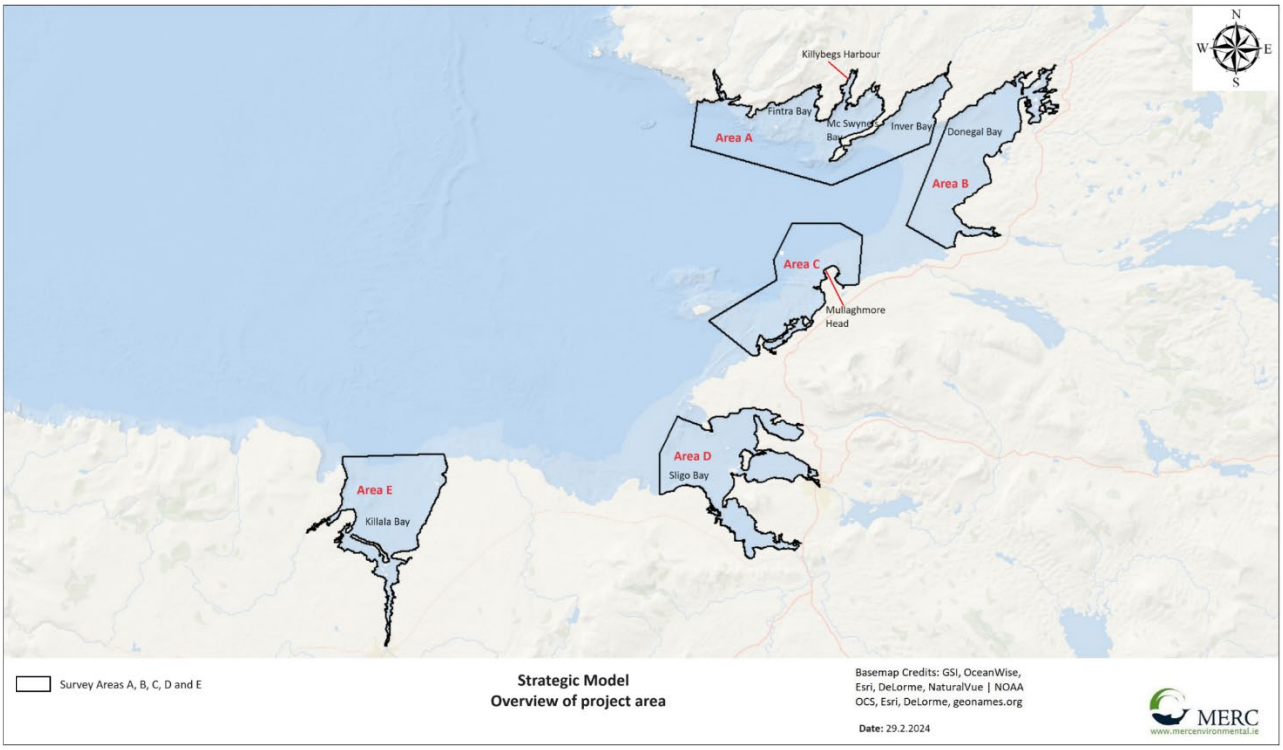

Figure 1. Overview of proposed project site.

4.2 Scope of works

The original scope of the project for the deployment of up to twenty-three (23) ADCPs is given in foreshore licence reference number FS007553 available to view at: https://www.gov.ie/en/foreshore-notice/bb676-fs007553-irish-water-site-investigations/. The currently proposed project aims gather information on bathymetry using a combination of single-beam, multibeam and LiDAR surveys, and potentially, the deployment of tidal gauges.

4.2.1 Description of instrumentation and operation

A description of the proposed equipment to be used is given below and summarised in **Table 1**.

4.2.2 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 transreceiver 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).

4.2.3 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.

4.2.4 Light Detection And Ranging (LiDAR)

Light Detection And Ranging (LiDAR) is useful for mapping bathymetry in very shallow water. It operates by emitting two laser light beams from a sensor onboard an aircraft. One beam hits the water surface and is reflected, while the second beam hits the seabed and is reflected back. The difference in time between the two beams returning allows the water depth to be calculated. LiDAR is very useful in areas too shallow for vessels to access such as the intertidal.

In the present case, bathymetric assessment of the intertidal area only is required, as information for the subtidal area is already available. LiDAR is likely to be the method used for this assessment, but the possibility of using a shallow draft vessel over the intertidal area on a high tide to conduct multibeam or single-beam surveys is also possible.

4.2.5 Vessel mounted 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. A foreshore licence has already been obtained for the deployment of fixed ADCPs within trawl resistant frames at 26 discrete locations within the proposed project area. However, given the shallow depth and navigational issues additional 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.

It is proposed that VMADCP data gathering will take place in the following areas:

- Ballysadare Bay (VMADCP1 to VMADCP2)
- Garavogue Estuary channel between Rosses Point and Sligo Docks (VMADCP3 to VMADCP5)
- Inner Donegal Bay between Donegal Town and Donegal Harbour (VMADCP6 to VMADCP8)
- Inver Bay (VMADCP9 to VMADCP10)
- McSwynes Bay (VMADCP11)
- Killybegs Bay (VMADCP12 to VMADCP13)

4.2.6 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 projects 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.

4.2.7 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.

4.2.8 Vessel

To facilitate the multibeam and single beam surveys (should they be required) 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. Summary of scope of works

Element	Method	Frequency	Location
Vessel based ADCP	The Vessel mounted ADCP 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 sensor is required.	Within MUL Area; limited to marine navigable areas; indicative locations presented
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; limited to marine navigable areas
CTD Monitoring	CTD and Dissolved Oxygen (DO) surveys will take place from the vessel. This will involve deploying a Sonde CTD/DO meter 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; limited to marine navigable areas; indicative locations presented
Bathymetry	Surveying of intertidal areas by boat may require a combination of methods including; Single beam & Multibeam Echosounders, LiDAR, GPS rover. Survey lines a will be dependent on tidal height and current at the time of survey and may require multiple transects within a given area.	Once off.	Intertidal areas within MUL Area A, B, C, E
Tide Gauge	The inshore tide gauge should be mounted on either a galvanized steel pole to the side of a suitable pier or other permanent fixed structure. Installation should 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	Installed for a minimum of 3 months, coinciding with all other sampling	Garavogue Estuary at Sligo Port or Sligo WwTP to assess propagation of tidal wave into estuary. ▪ Killybegs Harbour at Killybegs WwTP ▪ Donegal Town ▪ Killala Bay at Ballina WwTP
Vessel details	A shallow draft vessel likely to be no larger than 16m length, 6m beam and 2m draught will be used.		

5. Receiving Environment

5.1 Marine habitats

Marine habitat types vary across this wide area. The offshore benthic habitat is dominated by shelf sublittoral sand (in the deeper water approximately 3 to 8 km from the coastline). While a band of shallow sublittoral sand, interspersed with large areas of shallow sublittoral mud and shallow sublittoral rock and biogenic reef are present closer to shore and characterise the majority of the proposed licence areas. Within the SAC areas, finer scale mapping, to support the setting of Conservation Objectives, is available. This mapping shows a range of soft sediment benthic communities, geogenic and biogenic reef habitats and other areas where sensitive subtidal communities have been recorded and mapped (e.g. Maërl and *Zostera* dominated communities). Many of the sediment communities described for the area are typical of exposed sublittoral communities. The geogenic reef habitats support a rich and a diverse community dominated by epibenthic species and kelp. While these reef communities are also characteristic of exposed sites, they are vulnerable to physical impact and abrasion. The more sheltered bays and inlets are also home to certain species vulnerable to impact such as the aforementioned maërl and *Zostera* communities.

There is a spatial overlap between the proposed project area and the following SACs designated for marine habitats:

- Slieve League SAC (Reefs and Vegetated sea cliffs of the Atlantic and Baltic coasts).
- St John's Point SAC (Large shallow inlets and bays, Reefs and Vegetated sea cliffs of the Atlantic and Baltic coasts).
- Donegal Bay/Murvagh SAC (Mudflats and sandflats not covered by seawater at low tide).
- Bunduff Lough and Machair SAC (Mudflats and sandflats not covered by seawater at low tide, Large shallow inlets and bays, Reefs).
- Streedagh Point Dunes SAC (Mudflats and sandflats not covered by seawater at low tide).
- Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC (Estuaries and Mudflats and sandflats not covered by seawater at low tide).
- Ballysadare Bay SAC (Estuaries and Mudflats and sandflats not covered by seawater at low tide).
- Killala Bay/Moy Estuary SAC (Estuaries and Mudflats and sandflats not covered by seawater at low tide).

Area A

Area A covers an area from Carrigan Head east to Dorrin Point, encompassing Fintra Bay, Killybegs Harbour, Mc Swynes Bay, Iver Bay and the adjacent waters out to approximately the 50m contour. Infomar mapping indicates that the outer areas of the site are highly exposed to the south and dominated by shelf sublittoral sand, shallow sublittoral rock and biogenic reef[1] and shallow sublittoral sand. Detailed sediment data for Teelin Bay, Tawney Bay and Fintragh Bay are lacking. However, Teelin and Tawney Bays are generally characterised by an estuarine marine habitat, to the heads of the bays extending to areas of shallow sublittoral sands towards the mouths of the bays. Fintragh Bay to the east is characterised by exposed sands.

[1] It should be noted that INOMAR mapping does not distinguish between geogenic and biogenic reef. Thus when the classification is indicated the habitat could be either or both of these reef types.

Killybegs Harbour is Killybegs Harbour is a narrow southerly facing bay/natural harbour. Sediment habitats in the sublittoral near shore zone (i.e. covering the infralittoral and circalittoral zones) typically extend from the extreme lower shore down to the edge of the bathyal zone. Sediments range from boulders and cobbles, through pebbles and shingle, coarse sands, fine sands, muds and mixed sediment.

Mc Swyne's Bay is a large exposed Bay. Infomar mapping characterises the bay as being comprised of shallow sublittoral and shallow sublittoral mud in mosaic with shallow sublittoral rock and biogenic reef. The peninsula of St Johns Point runs along the eastern extremity of this bay. The intertidal area along the west side of St John's Point peninsula is within St John's Point Sac and represented at this location by a bank of intertidal reef. Towards the southern section of St Johns Point Peninsula extensive areas of subtidal geogenic reef are present represented by a *Subtidal reef with echinoderms and sponges community complex* in the circalittoral zone and a *Subtidal reef with echinoderms and sponges community complex* in the infralittoral. In the eastern side of the peninsula (to the south of Inver Bay) , further examples of these two reef types are present together with an extensive maërl dominated community (a particularly sensitive subtidal community) and further areas of intertidal reef. The remainder of Inver Bay is represented by exposed shallow sublittoral sand with pockets of Shallow sublittoral rock and biogenic reef.

Area B

Area B covers an area of Donegal Bay from Dorrin Point south to Aughrus Point and adjacent waters out to approximately the 30m contour. The outer exposed section of this site is dominated by exposed shallow sublittoral sand with small pockets of Shallow sublittoral rock and biogenic reef. Inside Murvagh spit more detailed habitat mapping (NPWS, 2012) indicates the area to be comprised of *Subtidal fine sands with polychaetes and bivalves community complex* and *Intertidal muddy sand to sand dominated by polychaetes, bivalves and crustaceans community complex.*

To the south of the area, near Ballyshannon, the Estuary of the River Erne enters Donegal Bay at Tullan strand. The estuary is dominated by exposed sands as a result of tide and wind at this location.

Area C

Area C includes the area running from Mullaghmore Head south to Streedadh Point and adjacent water out to the 30m contour at its furthest point. The dominant habitat type is exposed shallow sublittoral sand with extensive areas of shallow sublittoral rock and biogenic reef. NPWS mapping (NPWS, 2015) for a large section of this area indicates that the shallow sublittoral sand section is comprised of a *Fine to very fine sand community complex*. While inside Back Strand (at Streedagh) the habitat is comprised of *Sand with Pygospio elegans and Cerastoderma edule community complex.* The reef areas, across the entirety of area C, being characterised by an infralittoral *Laminaria-dominated community complex*.

Area D

Area D includes Sligo Bay, including Sligo Harbour and Ballysadare Bay out to the 20 m contour at its furthest point. Outer Sligo Bay is dominated by shallow sublittoral mud with areas of shallow sublittoral rock and biogenic reef. Drumcliff bay and Sligo Harbour are characterised *by Fine sand with Angulus spp. and Nephtys spp. community complex* and intertidal areas of *Intertidal fine sand with Peringia ulvae and Pygospio elegans community complex.* Ballysdare Bay, in contrast is characterised by *Muddy sand to sand with Hediste diversicolor, Corophium volutator and Peringia ulvae community complex* towards the head of the bay and expansive areas of *Intertidal sand with Angulus tenuis community complex* throughout the mid-section and a subtidal community of *Fine sand with polychaetes community complex*. A small area of subtidal reef is present towards the mouth of Ballysadare Bay.

Area E

Area E which covers Killala Bay out to just beyond the 30m contour is dominated by shallow sublittoral mixed sediment for the majority of the area beyond the 20m contour. The shallower area, inside of the Moy bar being dominated by *Fine sand dominated by Nephtys cirrosa community complex* and *Muddy sand to fine sand dominated by Hydrobia ulvae, Pygospio elegans and Tubificoides benedii community complex.* A *Zostera-dominated community* (a particularly sensitive marine community) is present to the east of the site at Gortabradaun Point.

5.2 Avifauna

The sheltered intertidal areas of the numerous inlets and estuaries along the north west coast provide important foraging areas for waterbirds. The wider open water areas provide foraging habitat for seabirds from a wide range of sites across the north west. The high sea cliffs of Slieve League and the offshore islands providing suitable nesting habitat for many seabirds including Fulmar, Cormorant, Shag, Peregrine, Herring Gull, Kittiwake and Razorbill. This area also provides foraging habitat for many seabird species from additional areas, including SPA's designated for sea birds, from other parts of the Irish coast.

There is a spatial overlap between the proposed project area and the following SPAs:

- West Donegal Coast SPA (terrestrial birds and seabirds)
- Donegal Bay SPA (Wintering waterbirds and Wetlands and waterbirds)
- Drumcliff Bay SPA (Waterbirds and Wetlands and waterbirds)
- Cummeen Strand SPA (Waterbirds and Wetlands and waterbirds)
- Ballysadare Bay SPA (Waterbirds and Wetlands and waterbirds)
- Killala Bay/Mot estuary SPA (Waterbirds and Wetlands and waterbirds)

5.3 Marine mammals

Donegal Bay, Sligo Bay, Killala Bay are their environs provide important habitat for marine mammals. Bottlenose Dolphin (*Tursiops truncatus*), Common Porpoise (*Phocoena phocoena*), Harbour Seal (*Phoca vitulina*) and Grey Seal (*Halichoerus grypus*), all of which are listed on Annex II of the EU Habitats Directive occur in this area on a regular basis.

There is a spatial overlap between the proposed project area and the following SACs designated for marine mammals:

- St Johns Point SAC (Common Bottlenose Dolphin)
- Bunduff Lough and Machair/Trawalua/Mullaghmore SAC (Harbour Porpoise)
- Donegal Bay/Murvagh SAC (Harbour Seal)
- Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC (Harbour seal)
- Ballysadare Bay SAC (Harbour seal)
- Killala Bay/Moy Estuary SAC (Harbour seal)

Bottlenose dolphin and/or Harbour Porpoise are recorded from the waters within and surrounding St Johns Point SAC and Bunduff Lough and Machair/Trawalua/Mullaghmore SAC.

Harbour seal are frequently recorded from the waters surrounding the Irish coast and favour sheltered inlets as haul out sites. Figures 2 to 4 show the locations of the recorded Harbour seal haul out sites for each area within an SAC as per the site specific conservation objectives.

Figure 2. Area B. Harbour seal haul out sites.

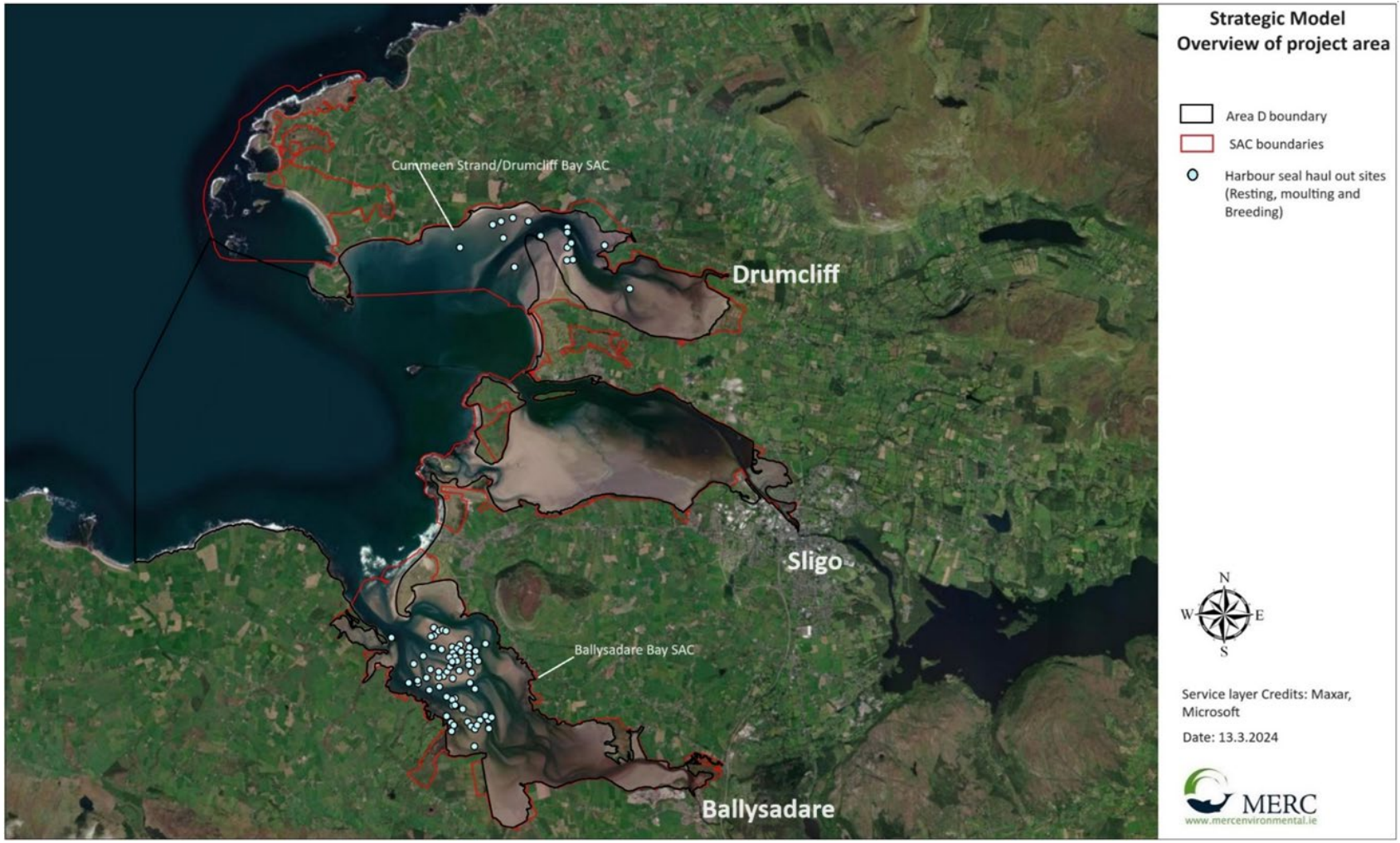

Figure 3. Area D Harbour seal haul out sites.

Figure 4. Area E Harbour seal haul out sites.

6. Screening of potential impacts

6.1 Zone of Influence

The first step in screening for appropriate assessment is to identify which European sites are likely to be within the ZoI of a proposed project and thereby have the potential to be affected by project related impacts. This was carried out by applying the SPR model. The proposed project, described in section 4, was reviewed to establish if a source/pathway existed and if so, what sensitive receptors might be affected (**Table 2**)

No part of the proposed project will have any physical interaction with the seabed. Therefore no potential for deployment or operation impacts on marine habitats are possible.

Table 2. Source-Path-Receptor matrix

Phase	Source (pressure)	Receptor	Area of Impact (Direct)
Vessel presence	Disturbance and vessel related underwater noise	Marine mammals, Birds and fish	Entire area of proposed licence area where vessel is operating.
Operation (MBES, SBS)	Harm or injury as a result of underwater noise related to bathymetric surveys	Marine mammals, Birds and fish	Entire area of proposed licence area where MBES and SBS will be deployed.
Operation (VMADCP, LiDAR, CTD)	No potential for impact identified as a result of any ADCP deployments	N/A	N/A

Following a review of the project scope of works, to include deployment and operation, the ZoI of the proposed project is taken as the direct area of the vessel operations, to include the area of ensonification by the multibeam and/or side scan sonar and all European sites designated for Annex II marine mammals associated with European sites which have the potential to utilise the waters within the proposed five areas as shown in figure 1. The ZoI also includes all SACs designated for Annex II fish species within 100km of the outer boundary of the proposed project areas, a conservative distance relative to the scale and scope of the project. The ZoI also includes all SPAs designated for waterbirds that utilise the intertidal areas for foraging within the proposed licence areas.

6.2 European sites screened for potential impact

Potential source-path-receptor links have been identified between the proposed project and a number of European sites. The relevant QIs and SCIs within the ZoI are given in **Table 3**. SCIs for SPAs with the potential for seabirds to be in the survey areas and connected to SPAs within foraging range of these areas are given in **Table 4**.

Table 3. European sites within ZoI

Site code	SAC	Distance (km) approx.	Sensitive receptor
000090	Glengarriff Harbour and Woodland SAC	450	Harbour seal
000101	Roaringwater Bay and islands SAC	450	Grey seal, Harbour porpoise
000133	Donegal Bay (Murvagh) SAC	Within Area B	Harbour seal
000138	Durnish Lough SAC	Within Area B	None recorded
000147	Horn Head and Rinclevan SAC	97	Grey seal
000163	Lough Eske and Ardnamona Wood SAC	0 (adjacent)	Atlantic Salmon
000189	Slieve League SAC	Within Area A	None recorded
000190	Slieve Tooey/Tormore Island/Loughros beg Bay SAC	17	Grey seal
000191	St Johns Point SAC	Within Area A	Bottlenose Dolphin
000197	West of Ardara/Maas Road SAC	35	Harbour seal, Atlantic Salmon
000204	Lambay Island SAC	446	Grey seal, Harbour seal, Harbour Porpoise
000213	Inishmore Island SAC	136	Harbour Porpoise
000268	Galway Bay Complex SAC	235	Harbour seal
000278	Inishbofin and Inishshark SAC	134	Grey seal
000328	Slyne Head Islands SAC	155	Grey seal
000428	Lough Melvin SAC	4	Otter, Atlantic Salmon
000458	Killala Bay/Moy Estuary SAC	Within Area E	Harbour seal, Sea Lamprey
000495	Duvillaun Islands SAC	80	Grey seal
000507	Inishkea Islands SAC	73	Grey seal
000622	Ballysadare Bay SAC	Within Area D	Harbour seal
000625	Bunduff Lough and Machair/Trawalua/Mullaghmore SAC	Within Area C	Harbour Porpoise
000627	Cummeen strand/Drumcliff Bay (Sligo Bay) SAC	Within Area D	Harbour seal, Sea Lamprey, River Lamprey
000707	Saltee Islands SAC	615	Grey seal
000764	Hook Head SAC	755	Bottlenose Dolphin, Harbour Porpoise
000781	Slaney River Valley SAC	600	Harbour seal
001141	Gweedore Bay and Islands SAC	46	Harbour Porpoise
001482	Clew Bay Complex SAC	130	Harbour seal
001680	Streedagh Point Dunes SAC	Within Area C	None recorded
001898	Unshin River SAC	0 (adjacent)	Otter, Atlantic Salmon
001976	Lough Gill SAC	0 (adjacent)	Otter, Atlantic Salmon, Sea Lamprey, River Lamprey
002111	Kilkieran Bay and Islands SAC	185	Harbour seal, Harbour Porpoise
002158	Kenmare River SAC	350	Harbour seal, Harbour Porpoise
002165	Lower River Shannon SAC	265	Bottlenose Dolphin
002172	Blasket Islands SAC	315	Grey seal
002172	Blasket Islands SAC	300	Harbour porpoise
002269	Carnsore Point SAC	770	Harbour Porpoise

002283	Rutland Island and Sound SAC	48	Harbour seal
002287	Lough Swilly SAC	160	Harbour Porpoise
002298	River Moy SAC	0 (adjacent)	Atlantic Salmon. Otter
002327	Belgica Mount Province SAC	450	Bottlenose Dolphin, Harbour Porpoise
002329	South-west Porcupine Bank SAC	532	Bottlenose Dolphin
002953	Blackwater Bank SAC	670	Harbour Porpoise
002998	West Connacht coast SAC	52	Bottlenose Dolphin, Harbour Porpoise
003000	Rockabill to Dalkey Islands SAC	427	Harbour porpoise
003001	Porcupine Bank Canyon SAC	510	Bottlenose Dolphin
003015	Codling Fault Zone SAC	565	Harbour Porpoise
004031	Drumcliff Bay SPA	Within Area D	Sanderling, Bar-tailed Godwit, Wetland and Waterbirds
004035	Cummeen Strand SPA	Within Area D	Light-bellied Brent Goose, Oystercatcher Redshank, Wetland and Waterbirds
004036	Killala Bay/Moy Estuary SPA	Within Area E	Ringed Plover, Golden Plover, Grey Plover, Sanderling, Dunlin, Bar-tailed Godwit, Curlew, Redshank, Wetland and Waterbirds
004129	Ballysadare Bay SPA	Within Area D	Light-bellied Brent Goose, Grey Plover Dunlin, Bar-tailed Godwit, Redshank, Wetland and Waterbirds
004115	Inishduff SPA	Within Area A	Shag
004150	West Donegal Coast SPA	Within Area A	Fulmar, Cormorant, Shag Peregrine, Herring Gull, Kittiwake, Razorbill Chough
004151	Donegal Bay SPA	Within Area B	Great Northern Diver, Light-bellied Brent Goose, Common Scoter Sanderling, Wetland and Waterbirds

Table 4. SPA and their SCIs within the ZoI. *After Woodward et al. (2019).*

Species	Mean Breding Season Foraging range (km)	SPAs where species is a SCI
Manx Shearwater	1,346.8	Blasket Islands SPA (004008)
		Deenish Island and Scariff Island SPA (004175)
		North-west Irish Sea SPA (004236)
		Puffin Island SPA (004003)
		Seas off Wexford SPA (004237)
		Skelligs SPA (004007)
Fulmer	542.3	Deenish Island and Scariff Island SPA (004175)
		Horn Head to Fanad Head SPA (004194)
		Beara Peninsula SPA (004155)
		Blasket Islands SPA (004008)
		Clare Island SPA (004136)
		Cliffs of Moher SPA (004005)
		Duvillaun Islands SPA (004175)
		Dingle Peninsula SPA (004153)
		Duvillaun Islands SPA (004111)
		High Island, Inishshark and Davillaun SPA (004144)
		Iveragh Peninsula SPA (004154)
Storm Petrel	336	Blasket Islands SPA (004008)
		Deenish Island and Scariff Island SPA (004175)
		Skelligs SPA (004007)
		Duvillaun Islands SPA (004175)
		Bills Rocks SPA (004177)
		Illanmaster SPA (004074)
		Inishglora and Inishkeeragh SPA (004084)
		Magharee Islands SPA (004125)
		Puffin Island SPA (004003)
		Stags of Broad Haven SPA (0040712)
Gannet	315.2	Seas off Wexford SPA (004237)
		Skelligs SPA (004007)
		Saltee Islands SPA (004002)
		The Bull and The Cow Rocks SPA (004066)
Kittiwake	156.1	Aughris Head SPA (004133)
		Horn Head to Fanad Head SPA (004194)
		Inishmore SPA (004152)
Puffin	137.1	Bills Rocks SPA (004177)
		Cliffs of Moher SPA (004005)
Lesser Black-Backed Gull	127	Inishglora and Inishkeeragh SPA (004084)
		Lough Derg (Donegal) SPA
		Inishbofin, Inishdooey and Inishbeg SPA
Razor Bill	88.7	Horn Head to Fanad Head SPA (004194)
		Clare Island SPA (004136)
Herring Gull	58.8	Inishmurray SPA (004068)
		Lough Derg (Donegal) SPA
Arctic Tern	25.7	Inishmurray SPA (004068)
Cormorant	25.6	Ardboline Island and Horse Island SPA
Guillemot	73.2	Horn Head to Fanad Head SPA (004194)
Shag	13.2	Inishmurray SPA (004068)
		Inishduff SPA (004115)

6.3 Assessment of Impact

This section identifies and considers potential impacts; 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 impacts resulting from the presence of the vessel and associated vessel noise and underwater noise associated with the deployment of acoustic instrumentation had the potential to impact marine mammals, birds and fish. These potential impacts are further assessed below. Direct and indirect impacts related to the project are discussed in section 8.2. Cumulative impacts are considered under section 9.

6.3.1 Direct and Indirect Impacts

6.3.1.1 Disturbance, harm or injury as a result of vessel presence

The proposed survey vessel has not been identified but 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 all areas of the proposed project.

It is widely recognised that seals have large foraging ranges, grey seals tagged in off the south coast of Ireland have been recorded off the coast of mainland Europe and west to the continental shelf (Cronin *et al,* 2011) more recently Carter *et al* (2022) has published foraging ranges for grey and harbour seals. Therefore, it is possible the either species could forage within the areas of the proposed project site. However, disturbance due to the presence of the vessel would not significantly contribute to the overall vessel traffic in this area which grey or harbour seals would be habituated to. However, vessels could cause disturbance to grey and harbour seals at their haul out sites if operating close to them.

There are no European sites designated for Grey seal within or adjacent to any of the proposed survey areas and therefore impacts on Grey seal are not considered possible.

Within Areas B, D and E there is a spatial overlap with Donegal Bay (Murvagh) SAC, Killala Bay/Moy Estuary SAC, Ballysadare Bay SAC and Cummeen strand/Drumcliff Bay (Sligo Bay) SAC. In these areas there is a potential for disturbance to the Harbour seal QI for these sites should the vessel be operating within close proximity (100m) of the haul out sites for these species.

Bottlenose dolphin is a QI for St Johns Point SAC (Area A) and Harbour porpoise is a QI Bunduff Lough and Machair/Trawalua/Mullaghmore SAC (Area C). Both species will be habituated to vessels of the size proposed for the project and no impact is likely.

The intertidal areas of Donegal Bay SPA, Drumcliff Bay SPA, Cummen Strand SPA and Killala Bay/Moy Estuary SPA provide important foraging areas for wintering waterfowl and waders. However, all elements of the proposed survey will be when the intertidal area is covered by seawater and hence not available for foraging to wetland bird species.

Seabird foraging ranges, as published by Woodward *at a*l (2019) indicate foraging ranges of many hundreds of kilometres e.g. up to 1,346.8km for Max Shearwater and 542.3km for Fulmer. Therefore, it is possible that selected seabirds, associated with more distant European sites, could forage in the proposed project area. Temporary disturbance to seabirds, should they be foraging in the subtidal area at the same

time as the proposed survey, may occur. However, given the scale of the available foraging habitat and short duration (days) of the survey, it is considered that the magnitude of the disturbance would not have the potential to impact their fitness, and therefore does not have the potential to lead to any population-level effects at any SPA or other adjacent colonies.

Disturbance to the Harbour seal QI for Donegal Bay (Murvagh) SAC, Killala Bay/Moy Estuary SAC, Ballysadare Bay SAC and Cummeen strand/Drumcliff Bay (Sligo Bay) SAC is considered possible without mitigation.

6.3.1.2 Disturbance, harm or injury as a result of vessel and acoustic instrumentation underwater noise

The effects of underwater noise on marine mammals can lead to disturbance, harm or injury depending on the type and frequency of the noise and distance of the receptor.

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. MBES and SSB produce a continuous string of "pings" sound which are more representative of impulsive sound.

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* 2003). 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 are generally divided into different functional hearing groups as shown in Table 5.

Table 5. 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 6. 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 SSB may be operating in the range of 300 to 500 KHz and as such are outside of the recorded auditory range of pinnipeds. Therefore no potential for impact is predicted on grey or harbour seal. 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 significant impact on either species due to the large area of alternative foraging habitat and the extremely shallow waters in which the survey will take place (intertidal, when covered at high water). However, with due regard to the precautionary principle temporary impacts on Bottlenose dolphin and Harbour porpoise are considered possible. 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 to the operation of ADCPs have been observed (Coakley, 2011) .

Underwater noise related disturbance to bottlenose dolphin and harbour porpoise as a result of MBES and SSB are considered possible.

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 15km along the coastline. Three sites are designated for otter within the ZoI of the project. While temporary disturbance to otter, from the presence of the vessel, may occur should they be foraging in marine intertidal or subtidal habitats when surveys are being conducted, significant impacts are not considered possible due to the short duration (days) and wide availability of alternative suitable foraging habitat in the area.

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 7 provides the guidelines for fish such as Atlantic salmon.

Table 7. Recommended guidelines for shipping and other continuous sources.

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 7 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.

The nearest site designated for Salmon is the River Moy SAC which is directly connected (hydrologically) to survey area E. It is considered possible that while some behavioural response in salmon may occur should they be migrating through the subtidal channel linking the River Moy to the waters of Killala Bay may be possible, this would not have a significant effect on their migration as the surveys will be taking place over the intertidal area, away from the main flow of the River Moy which any migratory fish would be utilising.

A summary of European sites screened in is provided in **Table 8**. It should be noted that as all **non-marine** habitats are outside the ZoI of the proposed project they have not been considered further in this assessment.

Table 8. Summary of sites screened in.

Site code	SAC	Species	Screening assessment	Rationale
000090	Glengarriff Harbour and Woodland SAC	Harbour seal	Screened out	SPR link too weak
000101	Roaringwater Bay and islands SAC	Grey seal, Harbour porpoise	Screened out	SPR link too weak
000133	Donegal Bay (Murvagh) SAC	Harbour seal	Screened in	Disturbance
000138	Durnish Lough SAC	None recorded	Screened out	N/A
000147	Horn Head and Rinclevan SAC	Grey seal	Screened out	SPR link too weak
000163	Lough Eske and Ardnamona Wood SAC	Atlantic Salmon	Screened out	SPR link too weak
000189	Slieve League SAC	None recorded	Screened out	N/A
000190	Slieve Tooey/Tormore Island/Loughros beg Bay SAC	Grey seal	Screened out	SPR link too weak
000191	St Johns Point SAC	Bottlenose Dolphin	Screened in	Disturbance
000197	West of Ardara/Maas Road SAC	Harbour seal, Atlantic Salmon	Screened out	SPR link too weak
000204	Lambay Island SAC	Grey seal, Harbour seal, Harbour Porpoise	Screened out	SPR link too weak
000213	Inishmore Island SAC	Harbour Porpoise	Screened out	SPR link too weak
000268	Galway Bay Complex SAC	Harbour seal	Screened out	SPR link too weak
000278	Inishbofin and Inishshark SAC	Grey seal	Screened out	SPR link too weak
000328	Slyne Head Islands SAC	Grey seal	Screened out	SPR link too weak
000428	Lough Melvin SAC	Otter, Atlantic Salmon	Screened out	SPR link too weak
000458	Killala Bay/Moy Estuary SAC	Harbour seal	Screened in	Disturbance
		Sea Lamprey	Screened out	No potential for impact identified
000495	Duvillaun Islands SAC	Grey seal	Screened out	SPR link too weak
000507	Inishkea Islands SAC	Grey seal	Screened out	SPR link too weak
000622	Ballysadare Bay SAC	Harbour seal	Screened in	Disturbance
000625	Bunduff Lough and Machair/Trawalua/Mullaghmore SAC	Harbour Porpoise	Screened in	Disturbance
000627	Cummeen strand/Drumcliff Bay (Sligo Bay) SAC	Harbour seal,	Screened in	Disturbance
		Sea Lamprey,	Screened out	No potential for impact identified
		River Lamprey	Screened out	No potential for impact identified
000707	Saltee Islands SAC	Grey seal	Screened out	SPR link too weak
000764	Hook Head SAC	Bottlenose Dolphin, Harbour Porpoise	Screened out	SPR link too weak
000781	Slaney River Valley SAC	Harbour seal	Screened out	SPR link too weak
001141	Gweedore Bay and Islands SAC	Harbour Porpoise	Screened out	SPR link too weak
001482	Clew Bay Complex SAC	Harbour seal	Screened out	SPR link too weak
001680	Streedagh Point Dunes SAC	None recorded	Screened out	SPR link too weak
001898	Unshin River SAC	Otter, Atlantic Salmon	Screened out	No potential for impact identified
001976	Lough Gill SAC	Otter, Atlantic Salmon, Sea Lamprey, River Lamprey	Screened out	No potential for impact identified
002111	Kilkieran Bay and Islands SAC	Harbour seal, Harbour Porpoise	Screened out	SPR link too weak
002158	Kenmare River SAC	Harbour seal, Harbour Porpoise	Screened out	SPR link too weak
002165	Lower River Shannon SAC	Bottlenose Dolphin	Screened out	SPR link too weak
002172	Blasket Islands SAC	Grey seal	Screened out	SPR link too weak
002172	Blasket Islands SAC	Harbour porpoise	Screened out	SPR link too weak
002269	Carnsore Point SAC	Harbour Porpoise	Screened out	SPR link too weak

002283	Rutland Island and Sound SAC	Harbour seal	Screened out	SPR link too weak
002287	Lough Swilly SAC	Harbour Porpoise	Screened out	SPR link too weak
002298	River Moy SAC	Atlantic Salmon. Otter	Screened out	No potential for impact identified
002327	Belgica Mount Province SAC	Bottlenose Dolphin, Harbour Porpoise	Screened out	SPR link too weak
002329	South-west Porcupine Bank SAC	Bottlenose Dolphin	Screened out	SPR link too weak
002953	Blackwater Bank SAC	Harbour Porpoise	Screened out	SPR link too weak
002998	West Connacht coast SAC	Bottlenose Dolphin, Harbour Porpoise	Screened out	SPR link too weak
003000	Rockabill to Dalkey Islands SAC	Harbour porpoise	Screened out	SPR link too weak
003001	Porcupine Bank Canyon SAC	Bottlenose Dolphin	Screened out	SPR link too weak
003015	Codling Fault Zone SAC	Harbour Porpoise	Screened out	SPR link too weak
004031	Drumcliff Bay SPA	Sanderling, Bar-tailed Godwit, Wetland and Waterbirds	Screened out	No potential for impact identified
004035	Cummeen Strand SPA	Light-bellied Brent Goose, Oystercatcher Redshank, Wetland and Waterbirds	Screened out	No potential for impact identified
004036	Killala Bay/Moy Estuary SPA	Ringed Plover, Golden Plover, Grey Plover, Sanderling, Dunlin, Bar-tailed Godwit, Curlew, Redshank, Wetland and Waterbirds	Screened out	No potential for impact identified
004129	Ballysadare Bay SPA	Light-bellied Brent Goose, Grey Plover Dunlin, Bar-tailed Godwit, Redshank, Wetland and Waterbirds	Screened out	No potential for impact identified
004115	Inishduff SPA	Shag	Screened out	No potential for impact identified
004150	West Donegal Coast SPA	Fulmar, Cormorant, Shag Peregrine, Herring Gull, Kittiwake, Razorbill Chough	Screened out	No potential for impact identified
004151	Donegal Bay SPA	Great Northern Diver, Light-bellied Brent Goose, Common Scoter Sanderling, Wetland and Waterbirds	Screened out	No potential for impact identified
All additional SPAs designated for seabirds associated with more distant SPAs with the potential to use the proposed project area for foraging				
All additional SPAs not listed above	All SCIs	Screened out		No potential for any project related activity has been identified that has the potential to impact the SCIs for any SPA designated for seabirds within foraging range

A summary of impact prediction relative to the site-specific conservation objectives of the European sites screened in is provided in **Table 9** below.

Table 9. Summary of impact prediction for sites screened in

Donegal Bay (Murvagh) SAC (000133)		
Mudflats and sandflats not covered by seawater at low tide [1140]		
Attribute	**Rationale**	**Potential for impact**
Habitat Area: The permanent habitat area is stable or increasing, subject to natural processes	**No potential for impact**. No physical interaction with seabed	No potential for impact
Community distribution: Conserve the following community types in a natural condition: Estuarine fine sands dominated by polychaetes and oligochaetes community complex; and Intertidal muddy sand to sand dominated by polychaetes, bivalves and crustaceans community complex	**No potential for impact**. No physical interaction with seabed	No potential for impact
Phoca vitulina* (Harbour Seal) [1365]. *Note CO's relate to within site only		
Access to suitable habitat: Species range within the site should not be restricted by artificial barriers to site use	Disturbance resulting from vessel working in close proximity to haul out sites may result in a temporary artificial barrier which could result in temporary access to habitat.	Potential for impact
Breeding behaviour: The breeding sites should be maintained in a natural condition	**No Impact predicted.**	No potential for impact
Moulting behaviour: The moult haul-out sites should be maintained in a natural condition	**No Impact predicted.**	No potential for impact
Resting behaviour: The resting haul-out sites should be maintained in a natural condition	**No Impact predicted.**	No potential for impact
Disturbance: Human activities should occur at levels that do not adversely affect the harbour seal population at the site	Potential disturbance resulting from vessel working in close proximity to haul out sites may result in disturbance to haul out sites which could result in impacts to the seal population within the site during pupping, moulting and resting.	Potential for impact
Fixed coastal dunes with herbaceous vegetation ('grey dunes') [2130]		
Not relevant: Habitat and all QIs relate to a terrestrial habitat outside of the ZoI of the proposed project.		No potential for impact
Humid dune slacks [2190]		
Not relevant: Habitat and all QIs relate to a terrestrial habitat outside of the ZoI of the proposed project.		No potential for impact
St Johns Point SAC (000191)		
Large shallow inlets and Bays [1160]		
Habitat Area: The permanent habitat area is stable or increasing, subject to natural processes.	**No potential for impact**. Project does not have the potential to alter habitat area.	No potential for impact
Community extent: Maintain the extent of the Maërl-dominated community, subject to natural processes	**No potential for impact**. No physical interaction with seabed	No potential for impact

Community structure: Conserve the high quality of the Maërl-dominated community, subject to natural processes	**No potential for impact**. No physical interaction with seabed	No potential for impact
Community structure: Conserve the following community types in a natural condition: Intertidal coarse sediment with enchytraeid oligochaetes and Scolelepis squamata community complex; Sand to mixed sediment with polychaetes and Edwardsia spp. community complex; Intertidal reef community complex; Laminariadominated community complex; Subtidal reef with echinoderms and sponges community complex	**No potential for impact**. No physical interaction with seabed	No potential for impact
Reefs [1170]		
Habitat Area: The permanent habitat area is stable or increasing, subject to natural processes.	**No potential for impact**. Project does not have the potential to alter habitat area.	No potential for impact
Habitat distribution: The distribution of reefs remains stable, subject to natural processes	**No potential for impact**. No physical interaction with seabed	No potential for impact
Community structure: Conserve the following community types in a natural condition: intertidal reef community complex; Laminaria-dominated community complex; Subtidal reef with echinoderms and sponges community complex	**No potential for impact**. No physical interaction with seabed	No potential for impact
Vegetated sea cliffs of the Atlantic and Baltic Coasts [1230]		
No Site specific Conservation objectives listed	**No potential for impact**. Sea cliffs donot potential to be impacted as there will be no physical interaction with this habitat and it is considered to be outside the ZoI of the proposed project.	No potential for impact
Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites [6210]		
Not relevant: Habitat and all QIs relate to a terrestrial habitat outside of the ZoI of the proposed project.		No potential for impact
Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) [6410]		
Not relevant: Habitat and all QIs relate to a terrestrial habitat outside of the ZoI of the proposed project.		No potential for impact
Alkaline fens [7230]		
Not relevant: Habitat and all QIs relate to a terrestrial habitat outside of the ZoI of the proposed project.		No potential for impact
Limestone pavements [8240]		
Not relevant: Habitat and all QIs relate to a terrestrial habitat outside of the ZoI of the proposed project.		No potential for impact
Submerged or partially submerged sea caves [8330]		
Distribution: The distribution of sea caves occurring in the SAC should remain stable, subject to natural processes	**No potential for impact**. Project not relevant to altering the distribution of sea caves	No potential for impact
Community structure: Conserve the following community type in a natural condition: Laminaria-dominated community complex	**No potential for impact**. No physical interaction with seabed	No potential for impact

Community structure: Human activities should occur at levels that do not adversely affect the ecology of sea caves in the SAC	**No potential for impact**. No physical interaction with seabed	No potential for impact
Bottlenose dolphin (*Tursiops truncatus*) [1349]		
No Site specific Conservation objectives listed. Therefore COs are assumed to be the same/similar to other SACs designated for this species (West Connaught Coast SAC) as listed below		
Access to suitable habitat: Species range within the site should not be restricted by artificial barriers to site use	Potential for the creation of temporary artificial barriers to suitable habitat.	Potential for impact
Disturbance: Human activities should occur at levels that do not adversely affect the bottlenose dolphin population at the site	Potential for underwater noise from acoustic survey equipment resulting in temporary behavioural changes should the species be within the area during surveys.	Potential for impact
Bunduff Lough and Machair/Trawalua/Mullaghmore SAC (000625)		
Mudflats and sandflats not covered by seawater at low tide		
Habitat area: The permanent habitat area is stable or increasing, subject to natural processes	**No potential for impact**. Project not relevant to altering the habitat area	No potential for impact
Community distribution: Conserve the following community type in a natural condition: Fine to very fine sand community complex	**No potential for impact**. No physical interaction with seabed	No potential for impact
Large shallow inlets and bays		
Habitat area: The permanent habitat area is stable or increasing, subject to natural processes	**No potential for impact**. Project not relevant to altering the habitat area	No potential for impact
Community distribution: Conserve the following community types in a natural condition: Fine to very fine sand community complex; Intertidal reef community complex; Laminaria-dominated community complex.	**No potential for impact**. No physical interaction with seabed	No potential for impact
Reefs		
Habitat area: The permanent habitat area is stable or increasing, subject to natural processes	**No potential for impact**. Project not relevant to altering the habitat area	No potential for impact
Community distribution: The distribution of reefs remains stable, subject to natural processes	**No potential for impact**. Project does not have potential to alter reef distribution	No potential for impact
Community structure: Conserve the following community types in a natural condition: Intertidal reef community complex; Laminaria-dominated community complex	**No potential for impact**. No physical interaction with seabed	No potential for impact
***Phocoena Phocoena* (Harbour Porpoise)**		
No Site specific Conservation objectives listed. Therefore COs are assumed to be the same/similar to other SACs designated for this species (Rockabill to Dalkey Island SAC) as listed below		

Access to suitable habitat: Species range within the site should not be restricted by artificial barriers to site use	Potential for the creation of temporary artificial barriers to suitable habitat.	Potential for impact
Disturbance: Human activities should occur at levels that do not adversely affect the bottlenose dolphin population at the site	Potential for underwater noise from acoustic survey equipment resulting in temporary behavioural changes should the species be within the area during surveys.	Potential for impact
Petalwort *Petalophyllum ralfsii*		
Not relevant: Species and all QIs relate to a terrestrial species outside of the ZoI of the proposed project.		No potential for impact
Shifting dunes along the shoreline with (white dunes)		
Not relevant: Habitat and all QIs relate to a terrestrial habitat outside of the ZoI of the proposed project.		No potential for impact
Fixed coastal dunes with herbaceous vegetation (grey dunes)		
Not relevant: Habitat and all QIs relate to a terrestrial habitat outside of the ZoI of the proposed project.		No potential for impact
Machairs (* in Ireland)		
Not relevant: Habitat and all QIs relate to a terrestrial habitat outside of the ZoI of the proposed project.		No potential for impact
***Juniperus communis* formations on heaths or calcareous grasslands [5130]**		
Not relevant: Habitat and all QIs relate to a terrestrial habitat outside of the ZoI of the proposed project.		No potential for impact
Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites)		
Not relevant: Habitat and all QIs relate to a terrestrial habitat outside of the ZoI of the proposed project.		No potential for impact
Alkaline fens		
Not relevant: Habitat and all QIs relate to a terrestrial habitat outside of the ZoI of the proposed project.		No potential for impact
***Euphydryas aurinia* (Marsh Fritillary0 [1065]**		
Not relevant: Species and all QIs relate to a terrestrial species outside of the ZoI of the proposed project.		No potential for impact
Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC (000627)		
Estuaries [1130]		
Habitat Area: The permanent habitat area is stable or increasing, subject to natural processes.	**No potential for impact**. No physical interaction with seabed	No potential for impact
Community extent: Maintain the extent of the *Zostera*-dominated community and the Mytilidae-dominated community complex, subject to natural processes	**No potential for impact**. No physical interaction with seabed	No potential for impact
Community structure: *Zostera* density (shoots per m^2): Conserve the high quality of the *Zostera*-dominated community, subject to natural processes	**No potential for impact**. No physical interaction with seabed	No potential for impact

Community structure *Mytilus edulis* density (Individuals/m²): Conserve the high quality of the Mytilidae-dominated community complex, subject to natural processes	**No potential for impact**. No physical interaction with seabed.	No potential for impact
Community distribution: Conserve the following community types in a natural condition: Intertidal fine sand with *Peringia ulvae* and *Pygospio elegans* community complex; Estuarine mixed sediment to sandy mud with *Hediste diversicolor* and oligochaetes community complex; Fine sand with *Angulus* spp. And *Nephtys* spp. community complex; Sand to mixed sediment with amphipods community; Intertidal reef community.	**No potential for impact**. No physical interaction with seabed	No potential for impact
Mudflats and sandflats not covered by seawater at low tide [1140]		
All Conservation Objectives and subsequent impact prediction for the Mudflats and sandflats not covered by seawater at low tide habitat are identical to those for the Estuaries habitat above. Therefore, there is not potential for impact.		
***Phoca vitulina* (Harbour Seal) [1365]**		
Access to suitable habitat: Species range within the site should not be restricted by artificial barriers to site use	Potential disturbance resulting from vessel working in close proximity to haul out sites may result in a temporary artificial barrier which could result in temporary access to habitat.	Potential for impact
Breeding behaviour: The breeding sites should be maintained in a natural condition	**No Impact predicted.**	No potential for impact
Moulting behaviour: The moult haul-out sites should be maintained in a natural condition	**No Impact predicted.**	No potential for impact
Resting behaviour: The resting haul-out sites should be maintained in a natural condition	**No Impact predicted.**	No potential for impact
Disturbance: Human activities should occur at levels that do not adversely affect the harbour seal population at the site	Disturbance resulting from vessel working in close proximity to haul out sites may result in disturbance to haul out sites which could result in impacts to the seal population within the site during pupping, moulting and resting.	Potential for impact
***Petromyzon marinus* (Sea Lamprey) [1095]**		
Distribution: extent of anadromy: No barriers for migratory life stages of lamprey moving from freshwater to marine habitats and vice versa	No potential to create barriers to lamprey movement	No potential for impact
***Petromyzon Fluviatilis* (River Lamprey) [1099]**		
Distribution: extent of anadromy: No barriers for migratory life stages of lamprey moving from freshwater to marine habitats and vice versa	No potential to create barriers to lamprey movement	No potential for impact
Marsh Snail Vertigo angustior [1014]		

Not relevant: Species and all QIs relate to a terrestrial species outside of the ZoI of the proposed project.		No potential for impact
Embryonic shifting dunes [2110]		
Not relevant: Habitat and all QIs relate to a terrestrial habitat outside of the ZoI of the proposed project.		No potential for impact
Shifting dunes along the shoreline with (white dunes) [2120]		
Not relevant: Habitat and all QIs relate to a terrestrial habitat outside of the ZoI of the proposed project.		No potential for impact
Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]		
Not relevant: Habitat and all QIs relate to a terrestrial habitat outside of the ZoI of the proposed project.		No potential for impact
***Juniperus communis* formations on heaths or calcareous grasslands [5130]**		
Not relevant: Habitat and all QIs relate to a terrestrial habitat outside of the ZoI of the proposed project.		No potential for impact
Petrifying springs with tufa formation (Cratoneurion) [7220]		
Not relevant: Habitat and all QIs relate to a freshwater habitat outside of the ZoI of the proposed project.		No potential for impact
Ballysadare Bay SAC		
Estuaries [1130]		
Habitat Area: The permanent habitat area is stable or increasing, subject to natural processes.	**No potential for impact**. No physical interaction with seabed	No potential for impact
Community extent: Maintain the extent of the *Zostera*-dominated community subject to natural processes	**No potential for impact**. No physical interaction with seabed	No potential for impact
Community structure: *Zostera* density: Conserve the high quality of the *Zostera*-dominated community, subject to natural processes	**No potential for impact**. No physical interaction with seabed	No potential for impact
Community distribution: Conserve the following community types in a natural condition: Intertidal sand with *Angulus tenuis* community complex; Muddy sand to sand with *Hediste diversicolor*, *Corophium volutator* and *Peringia ulvae* community complex; Fine sand with polychaetes community complex; Sand with bivalves, nematodes and crustaceans community complex; Intertidal reef community complex; Subtidal reef community complex	**No potential for impact**. No physical interaction with seabed	No potential for impact
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.	**No potential for impact**. No physical interaction with seabed	No potential for impact
Community extent: Maintain the extent of the *Zostera*-dominated community subject to natural processes	**No potential for impact**. No physical interaction with seabed	No potential for impact

Community structure: *Zostera* density (Shots/m^2): Conserve the high quality of the *Zostera*-dominated community, subject to natural processes	**No potential for impact**. No physical interaction with seabed	No potential for impact
Community distribution: Conserve the following community types in a natural condition: Intertidal sand with *Angulus tenuis* community complex; Muddy sand to sand with *Hediste diversicolor*, *Corophium volutator* and *Peringia ulvae* community complex.	**No potential for impact**. No physical interaction with seabed	No potential for impact
***Phoca vitulina* (Harbour Seal) [1365]**		
Access to suitable habitat: Species range within the site should not be restricted by artificial barriers to site use	Potential disturbance resulting from vessel working in close proximity to haul out sites may result in a temporary artificial barrier which could result in temporary access to habitat.	Potential for impact
Breeding behaviour: The breeding sites should be maintained in a natural condition	**No Impact predicted.**	No potential for impact
Moulting behaviour: The moult haul-out sites should be maintained in a natural condition	**No Impact predicted.**	No potential for impact
Resting behaviour: The resting haul-out sites should be maintained in a natural condition	**No Impact predicted.**	No potential for impact
Disturbance: Human activities should occur at levels that do not adversely affect the harbour seal population at the site	Disturbance resulting from vessel working in close proximity to haul out sites may result in disturbance to haul out sites which could result in impacts to the seal population within the site during pupping, moulting and resting.	Potential for impact
Killala Bay/Moy Estuary SAC		
Estuaries [1130]		
Habitat Area: The permanent habitat area is stable or increasing, subject to natural processes.	**No potential for impact**. No physical interaction with seabed	No potential for impact
Community extent: Maintain the extent of the *Zostera*-dominated community subject to natural processes	**No potential for impact**. No physical interaction with seabed	No potential for impact
Community structure: *Zostera* density: Conserve the extent of the *Zostera*-dominated community, subject to natural processes	**No potential for impact**. No physical interaction with seabed	No potential for impact
Community distribution: *Zostera* density (Shoots/m^2): Conserve the high quality of the *Zostera*-dominated community, subject to natural processes		
Community distribution: Conserve the following community types in a natural condition: Muddy sand to fine sand dominated by *Hydrobia ulvae*, *Pygospio elegans* and *Tubificoides benedii*	**No potential for impact**. No physical interaction with seabed	No potential for impact

community complex; Estuarine muddy sand dominated by *Hediste diversicolor* and *Heterochaeta costata* community complex; Fine sand dominated by *Nephtys cirrosa* community complex		
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.	**No potential for impact**. No physical interaction with seabed	No potential for impact
Community extent: Maintain the extent of the *Zostera*-dominated community subject to natural processes	**No potential for impact**. No physical interaction with seabed	No potential for impact
Community structure: *Zostera* density (Shots/m^2): Conserve the high quality of the *Zostera*-dominated community, subject to natural processes	**No potential for impact**. No physical interaction with seabed	No potential for impact
Community distribution: Conserve the following community types in a natural condition: Muddy sand to fine sand dominated by *Hydrobia ulvae*, *Pygospio elegans* and *Tubificoides b*enedii community complex; Estuarine muddy sand dominated by *Hediste d*iversicolor and H*eterochaeta* costata community complex; Fine sand dominated by *Nephtys cirrosa* community complex	**No potential for impact**. No physical interaction with seabed	No potential for impact
***Phoca vitulina* (Harbour Seal) [1365]**		
Access to suitable habitat: Species range within the site should not be restricted by artificial barriers to site use	Potential disturbance resulting from vessel working in close proximity to haul out sites may result in a temporary artificial barrier which could result in temporary access to habitat.	**Potential for impact**
Breeding behaviour: The breeding sites should be maintained in a natural condition	**No Impact predicted.**	No potential for impact
Moulting behaviour: The moult haul-out sites should be maintained in a natural condition	**No Impact predicted.**	No potential for impact
Resting behaviour: The resting haul-out sites should be maintained in a natural condition	**No Impact predicted.**	No potential for impact
Disturbance: Human activities should occur at levels that do not adversely affect the harbour seal population at the site	Disturbance resulting from vessel working in close proximity to haul out sites may result in disturbance to haul out sites which could result in impacts to the seal population within the site during pupping, moulting and resting.	Potential for impact
***Petromyzon marinus* (Sea Lamprey) [1095]**		

Distribution: extent of anadromy: No barriers for migratory life stages of lamprey moving from freshwater to marine habitats and vice versa	No potential to create barriers to lamprey movement	No potential for impact
Population structure if juveniles: At least three age/size groups present	No Potential to impact population structure	No potential for impact
Juvenile density on fine sediment: Juvenile density at least 1/m²	No Potential to impact juvenile density	No potential for impact

7. In-combination Impacts

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 and acoustic 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 and vessel disturbance.

7.4.1 Approach to assessment of in-combination effects

The following approach has been taken 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.
- 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 100km (hydrologically) of the proposed project area were considered in this review. This is considered to be reasonable and appropriate relative to the scale and scope of the proposed project.
- 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.
- An assessment of the magnitude and /or extent of the identified likely cumulative effects was carried out.
- The significance of any impact identified was determined.

A summary of projects identified within the ZoI of the proposed project and their potential for in-combination effects is given in **Table 10**.

Table 10. Summary of project screened for in-combination effects

Project No.	Application licence no.	Applicant	Description/scope	Location	Potential for impact
1	FS007527	Donegal Co. Co.	Installation of a landing pontoon and access gangway to facilitate fishing punts fishing on the Erne Estuary.	Ballyshannon, Co. Donegal	No potential for combined impacts with this project due to the weak SPR links upstream of a hydrological gradient, distance and magnitude.
2	FS007553	Uisce Éireann	Strategic modelling study of water currents requiring deployment of 23 Acoustic Doppler Current Profilers (ADCPs) at various locations within the area.	Donegal Bay, Sligo Bay, Killala Bay	ADCPs are placed on the seabed to gather tidal information in trawl resistant frames. Previous assessments of ADCP deployments around the coast of Ireland have not identified any potential for impact associated with such deployments. As such no potential for in-combination effects is consider possible.
3	FS007245	Arranmore Wind Ltd.	Marine surveys at the proposed site in order to inform the specific location, design and layout of the proposed Arranmore Wind Park. The surveys will include geophysical, geotechnical, environmental and metocean campaigns	Off the coasts of Donegal, Leitrim and Sligo	Potential for underwater noise related impacts which may have the potential to act in-combination with the proposed project without mitigation
4	FS007189	Aniar Offshore Array Ltd.	Site investigations for offshore floating and static wind farm to include surveys to assess geophysical, technical, environmental, social, and economic factors.	Off the coast of counties Sligo, Leitrim and Donegal.	Potential for underwater noise related impacts which may have the potential to act in-combination with the proposed project without mitigation
5	FS006245	Puelo Ltd	Construction of revetment on foreshore side of existing Eden Bay Apartments	Bundoran, Co Donegal	No potential for combined impacts with this project due to the weak SPR links, distance, magnitude and lack of potential for noise and underwater related disturbance impacts.
6	FS005920	Donegal Co. Co.	Installation of navigational perch to accommodate a navigational light	Rutland Sound, Co. Donegal	No potential for combined impacts with this project due to the weak SPR links, its distance from the proposed project and its magnitude.
7	FS005746	Donegal Co. Co.	Construction of a sea outfall and diffuser associated with Bundoran Wastewater Treatment Works	Bundoran, Co Donegal	No potential for combined impacts with this project due to the weak SPR links, its distance from the proposed project and its magnitude.

8	FS006586	Donegal Co. Co.	Dredging and Pier extension.	Magheraroarty, County Donegal	No potential for combined impacts with this project due to the weak SPR links, its distance from the proposed project and its magnitude.
9	FS007084	Donegal Co. Co.	Dredging and beach nourishment at Magheraroarty Pier	Magheraroarty, County Donegal	No potential for combined impacts with this project due to the weak SPR links, its distance from the proposed project and its magnitude.
10	FS007086	Donegal Co. Co.	Installation of landing pontoon and access gangway to facilitate leisure craft and visiting yachts	Meevagh, Co. Donegal	No potential for combined impacts with this project due to the weak SPR links, its distance from the proposed project and its magnitude.
11	FS006505	Irish Wave Energy Developers Association	Deployment of a Wave Rider buoy	Blacksod Bay, Co. Mayo	No potential for combined impacts with this project due to the weak SPR links, distance, magnitude and lack of potential for noise and underwater related disturbance impacts.
12	FS006451	Mayo County Council	Extension to the existing pier and construction of a new slipway.	Frenchport, Co. Mayo	Project competed. No potential for impact identified.
13	FS005726	SEAI	Development a wave energy converter test site	Annagh, Co. Mayo	Project superseded by FS007062. See project No. 17 below.
14	FS005725	Sligo Co. Co	Maintenance and capital dredging	Sligo Harbour, Sligo	No potential for combined impacts with this project due to the weak SPR links, its distance from the proposed project and its magnitude.
15	FS005988	Donegal Co. Co.	Maintenance dredging and beach nourishment	Magheraroarty, County Donegal	No potential for combined impacts with this project due to the weak SPR links, its distance from the proposed project and its magnitude.
16	FS006322	Carraig Fhada	Manual collection of seaweed	Kilglass to Cooanmore Bay, Sligo	No potential for impact identified. No potential for noise and underwater related disturbance impacts
17	FS007062	SEAI	Site Investigation for testing Offshore Floating Wind technology. Sub-bottom Profiling and Cone Penetration Testing to inform deployment of a turbine of up to 6MW at AMETS.	Off the west coast of Co. Mayo.	No potential for combined impacts with this project due to the weak SPR links, its distance from the proposed project and the limited magnitude of the proposed project.
18	FS007140	Donegal Co. Co.	Maintenance dredging	Magheraroarty, County Donegal	No potential for combined impacts with this project due to the weak SPR links, its distance from the proposed project and its magnitude.

Plans			
1	The Climate Action Plan 2023	These plans promote sustainable development in the maritime environment, Ireland's Climate Action Plan's renewable electricity targets and the protection and improvement of water quality national and locally.	No element of the proposed project has the potential to act in-combination with these 3 identified plans to result in any negative in-combination effects. Rather, the proposed project may contribute towards positive environmental impacts on the maritime environment as it is being conducted to facilitate modelling of waste water discharges which will improve water quality without the potential to contribute towards negative impacts on any European site.
2	River Basin Management Plans (RBMP)		
3	Designated Maritime Area Plans(DMAPs)		

Additional activities with the potential for combination impacts

No other marine projects have been identified for the proposed project area that could serve to lead to cumulative impacts.

7.4.2 Conclusion

Based on the review of the projects detailed above, and in the absence of additional projects being identified that could act in-combination with the proposed project, it is concluded that in the absence of mitigation Foreshore reference numbers FS007245 and FS007189 may have the potential to act in-combination with the proposed project.

8. Screening Assessment

It is concluded that based on a SPR model, in the absence of mitigation, the proposed project alone and in-combination with other projects has the potential to impact the conservation objectives of:

- **Harbour Seal** within Donegal Bay (Murvagh) SAC, Killala Bay/Moy Estuary SAC, Ballysadare Bay SAC, Cummeen strand/Drumcliff Bay (Sligo Bay) SAC and Bunduff lough and Machair/Trawalua/Mullaghmore SAC .
- **Harbour Porpoise** Within Bunduff lough and Machair/Trawalua/Mullaghmore SAC .
- **Bottlenose dolphin** within: St Johns Point SAC

Therefore it cannot be excluded on the basis of objective scientific information, following the preparation of this SISAA, that the proposed project may have a significant effect on a European Site.

Accordingly it is considered that Appropriate Assessment of the proposed project is required.

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