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MERC Consultants
environmental and conservation services

Supporting Information for Screening for Appropriate Assessment Report

Saoirse Wave Energy Project

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List of Tables

List of Figures

1. Introduction

Saoirse Wave Energy Limited is seeking a Marine Usage Licence (MUL) to undertake marine site investigations off the Clare coast (Figure 1) to progress the Saoirse Wave Energy project. The site investigation works, which constitute the proposed project, include geophysical, geotechnical, metocean, archaeological and environmental surveys which are required to facilitate the future design of the wave energy site, define the location of the array site, export cable corridor and landfall location options; and support the project planning application.

This document constitutes Supporting Information for Screening for Appropriate Assessment (SISAA) to assist the Competent Authority (Maritime Area Regulatory Authority (MARA)) in undertaking a screening exercise for Appropriate Assessment (AA). The screening exercise will aim to assess, in view of best scientific knowledge, if the proposed works, individually or in combination with other plans or projects, is likely to have significant effects on any European sites, with consideration to their conservation objectives. Under Article 6(3) of the EU Habitats Directive, an Appropriate Assessment must be undertaken for any plan or programme that is likely to have a significant effect on the conservation objectives of a Natura 2000 site. Article 6(4) of the Habitats Directive sets out the decision-making test which must be applied to plans or projects that may impact on a Natura 2000 site.

Appropriate Assessment is a four stage process as detailed below:

Stage One: Screening — the process which identifies the likely impacts upon a Natura 2000 site of a project or plan, either alone or in combination with other projects or plans, and considers whether these impacts are likely to be significant;

Stage Two: Appropriate Assessment — the consideration of the impact on the integrity of the Natura 2000 site of the project or plan, either alone or in combination with other projects or plans, with respect to the site's structure and function and its conservation objectives. Additionally, where there are adverse impacts, an assessment of the potential mitigation of those impacts;

Stage Three: Assessment of alternative solutions — the process which examines alternative ways of achieving the objectives of the project or plan that avoid adverse impacts on the integrity of the Natura 2000 site;

Stage Four: Assessment where no alternative solutions exist and where adverse impacts remain — an assessment of compensatory measures where, in the light of an assessment of imperative reasons of overriding public interest (IROPI), it is deemed that the project or plan should proceed.

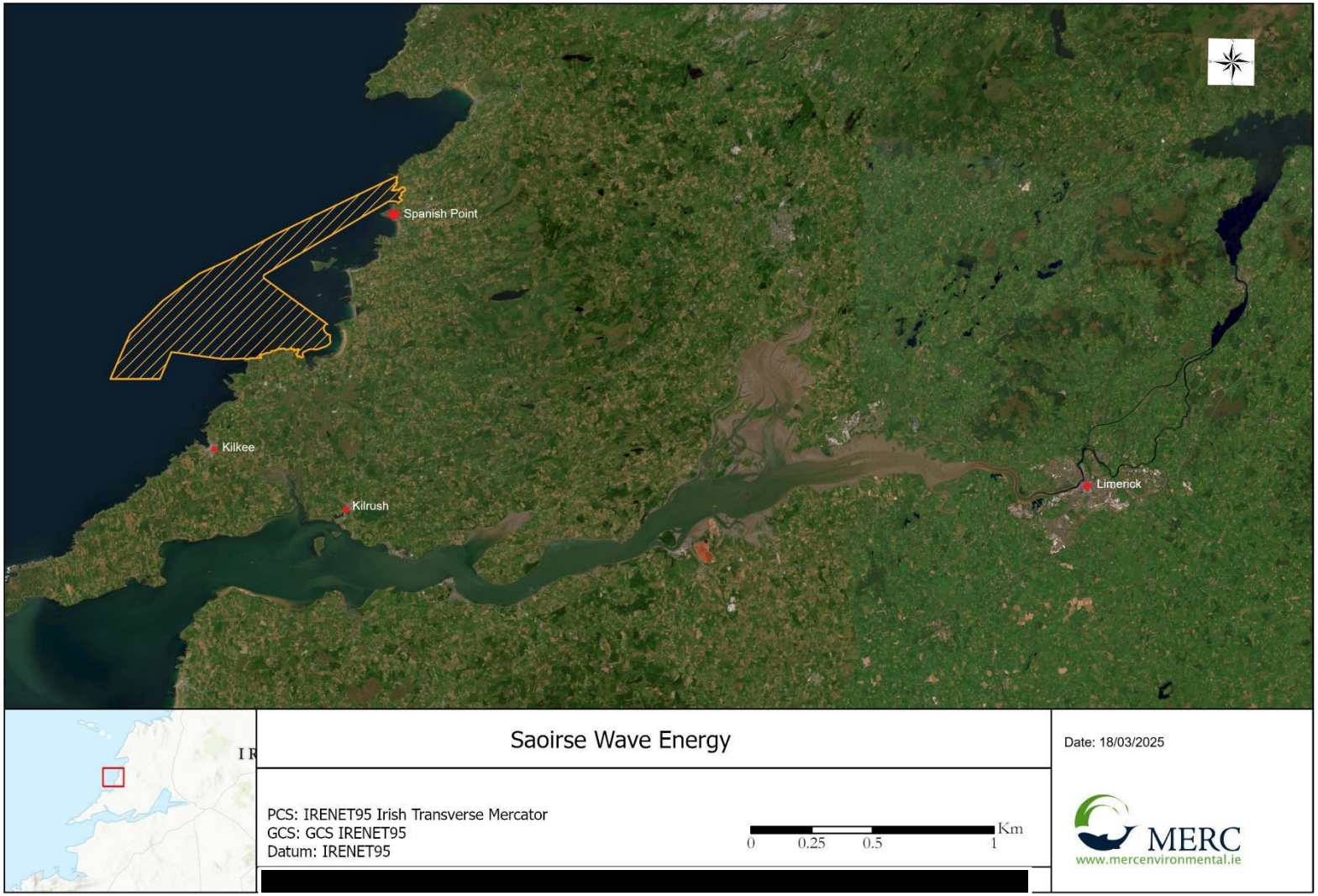

Figure 1. MUL application area.

2. Statement of authority

This report was prepared by [redacted] and [redacted] of 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 marine habitats and species in addition to the assessment and management of conservation interests. MERC have been responsible for conducting national surveillance monitoring of EU Annex I marine habitats for compliance under Article 17 of the EU Habitats Directive since 2015. In this context MERC have also been responsible for the assessment and reporting of marine Annex I habitats and the preparation of Article 17 and overarching site monitoring reports. MERC are currently engaged in conducting surveys and preparing the relevant reports for the current (2022-2025) monitoring cycle. Between 2005 and 2010 MERC conducted the survey, monitoring and assessment of sensitive subtidal habitats in Ireland to inform the conservation objective setting for Irish marine SACs.

[redacted] **MCIEEM** is a professional marine ecologist with a wide range of experience in the field of conservation biology, marine habitat mapping and ecology. She completed a M.Sc. in ecology and taxonomy at Trinity College Dublin in 1989 and a Ph.D. in taxonomy also at Trinity College Dublin in 2001. She is a full member of the Chartered Institute of Ecology and Environmental Management (CIEEM). For the last 20 years she has specialised in the ecology of marine ecosystems. She has specialised in the assessment of benthic habitats with a focus on intertidal and subtidal reef habitats and sensitive seabed species and habitats. Over the last 20 years she has conducted extensive marine monitoring surveys and assessments of EU Habitats Directive marine Annex I habitats and their associated species within European sites in Ireland to assist Ireland in complying with monitoring obligations under the EU Habitats Directive .

[redacted] **MCIEEM** is a professional marine ecologist with a wide range of experience in the ecology, survey, and monitoring of marine habitats and species in Ireland. He completed a Diploma in Science at Galway Regional Technical College in 1987 and a B.Sc. in Biological Sciences at Plymouth University in 1989. He has extensive experience in the monitoring of benthic habitats and species in Ireland and was lead scientist for the mapping of sensitive subtidal species across a range of European sites in Ireland from 2005 to 2010. Over the last 30 years he has also specialised in the ecology of marine fish, and in this regard, provides expertise and review services with respect to assessment of anthropogenic impacts on shellfish, pelagic and demersal species. In this regard he has acted as a lead auditor for the Aquaculture Stewardship Council (ASC) and Marine Stewardship Council (MSC).

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. European Commission 2018. 7621 final. Office for Official Publications of the European Communities, Luxembourg.
- 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.

3.2. Assessment of the receiving environment

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 (see section 3.3 for methods used to determine the ZoI). This included 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.
- EMODnet: EUSeaMap

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 effects 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, scope and location of the project was examined.
2. A desk review of the available literature describing the habitats and species known to occur at the Marine Usage Licence (MUL) application area 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. Proposed survey activities

4.1. Overview

Saoirse Wave Energy Ltd. is planning geophysical, geotechnical and environmental surveys to provide the required information to establish the future design and operation of the wave energy demonstration site. The proposed survey area which corresponds to the MUL application area, is 114.57 km^2. It encompasses an area extending from Freagh point County Clare, south to Ballard Bay and out to a maximum distance of 10km from shore (Figure 1).

It is intended that surveys will commence in the spring of 2025 with a staged programme of investigations over the subsequent four years (2026, 2027, 2028, 2029), capitalising on suitable weather windows over the total period of five years. A high level programme, including indicative numbers of samples, durations and timings is outlined in Table 1 and described in section 4.2.

Table 1.Proposed Survey activity and estimated time and duration

Activity	Equipment	Timing and duration
Geophysical surveys	Multibeam echosounder (MBES) with acoustic backscatter; Side scan sonar (SSS). Magnetometer. Gradiometer. Sub-bottom profiler (SBP); Ultra-high resolution Seismic (UHRS). Potentially a sparker (single and multi-channel) and mini-air gun. USBL system.	Initial reconnaissance geophysical surveys in summer 2025 (with support from the National Marine Survey Programme). Detailed surveys in summer of 2026. Total duration of up to 6 months (weather permitting).

Activity	Equipment	Timing and duration
Geotechnical surveys	Up to 30nr. boreholes to depths of up to 50m below seabed (BSB) in subtidal areas; Up to 40nr. cone penetration tests (CPTs) in subtidal areas; and Up to 40nr. vibrocores in subtidal areas. Up to 5nr. trial pits at proposed landfall locations	Reconnaissance geotechnical campaign in summer 2026. Potentially a refined detailed survey in summer of 2027. 15 - 25 hours of drilling time in any one location CPT - 30min – 2 hours in any one location Vibrocores 30mins-2 hours in any one location Trial pits – 30mins-2 hours in any one location Total duration of up to 6 months (weather permitting). The exact locations of boreholes, vibrocores and CPTs will be informed by the data derived from the geophysical surveys and cannot be confirmed at this stage. However, it is considered likely that they will be spread across the entire area of the MUL where suitable bathymetry is present.
Benthic ecology survey	Benthic grab sampling (up to 50 sampling locations). Camera and video sampling (up to 50 sampling locations). Video transects over potential Annex I habitats and protected features e.g. reef habitats (If required; number of locations to be confirmed by geophysical survey results). Diving activities may be applied for inspection and sampling in areas with restricted access. Intertidal walkover surveys to record biotopes and species present.	Subject to availability of geophysical survey results. A part of summer survey 2026 campaign. Up to 3 hours at any one location. Total duration of up to 3 weeks (weather permitting). The exact locations of grab stations will be informed by the data derived from the geophysical surveys and cannot be confirmed at this stage. However, it is considered likely that they will be spread evenly across the entire area of the MUL where suitable soft sediments are present.
Metocean	Up to 2 Acoustic Doppler Current Profilers (ADCPs) are likely to be deployed on the	Maximum 36 months.

Activity	Equipment	Timing and duration
	seafloor in a trawl resistant mooring frame. Up to 2 waverider buoy are likely to be deployed with a mooring system. Up to 2 LiDAR buoys with a mooring system may be also deployed.	
Marine mammal acoustic monitoring	Up to 4 acoustic monitoring devices (i.e. CPoDs and/or AMAR) are likely to be deployed across the site at any one time. Assume deployment of up to six deployments of CPoDs/AMAR devices, as contingency for lost equipment, at the same locations as the original deployments.	Up to 2 years of monitoring.
Intertidal ecology surveys	Walkover surveys to map intertidal habitats and species. Likely to include transects, quadrats and core sampling (e.g. hand coring). Up to 12 sampling locations per landfall considered.	1-2 days per landfall. Summer 2025 (weather and tide permitting).
Offshore bat surveys	Offshore bat surveys may be considered for the project.	To be confirmed.
Water Quality	Sample collection may be undertaken with a rosette of water bottles and in situ sampling (i.e. with CTD probe)	There may be maximum of 20 nr. water quality sampling locations within the MUL Licence Area. As a part of summer survey 2026 campaign.
Archaeological Survey (Undertaken as part geophysical survey)	Underwater Archaeology Intertidal archaeology	Identification and assessment of metallic and other targets recorded during the magnetometer survey (as part of the geophysical survey specification above). This will be conducted in advance of geotechnical survey to inform the UXO and archaeological risk assessment. Undertaken as part of geophysical survey (2025/2026). Intertidal archaeological survey is also considered to be carried out during summer 2025.

4.2. Survey vessel

For the geophysical, environmental, and possibly geotechnical (CPTs and vibrocore) surveys it is proposed to use the Irish multi-purpose marine research vessel, the *RV Tom Crean,* (Figure 2) or similar vessels available at time of survey mobilisation. For follow-on geotechnical surveys, it is proposed to use vessels similar to Fugro Voyager and Fugro Aran 120 and a Jack Up Barge as shown in Figure 3 to Figure 5.

Fugro Voyager is an example of typical, purpose built offshore geotechnical vessel. The vessel has been specifically designed for operating in water depths up to 3,000m metres for both drilling and seabed sampling and in situ testing. The vessel has a twin tower type drilling derrick over a central moonpool.

Fugro Aran 120 is an example of Jack Up Barge, designated for acquisition of sub-seabed data using borehole, vibrocore and cone penetration techniques in nearshore area.

For follow-on nearshore geophysical, geotechnical, and environmental surveys smaller vessels are likely to be employed.

Uncrewed surface vehicle (USV) and/or autonomous surface vehicle (ASV) may also be used for the provision of geophysical survey.

The RV Tom Crean was commissioned in 2022 and was designed as a silent research vessel, in order to meet the stringent criteria of the ICES 209 noise standard for fisheries research. The vessel technical specification is outlined in Table 2.

A suitable support vessel will be contracted to enable to deployment and recovery of any metocean survey equipment throughout the project duration. A suitable small to medium sized multicat support vessel with an appropriately rated crane or A-frame system would be required for the tow-out, deployment and mooring, and recovery operations. A vessel such as the AMS Retriever (as shown in Figure 5) or similar would be required for these operations.

Other vessels supporting project works, have yet to be identified, as their availability will be subject to grant of MUL licence.

All vessels will be fit for purpose, certified and capable of safely undertaking all required survey work. Marine vessels will be governed by the provisions of the Sea Pollution Act 1991, as amended, including the requirements of MARPOL. In addition, all vessels will adhere to published guidelines and best working practices such as: the National Maritime Oil/HNS Spill Contingency Plan (NMOSCP), Marine Pollution Contingency Plan (MPCP), Chemicals Act 2008 (No. 13 of 2008), Chemicals (Amendment) Act 2010 (No. 32 of 2010) and associated regulations. Vessels shall have a Health, Safety and Environmental Managements system which should conform to the requirements of the latest International Maritime Organization (IMO), Safety of Life at Sea (SOLAS) and environmental requirements for their classification and with any national requirement of the territorial or continental / EEZ waters to be operated in.

The vessels to be considered for the provision of survey works will be represented by small and medium size vessels. Acoustic broadband source pressure levels with smaller vessels (<50 m) having source pressure levels 160-175 dB (re 1µPa at 1m) and medium size vessel (50-100 m) 165-180 dB (re 1µPa at 1m) (DECC, 2011). The survey works will be undertaken from vessels in accordance with the relevant guidelines required to manage the risk to marine mammals from man-made sound sources in Irish waters.

Figure 2. RV Tom Crean

Figure 3. Typical Offshore geotechnical drill survey vessel - Fugro Voyager

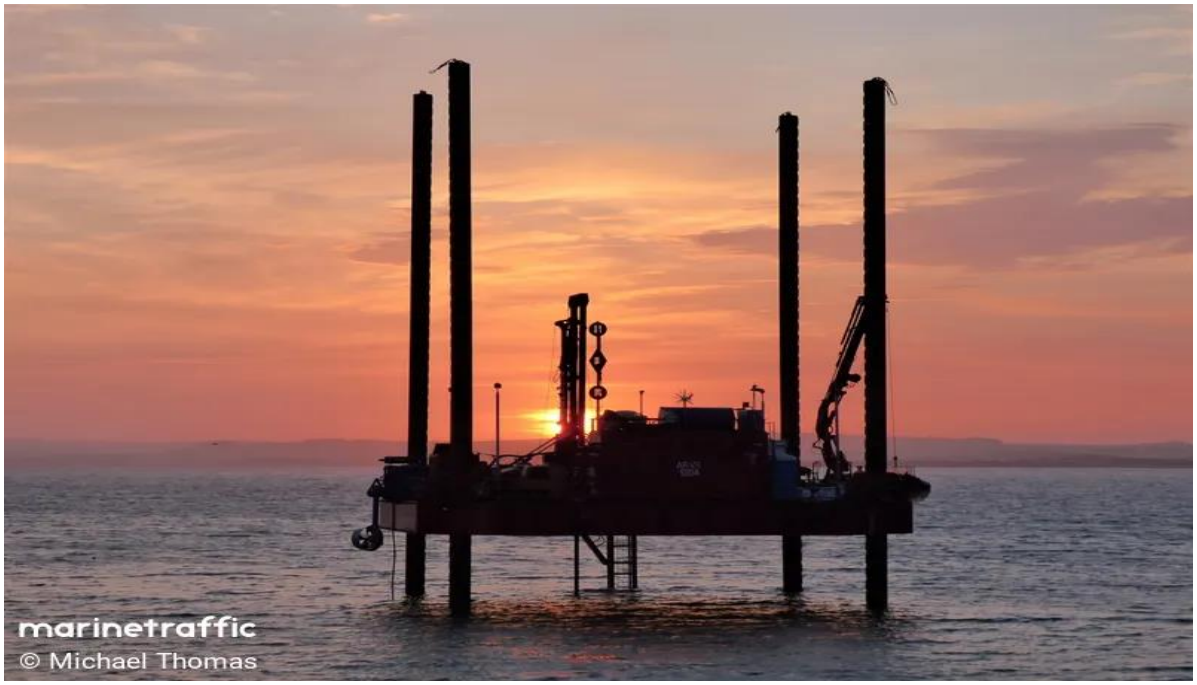

Figure 4. Typical Jack Up Barge – Fugro Aran 120

Figure 5. Typical vessel for metocean deployment and recovery – AMS Retriever

Table 2. RV Tom Crean: Vessel specifications

Vessel size	
Vessel length	52.8m
Beam	14m
Draught	5.2m (maximum)
Tonnage (GRT)	1935 Tonnes
Main diesel generators	
Make	Mitsubishi
Type	S16R-(Z3)MPTAW
Number and power	2 x ~1437kW
Speed	1500 rpm
Mounting	Double resilient
Exhaust silencers	SCR system with 45dB(A) attenuation
Auxiliary diesel generators	
Make	Scania
Type	DI 13-91 M
Power	426 kWm
Speed	1500 rpm
Mounting	Resilient
Exhaust silencers	At least 25 dB(A)
Propulsion motor	
Make	Indar
Type	Squirrel cage – Induction motor IMU-710-X/8
Power	2000 kW at 179rpm
Rated frequency	12.6 Hz

4.3. Equipment description and specifications

A suite of instruments will be used for the site investigation survey as detailed in Table 1.

Geophysical survey equipment will include a multibeam echosounder, sub bottom profiler and side scan sonar. A sparker system and, if further penetration is required, an air gun source may also be required. The type of geophysical survey equipment to be used will be determined by a number of factors including:

- Depth of interest below seafloor.
- Nature of shallow rock that is likely to be encountered.
- Desired resolution of the data that are to be used for mapping the shallow materials.

Geotechnical survey equipment to test the nature of, and/or retrieve samples on or below the seafloor will also be required. This to include vibrocore, borehole or cone penetration testing (CPT). Trial pits possibly to be collected in the intertidal zone as well.

A number of other instruments, such as a magnetometer, ADCPs, wave rider and LiDAR buoys and a maximum of 4 no. CPoDs, which are considered passive devices in terms of noise generation, will also be deployed.

Deployment of a Day or Hammon grab will be required to collect sediment samples to inform the benthic ecology of the MUL application area.

Table 3. Indicative specifications of proposed survey equipment

Equipment	**Example Model**	**Deployment**	**Company**	**Sound Pressure Level re 1 µPA in water @ 1m from source**
Geophysical equipment				
Multibeam Echo sounder	EM2040 (200,300 & 400kHz)	Retractable hull mount	Konsberg Maritime	210dB
Side scan Sonar	4205 sidescan (300 to 900 kHz)	Towed system	Edgetech	228dB
Sub-bottom Profiler	Knudsen 3250 CHIRP (3.5-12kHz)	Vessel mount	Knudsen	223dB
Sparker	Dura-speak seismic sound source (300Hz to 1.2kHz)	Towed system	Subsea Technologies	226dB
Mini air-gun	Mini G Gun (10 and 500 Hz)	Vessel mount	Sercel	230dB
ultra-short baseline (USBL) system	e.g. Kongsberg HiPAP (Typically 20 to 50 kHz)	Equipment mounted	Konsberg	207dB
Geotechnical equipment				
Vibrocorer	HPC (high performance corer), or similar	From vessel	Fugro or similar	145-190dB

Cone penetration testing	Fugro Seascalf, G-Tec GT25 or similar	From vessel	Fugro or similar	118-145dB
Borehole testing	Geobor S or similar	From vessel	Fugro or similar	145-190dB
Trial Pitting	Tracked excavator	Tracked within foreshore area where access is possible	Fugro or similar	N/A
Passive recording equipment				
Magnetometer/ gradiometer	TBC	Towed	TBC	N/A
Wave rider	DWR-MkIII	Anchored	Datawell	N/A
CPoDs/Autonomous Marine Acoustic Recorder (AMAR)	AMAR G4	Anchored	Jasco	N/A
Acoustic Doppler Current Profiler (ADCP)	Sentinel V (300 – 1000Hz)	Static on seabed	Teledyne marine	N/A
Floating LiDAR buoy	EOLOS FLS200	Anchored	EOLOS	N/A
Benthic sampling and survey equipment				
Day Grab	N/A	Overboard	N/A	N/A
Hammon Grab	N/A	Overboard	N/A	N/A
Drop down camera	N/A	Overboard	N/A	N/A
Diver surveys	N/A	Overboard	N/A	N/A

*Note: Where the exact model to be used is yet To Be Confirmed (TBC) a worst-case scenario has been used to determine the upper-level sound pressure possible. The equipment type and model are indicative only, exact equipment to be specified by the contractor but the examples provided are consisted standard and any variations will be minor.

4.3.1. Geophysical equipment

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 to the hull of the vessel. 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. The proposed MBES operates at a sound pressure level of 210 dB re 1µPa at 1m with a peak frequency between 200-400 kHz.

Side scan sonar

Side scan Sonar (SSS) is another device that transmits sound pulses that provide the information required to map the seabed. It differs from MBES in that SSS has a finer beam width and smaller footprint to MBES and therefore higher resolution. It is generally towed behind the vessel very close to the seabed and emits fan-shaped acoustic pulses directed down toward the seafloor which are recorded as a series of cross-tracks. The sound frequencies used by side-scan sonar range generally range from 100 to 1000kHz; higher frequencies yielding better resolution but less range.

Sub-bottom profiler

A Sub-bottom profiler employs an acoustic signal, to provide the information required to identify and measure marine sediment layers that exist below the sediment/water interface. The proposed

equipment comprises a Knudsen Chirp system which transmit a sweep of frequencies (e.g. 2-10 kHz) in a single pulse. Depending on the profile of the seabed (rock, sand, mud etc.) and level of compaction, the energy reflected back can be related to the sub-bottom composition.

Sparker system and hydrophone array

A sparker is a device used for sub-seabed investigations where deeper acoustic penetration is required. It is generally more powerful than a Sub-bottom profiler and used to explore very coarse/compacted sea beds. The sound source is generated by an electrical arc that creates a bubble. As it collapses the bubble produces a broad band (500 Hz – 4 kHz) omnidirectional pulse which penetrates a few hundred meters into the subsurface. Hydrophone arrays towed near the acoustic source receive the returning signals.

Mini airgun

A mini airgun emits a blast of compressed air resulting in an acoustic signal consisting of an initial high-amplitude pressure pulse followed by a decaying series of “bubble pulses” formed by oscillations of the resulting air bubble.

USBL system

A USBL system provide a method of positional fixing underwater. It consists of a transceiver, which is mounted on a pole under the survey vessel, and a transponder deployed on the seafloor or on the subsea instrument being used. An acoustic pulse is transmitted by the transceiver, and the pulse detected by the transponder is retuned. The time between the initial acoustic pulse and the reply is then measured by the USBL system and is analysed to allow the position to be calculated.

4.3.2. Metocean and other passive equipment

ADCP

An ADCP is a hydroacoustic current meter used to measure water current velocities over a depth range using the doppler effect of sound waves scattered back from particles within the water column. In the present case ADCPs potentially operating in the range of 300 – 1000Hz will be used. The instrument emits “pings” of sound at a sampling rate of 1-minute average every 10 minutes.

The ADCP is contained within a trawl resistant bottom mount frame *circa* 1.8m x 1.3m x 0.6m with a weight of approximately 300kg. The frame is attached to a ground line, a clump weight and to an acoustic release system carrying a rope retrieval system. The frame also houses a recovery line attached to a small rigid buoy which is held in place by an acoustic release, which releases the buoy on command from a deck unit.

Also housed within the frame is lead ballast to secure the frame to the seabed. Additional instrumentation to collect salinity and temperature data may also be contained within the frame. An acoustic pinger is also mounted on the frame to aid in the recovery of the frame in the event of the

acoustic release not firing. The frame is deployed with a grapple hook and floating nylon line to serve as a backup means of recovery.

The specifications of the ADCP and installation vessel will be confirmed by award of the tender contract. A vessel will be employed for the installation, service, and recovery of this equipment. The details of the contracted vessel will become available on award of the tender contract.

Floating LiDAR buoy

Floating LiDAR buoys may be deployed to measure the wind resource and wind speeds, understand the wave hight, heave and direction, measure current profiles to understand met conditions within MUL licence area. Deployment of buoy will include anchoring. Up to 2 LiDAR buoys may be deployed for a period of between 12 to 24 months.

The specifications of the floating LiDAR buoy, the associated mooring type, and an installation vessel will be confirmed by award of the tender contract. An installation vessel will be employed for the installation, service, and recovery of this equipment. The details of the contracted vessel will become available on award of the tender contract.

Waverider buoy

Waverider buoys may be deployed to measure wave hights and direction to support a detailed design of the project within MUL Licence area. They will be attached to a seabed with suitable mooring. Up to 2 waverider buoys may be deployed to gather wave data. The specifications of the waverider buoy, the associated mooring type, and an installation vessel will be confirmed by award of the tender contract. An installation vessel will be employed for the installation, service, and recovery of this equipment. The details of the contracted vessel will become available on award of the tender contract.

Magnetometer/Gradiometer

A magnetometer is a passive instrument that measures the Earth's magnetic field allowing magnetic anomalies to be measured. It is towed behind the survey vessel where it samples background magnetism. When the magnetometer detects an anomaly, such as ferrous objects such as fragments of a ship hull or a geological formation of basalt. This is detected as a change to the background magnetic field. This tool can detect artifacts above or below the seabed.

Gradiometer surveys are carried out using a similar methodology but with the use of two separate magnetometer sensors towed in a paired configuration. Gradiometer surveys measure the gradient of the magnetic field, allowing for a more precise measurements of magnetic variations. The use of magnetometer or gradiometer survey arrays will be determined following further site-specific assessments to ensure the most appropriate methodology.

4.3.3. Benthic sampling

Seabed imagery

Underwater camera systems or Remotely Operated Vehicles (ROVs) may be used for visual inspection of the existing environmental conditions within MUL area. Dropdown video surveys using a overboard camera may be conducted to record the subtidal habitat especially in areas where hard strata (subtidal reef) are indicated (based on bathymetry) to be present. High quality video recordings and stills will be collected for further analysis and confirmation of suitable conditions for further intrusive activities e.g. benthic sampling or geotechnical works.

Day or Hammon Grab

A Day grab is an instrument used for sampling soft seabed sediments. When deployed overboard it is lowered on a winch to the seabed where the jaws open to take a small (approx. 15L) sample of the surface sediment (top 20cm). A Hammon grab is a very similar type of sampler, but the jaw mechanism is slightly different which allows it to sample coarser sediments (e.g. gravel and shelly sediments). The samples retained can then be analysed to obtain an overview of the sediment fauna, and particle size. Both samplers are routinely used for surveillance monitoring to support a number of EU Directives such as the Habitats Directive and Water Framework Directive. Day or Hammon grabs do not introduce noise into the underwater environment other than that produced from a slight impact with the grab making contact with the seabed.

Intertidal coring and walkover surveys

For intertidal sediment assessment a 0.01m^2 hand core taken to a depth of 20cm for benthic faunal analysis will be used. Additional surveys of intertidal hard strata may also be carried out by conducting walk over surveys of the relevant hard strata to record biotopes and species present.

Diver surveys

Diver surveys, using SCUBA, may be also be conducted in areas of hard strata. Both surveys are considered to be non-intrusive as they do not make contact with the seabed.

4.3.4. Geotechnical survey equipment

The aim of the geotechnical survey is to provide sufficient geotechnical data to allow the characterisation of the sub-seabed strata. As such virocoring, seabed CPT and borehole testing will be conducted at the number of locations spread throughout the MUL application area. The geotechnical survey will be undertaken from a dedicated geotechnical vessel as described in section 4.2. Drilling, resulting from geotechnical surveys, is generally acknowledged to produce moderate levels of continuous omnidirectional sound at low frequency (several tens of Hz to several thousand Hz and up to c.10 kHz). Source sound pressure levels have generally been reported to lie within the 145-190 dB re: 1 µPa range (NPWS, 2014).

Boreholes

Up to 30 bore holes with a diameter of up to 102mm and a depth of Up to 50m below the seabed will be carried out. To facilitate this, a drill head is lowered to the seabed from the vessel via a drill string and stabilised using a seabed frame. The drill head penetrates the seabed via rotation of the drill string and the application of a downward pressure. Soils and rock samples are then retrieved for laboratory testing via the drill string. Borehole drilling may be combined with *in-situ* testing such as cone penetration testing or down the hole testing at some investigative locations.

Indicative Equipment: Drilling equipment used will follow the ISO and API technical specifications for drilling equipment. Indicative equipment to be used would be traditional API drill string or a triple core barrel system (e.g., Geobor 'S') or similar.

Cone penetration testing

Up to 40 CPT with a Diameter: 50-62mm and a depth of 30m below the seabed will be carried out. This will be carried out *in situ* on the seabed via a frame or by deck-push CPT from the vessel via a moon pool.

Indicative Equipment: Fugro Seascalf, G-Tec GT25 or similar. For landfall investigation within the intertidal zone, a tracked borehole / CPT rig and ancillary equipment would be used.

Vibrocoring

Up to 40 Vibrocore samples will be taken to a depth of 6m. A piston core, will be used to collect the samples. These devices are typically deployed from a crane on the vessel.

Indicative Equipment: Fugro HPC (high performance corer) & OSIL Vibro-Corer or similar.

Trial pitting

Up to 5 trial pit excavation locations will be carried within the intertidal or foreshore areas where access is possible. These excavations will be carried out using a tracked excavator to excavate a pit approximately 1m wide, 3m long and up to 4m deep depending on the ground conditions. Trial pit excavations will be used to visually inspect the ground conditions, collect samples and carry out insitu testing such as shear vane testing and plate bearing testing. Completion of a trial pit excavation will take up to two hours each and all excavations will be back filled with the excavated materials in the order in which they were excavated. Trial pit excavation is not carried out within the water body, with all works carried out above the water line or within tidal windows.

5. Receiving environment

The MUL application area, within which surveys will take place, is 114.57 km^2. It encompasses an area extending from Freagh Point, south to Ballard Bay, County Clare out to a maximum distance of 10km from shore.

There is no spatial overlap between the MUL area and any Special Area of Conservation (SAC). EMODnet broad-scale seabed habitat mapping (EUSeaMap, 2021), shows the MUL area to be comprised of a range of different sediment types including circalittoral fine sand or circalittoral muddy sand, circalittoral rock and other hard substrata, deep circalittoral coarse sediment, deep circalittoral mixed sediments, deep circalittoral sand and unspecified infralittoral sediments.

There is a spatial overlap between the proposed MUL area and Mid-Clare Coast Special Protection Area (SPA). In addition, the MUL area is likely to provide foraging habitat for seabird species connected to more distant SPAs, within foraging range. Aerial surveys for seabirds and marine mammals, which included the MUL area, conducted to support this project (Intertek, 2022 and 2023) indicated that the site is used by a number of seabird species, with wide foraging ranges. These aerial surveys also indicated that the MUL area is used by a number of cetaceans, with large ocean ranges.

The MUL area and surrounding waters also provides foraging habitat for Grey seal (*Halichoerus grypus*) and Harbour seal (*Phoca vitulina*) with the potential to be connected to more distant European sites.

While there are no records for Otter (*Lutra lutra*) within the MUL area, records for otter occur in adjacent terrestrial areas along the Clare coast. Therefore it is considered that this species is likely to use the intertidal and nearshore (<300m) in the areas of Doughmore Bay and Doonbeg Bay, within the MUL area, where freshwater enters the marine areas within these bays.

6. Identification of potential impacts

The proposed scope of the surveys and types of equipment to be used, including the use of the vessels required, are described in section 4. This information was reviewed to establish if a source/pathway existed and if so, what sensitive receptors might be affected.

Potential project related impacts have been identified and assessed in the context of a SPR matrix as given in Table 4.

Table 4. Source-Path-Receptor matrix

Element	Potential Source (pressure)	Path	Receptor
Vessel presence	Disturbance, harm or injury as a result of vessel operations including noise and collision risk	Direct and indirect	Marine mammals, Seabirds, Fish
Vessel	Pollution as a result of Accidental spillage of hydrocarbons- small non-MARPOL compliant vessels only	Direct and indirect	Benthic habitats, Marine mammals, Seabirds, Fish
Multibeam echosounder	Disturbance, harm or injury as a result of underwater noise	Direct and indirect	Marine mammals, Seabirds , Fish
Sparker System & hydrophone array	Disturbance, harm or injury as a result of underwater noise	Direct and indirect	Marine mammals, Seabirds, Fish
Sparker (backup)	Disturbance, harm or injury as a result of underwater noise	Direct and indirect	Marine mammals, Seabirds, Fish
Sub-Bottom Profile	Disturbance, harm or injury as a result of underwater noise	Direct and indirect	Marine mammals, Seabirds, Fish
Mini airgun	Disturbance, harm or injury as a result of underwater noise	Direct and indirect	Marine mammals, Seabirds, Fish
Side scan Sonar	Disturbance, harm or injury as a result of underwater noise	Direct and indirect	Marine mammals, Seabirds, Fish
Vibrocore	Disturbance, harm or injury as a result of underwater noise	Direct and indirect	Marine mammals
CTD testing	Disturbance, harm or injury as a result of underwater noise	Direct and indirect	Marine mammals

Borehole drilling	Disturbance, harm or injury as a result of underwater noise	Direct and indirect	Marine mammals
Benthic sampling (Day grab or Hammon grab)	Physical damage/Sediment disturbance	Direct	Benthic invertebrates
Intertidal sampling (hand cores)	Physical damage/Sediment disturbance/ Disturbance and/or displacement to foraging waterbirds	Direct	Benthic invertebrates, birds (waders)
Intertidal sampling (walkover survey)	No pressure identified. Survey of intertidal reef outside foraging areas of waterbirds	N/A	N/A
Dropdown video survey	No pressure identified	N/A	N/A
Diver survey	No pressure identified	N/A	N/A

6.1. Zone of Influence

The determination of the ZoI was based on the scale, scope and location 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. 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 habitats and species, or freshwater habitats, upstream of a hydrological gradient, are considered outside of the ZoI.

The likely **direct** impacts of the project will result from intrusive works (grab sampling, vibrocoring, borehole drilling, CPD testing and intertidal coring). This will result in small and localised (meters) disturbance to benthic sediments within a highly exposed environment whereby disturbance to benthic sediments would be undetectable within a short time period (days) and are considered to be insignificant. Direct impacts on benthic habitats as a result of the accidental spillage of hydrocarbons are also considered to be small and localised due the limited volume of hydrocarbons carried on small vessels.

Indirect impacts are likely to result from the production of underwater noise, vessel disturbance and disturbance by personnel working in intertidal areas. While noise related indirect impacts are localised, in their distance from source, as determined by noise modelling studies conducted on behalf of the Marine Institute for the same or similar noise emitting instruments (Thomsen *et al*, 2023), they may affect mobile species passing through the site and connected with more distant European sites.

There is no spatial overlap between the proposed project site and any SAC. The proposed project site is adjacent to, within 150-200 meters of, Carrowmore Point to Spanish Point and Islands SAC and Kilkee Reefs SAC. While direct impacts on the conservation objectives of these SACs are highly unlikely, due to the scale and scope of the project, they have been included within the ZoI of the project out of an abundance of caution. There are no additional SACs within a minimum distance of 15.53km (hydrologically) of the proposed project site.

There is a spatial overlap between the proposed project site and mid-Clare Coast SPA which is therefore considered to be within the ZoI of the project.

With due regard to mobile species that may be transiting through the MUL area, 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. Further information on indirect impacts on mobile species within the ZoI is provided below.

Seabirds

Seabirds foraging ranges are well studied and vary widely between species. There are likely to be a range of **breeding** seabird species associated with SPAs adjacent to the proposed project site, or within foraging range of it. Site specific surveys of the MUL area and surrounding waters (Intertek, 2022)

indicated that the site is used by a number of seabird species, with high numbers of Manx shearwater and Guillemot, in particular, using the site.

Therefore, for seabird species during the summer breeding months, the ZoI 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.

Wintering waterbirds and their associated habitat

Wintering waterbirds may be subject to disturbance, causing them to temporarily abandon their foraging areas when personnel, on foot, are surveying intertidal areas. However this disturbance would be short term (1-2 hours) and temporary, with birds returning to their foraging area once the surveyors have left the area. Therefore disturbance would not have the potential to lead to population level impacts of the SCIs for any bird species or their wetland habitat. **However, out of an abundance of caution we have screened in Mid-Clare Coast SPA relative to disturbance for foraging wintering waterbirds.**

Pinnipeds

The foraging ranges for Grey seal can be large, travelling up to several hundred kilometres from their breeding areas (Kiely *et al*, 2000), while the foraging distance travelled by Harbour seals is generally less, it can also extend for 100s of kilometres (Vance *et al,* 2021, Carter, *el al*, 2022). **While NPWS site conservation objectives only apply to these species within their site, we have included a ZoI of 448km for Grey seal and 273km for Harbour seal to align with MARA practice.**

Cetaceans

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 100s of kilometres depending on prey availability and distribution. The MUL area lies within the Celtic and Irish Seas MU for Harbour porpoise and the West Coast of Ireland MU for Bottlenose Dolphin. Given the scale and scope of the project, relatively low magnitude of impact, the actual ZoI relative to Harbour porpoise and Bottlenose dolphin is extremely small. **However, out of an abundance of caution and to align with MARA practice we have screened in these two species within their respective Management Units (MU) as detailed in JNCC, 2015.**

Migratory fish

The main migratory route for Atlantic salmon on the west coast of Ireland, moving between their natal rivers and their feeding grounds off Greenland and the Faroe Islands, is along the shelf margin (Rickardsen *et al*., 2021). Outward and inward migrating Salmon are therefore likely to move through the MUL area during their migration. **The ZoI for this species is therefore taken to include the nearshore waters along the western seaboard.**

While it is recognised that Atlantic salmon are one of the host species for the glochidia released by freshwater pearl mussel (*Margaritifera margaritifera*), the SPR link for this interaction, during salmon migration periods, is considered to be too weak to lead to effects on freshwater pearl mussel.

Lamprey are known to be able to detect sound at low frequencies and behavioural responses from sound, in sea lamprey, at the low frequency range are known from limited studies (Mickle *et al,* 2018). Twaite Shad are known to be able to detect sound at frequencies greater than 1.8Mhz, typically moving away from the sound source (Gregory *et al*, 2007). **Therefore, a ZoI of 20km from the MUL area was applied to these species out of an abundance of caution.**

Otters

Freshwater and coastal habitats are used by otters, but otters utilising the marine environment require access to freshwater habitats to drink and bathe. Therefore, otters are most likely to favour marine areas with nearby freshwater inflow. In Ireland, the territory of female otters in mesotrophic rivers is approximately 7.5 ± 1.5km in length and 6.5 ± 1.0km in coastal environments. The territory of male otters in mesotrophic and oligotrophic rivers is approx. 13.2 ± 5.3km in length with a high degree of variability as territorial males respond quickly to social perturbation (See Reid *et al,* 2013). The ZoI for this species is therefore taken to include the shoreline and nearshore waters (out to 300m) 15km either side of the outer limits of the proposed project site. However, there are no SACs designated for Otter within this distance.

7. European sites

Based on the criteria described in section 6, all SACs within the ZoI and therefore screened in are given in Table 5 and shown in Figure 6 to Figure 8. This includes UK sites (outside of the Natura 2000 Network) in relation to Harbour porpoise and/or Bottlenose dolphin, where the project sites lie within a MU for these species as per MARA policy.

All SPAs, with breeding seabirds within foraging range of the MUL area, and therefore within the ZoI of the proposed project, are given in Table 6 and shown in Figure 9.

The qualifying interests for all SACs and SPAs screened in are given in Table 7 and Table 8 respectively.

Table 5. SACs within the ZoI screened in for appropriate assessment.

Site code	Site name	Qualifier for screening the site in
1021	Carrowmore Point to Spanish Island SAC	Immediately adjacent
2264	Kilkee Reef SAC	Immediately adjacent
Mobile species within ZoI: Within MU for Bottlenose dolphin and Harbour Porpoise. Within 450Km for Grey seal, 273Km for Harbour seal. Along western seaboard Atlantic Salmon.		
90	Glengarriff Harbour and Woodland SAC	Harbour seal (*Phoca vitulina*)
101	Roaringwater Bay and Islands SAC	Harbour porpoise (*Phocoena phocoena*)
		Grey seal (*Halichoerus grypus*)
133	Donegal Bay (Murvagh) SAC	Harbour seal (*Phoca vitulina*)

147	Horn Head and Rinclevan SAC	Grey seal (*Halichoerus grypus*)
190	Slieve Tooey/Tormore Island/Loughros Beg Bay SAC	Grey seal (*Halichoerus grypus*)
191	St. John's Point SAC	Bottlenose dolphin (*Tursiops truncatus*)
197	West of Ardara/Maas Road SAC	Harbour seal (*Phoca vitulina*)
		Atlantic salmon (*Salmo salar*)
204	Lambay Island SAC	Harbour porpoise (*Phocoena phocoena*)
		Harbour seal (*Phoca vitulina*)
		Grey seal (*Halichoerus grypus*)
241	Lough Swilly SAC	Harbour porpoise (*Phocoena phocoena*)
268	Galway Bay Complex SAC	Harbour seal (*Phoca vitulina*)
278	Inishbofin and Inishshark SAC	Grey seal (*Halichoerus grypus*)
328	Slyne Head Islands SAC	Bottlenose dolphin (*Tursiops truncatus*)
		Grey seal (*Halichoerus grypus*)
343	Castlemaine Harbour SAC	Atlantic salmon (*Salmo salar*)
428	Lough Melvin SAC	Atlantic salmon (*Salmo salar*)
458	Killala Bay/Moy Estuary SAC	Harbour seal (*Phoca vitulina*)
495	Duvillaun Islands SAC	Bottlenose dolphin (*Tursiops truncatus*)
		Grey seal (*Halichoerus grypus*)
507	Inishkea Islands SAC	Grey seal (*Halichoerus grypus*)
622	Ballysadare Bay SAC	Harbour seal (*Phoca vitulina*)
627	Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC	Harbour seal (*Phoca vitulina*)
707	Saltee Islands SAC	Grey seal (*Halichoerus grypus*)
764	Hook Head SAC	Harbour porpoise (*Phocoena phocoena*)
		Bottlenose dolphin (*Tursiops truncatus*)
781	Slaney River Valley SAC	Harbour seal (*Phoca vitulina*)
1141	Gweedore Bay and Islands SAC	Harbour porpoise (*Phocoena phocoena*)
1482	Clew Bay Complex SAC	Harbour seal (*Phoca vitulina*)
2034	Connemara Bog Complex SAC	Atlantic salmon (*Salmo salar*)
2074	Slyne Head Peninsula SAC	Bottlenose dolphin (*Tursiops truncatus*)
2111	Kilkieran Bay and Islands SAC	Harbour porpoise (*Phocoena phocoena*)
		Harbour Seal (*Phoca vitulina*)
2158	Kenmare River SAC	Harbour porpoise (*Phocoena phocoena*)
		Harbour seal (*Phoca vitulina*)
2165	Lower River Shannon SAC	Bottlenose dolphin (*Tursiops truncatus*)
		Atlantic salmon (*Salmo salar*)
2172	Blasket Islands SAC	Harbour porpoise (*Phocoena phocoena*)
		Grey seal (*Halichoerus grypus*)
2269	Carnsore Point SAC	Harbour porpoise (*Phocoena phocoena*)
2283	Rutland Island and Sound SAC	Harbour seal (*Phoca vitulina*)
2953	Blackwater Bank SAC	Harbour porpoise (*Phocoena phocoena*)
2998	West Connaught coast SAC	Bottlenose dolphin (*Tursiops truncatus*)
		Harbour porpoise (*Phocoena phocoena*)

3000	Rockabill to Dalkey Island SAC	Harbour porpoise (*Phocoena phocoena*)
3015	Codling Fault Zone SAC	Harbour porpoise (*Phocoena phocoena*)
EU sites (outside Ireland) There are no additional sites in the MU (West Coast of Ireland) within range for Bottlenose dolphin or within the 450km range for Grey seals		
2500077	Baie du Mont Saint-Michel SAC	Harbour porpoise (*Phocoena phocoena*)
2500079	Chausey SAC	Harbour porpoise (*Phocoena phocoena*)
2500084	Récifs et landes de la Hague SAC	Harbour porpoise (*Phocoena phocoena*)
2502018	Banc et récifs de Surtainville SAC	Harbour porpoise (*Phocoena phocoena*)
2502019	Anse de Vauville SAC	Harbour porpoise (*Phocoena phocoena*)
5300008	Rivière Leguer, forêts de Beffou, Coat an Noz et Coat an Hay SAC	Harbour porpoise (*Phocoena phocoena*)
5300009	Côte de Granit rose-Sept-Iles SAC	Harbour porpoise (*Phocoena phocoena*)
5300012	Baie de Lancieux, Baie de l'Arguenon, Archipel de Saint Malo et Dinard SAC	Harbour porpoise (*Phocoena phocoena*)
5300015	Baie de Morlaix SAC	Harbour porpoise (*Phocoena phocoena*)
5300017	Abers - Côte des légendes SAC	Harbour porpoise (*Phocoena phocoena*)
5300018	Ouessant-Molène SAC	Harbour porpoise (*Phocoena phocoena*)
5300061	Estuaire de la Rance SAC	Harbour porpoise (*Phocoena phocoena*)
5300066	Baie de Saint- Brieuc SAC	Harbour porpoise (*Phocoena phocoena*)
5302006	Côtes de Crozon SAC	Harbour porpoise (*Phocoena phocoena*)
5302007	Chaussée de Sein SAC	Harbour porpoise (*Phocoena phocoena*)
5302015	Mers Celtiques - Talus du golfe de Gascogne SAC	Harbour porpoise (*Phocoena phocoena*)
5302016	Récifs du talus du golfe de Gascogne SAC	Harbour porpoise (*Phocoena phocoena*)
2502022	Nord Bretagne DH SAC	Harbour porpoise (*Phocoena phocoena*)
UK sites within a MU for Harbour porpoise. There are no UK sites within the relevant MU (West Coast of Ireland MU) for Bottlenose dolphin		
UK0030399	North Channel SAC	Harbour porpoise (*Phocoena phocoena*)
UK0016618	Strangford Lough	Harbour porpoise (*Phocoena phocoena*)
UK0016612	Murlough	Harbour porpoise (*Phocoena phocoena*)
UK0030398	North Anglesey Marine/Gogledd Môn Forol Side Code	Harbour porpoise (*Phocoena phocoena*)
UK0030397	West Wales Marine/Gorllewin Cymru Forol U	Harbour porpoise (*Phocoena phocoena*)
UK0030396	Bristol Channel Approaches/Dynesfeydd Môr Hafren	Harbour porpoise (*Phocoena phocoena*)

Table 6. SPAs within the ZoI screened in for appropriate assessment.

European site		**Qualifier**
Mid-Clare Coast SPA		Spatial overlap
Species	**Foraging range (Km)**	**SPAs where species is a qualifying feature**
Kittiwake	156.1	Cliffs of Moher SPA Loop Head SPA Inishmore SPA

European site		Qualifier
		Iveragh Peninsula SPA Blasket Islands SPA Clare Island SPA Skelligs SPA Old Head of Kinsale SPA Helvick Head to Ballyquin SPA
Gannet	315.2	Skelligs SPA The Bull And The Cow Rocks SPA Saltees Islands SPA
Fulmar	542.3	Cliffs of Moher SPA Kerry Head SPA Dingle Peninsula SPA Iveragh Peninsula SPA Blasket Islands SPA High Island, Inishshark and Davillaun SPA Puffin Island SPA Clare Island SPA Deenish Island and Scariff Island SPA Skelligs SPA Beara Peninsula SPA Duvillaun Islands SPA West Donegal Coast SPA Saltees Islands SPA Lambay Island SPA Horn Head to Fanad Head SPA Tory Island SPA
Cormorant	25.6	Mid-Clare Coast SPA River Shannon and River Fergus Estuaries SPA
Shag	13.2	N/A
Guillemot	73.2	Cliffs of Moher SPA Loop Head SPA Inishmore SPA Inishmore SPA
Razorbill	88.7	Cliffs of Moher SPA Inishmore SPA Blasket Islands SPA
Puffin	137.1	Cliffs of Moher SPA Blasket Islands SPA Puffin Island SPA Skelligs SPA Bills Rocks SPA The Bull And The Cow Rocks SPA
Black-headed gull	18.5	River Shannon and River Fergus Estuaries SPA
Roseate tern	12.6	N/A

European site		Qualifier
Common tern	18	N/A
Arctic tern	25.7	Inishmore SPA
Sandwich tern	34.3	N/A
Red-throated diver	9	N/A
Herring gull	58.8	N/A
Little tern	5	N/A
Lesser black-backed gull	127	Puffin Island SPA Blasket Islands SPA Deenish Island and Scariff Island SPA
Manx shearwater*	1346.8	Blasket Islands SPA Puffin Island SPA Cruagh Island SPA Deenish Island and Scariff Island SPA Skelligs SPA Seas of Wexford SPA North-West Irish Sea SPA
Storm petrel	336	Magharee Islands SPA Blasket Islands SPA Puffin Island SPA Deenish Island and Scariff Island SPA Skelligs SPA Bills Rocks SPA The Bull And The Cow Rocks SPA Duvillaun Islands SPA Inishglora and Inishkeeragh SPA Illanmaster SPA Stags of Broad Haven SPA
Great black-backed gull	73	N/A
Common gull	50	Magharee Islands SPA
Med gull	20	N/A

**Due to the vast foraging range of this species it is possible that the species could be associated with sites outside of Ireland. However, as the MUL area represents the outer extent of the foraging range of species (on the west coast of Ireland), connectivity between it and SPAs for which the species is an SCI are considered to be insignificant, as the SPR link is too weak, and therefore additional sites outside of Ireland have not been screened in.*

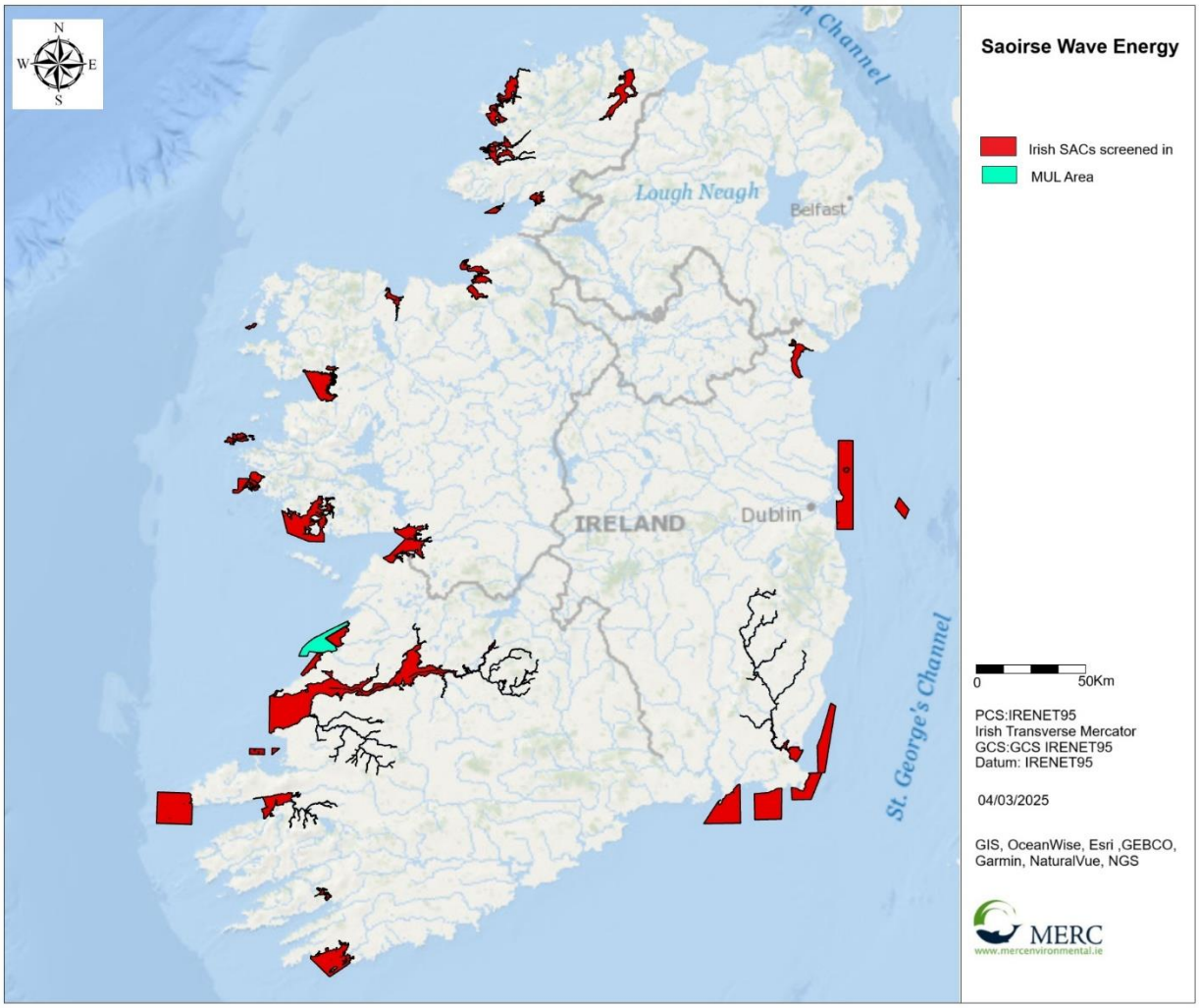

Figure 6. Irish SACs screened in.

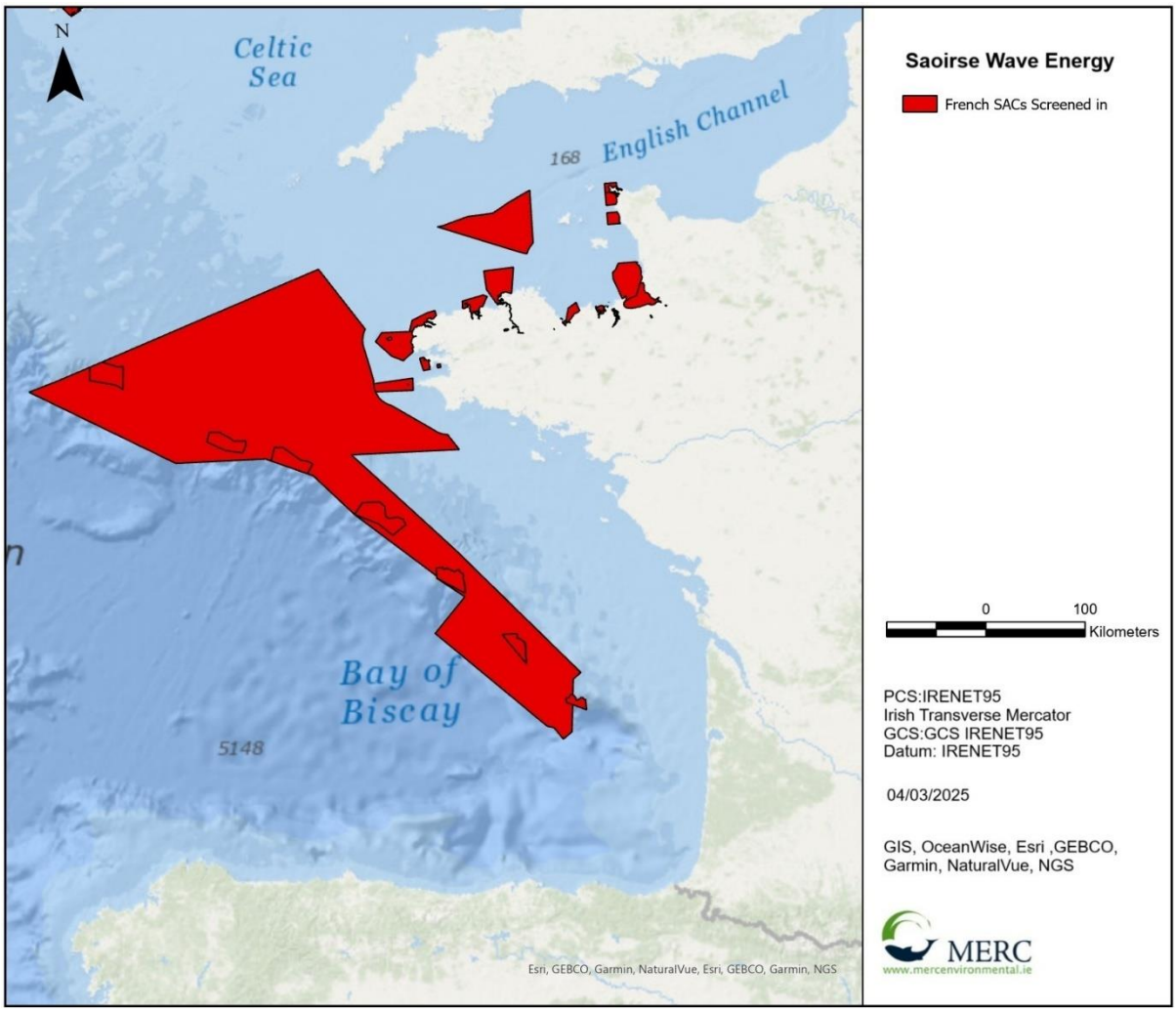

Figure 7. French SACs screened in.

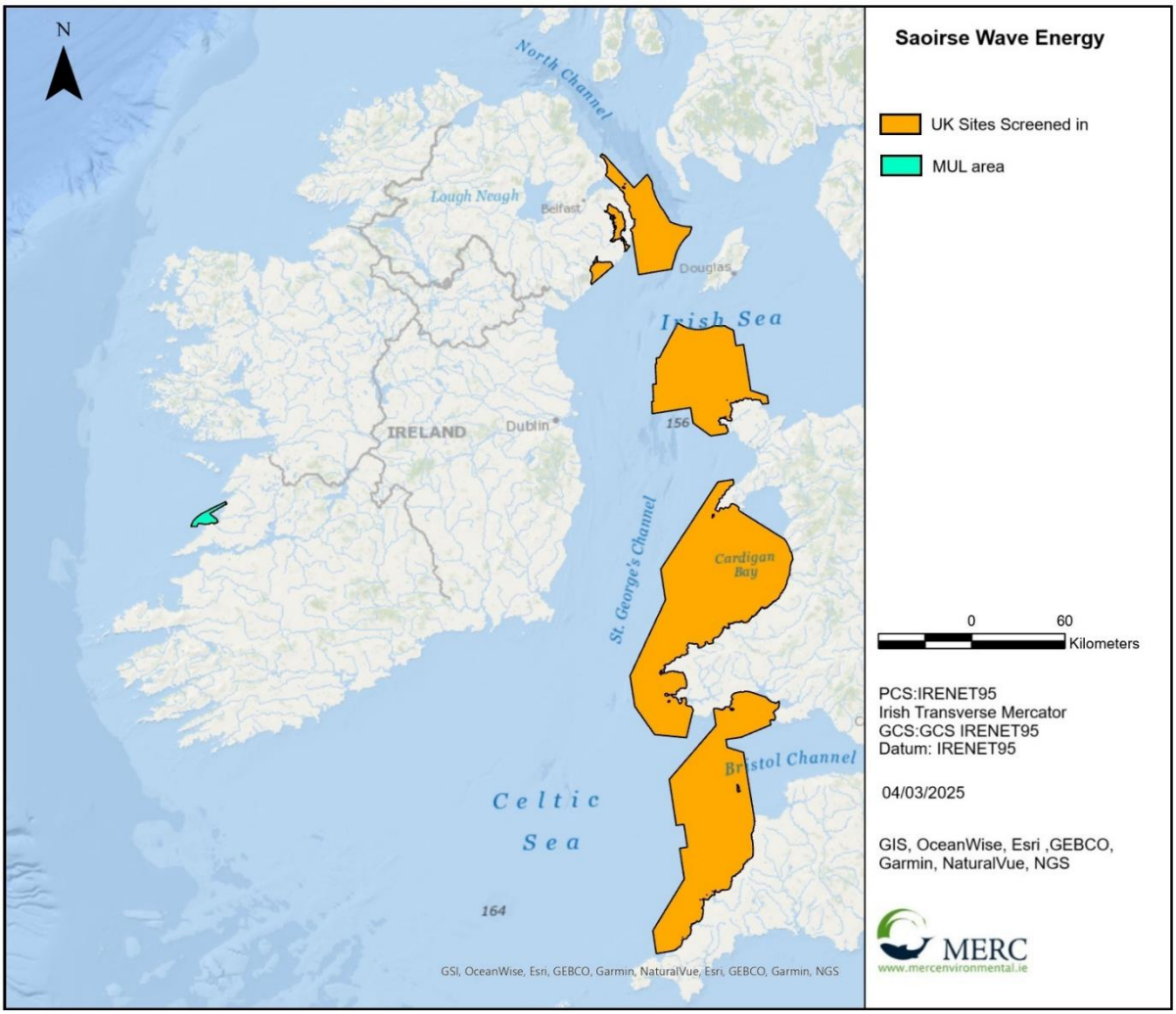

Figure 8. UK Sites screened in

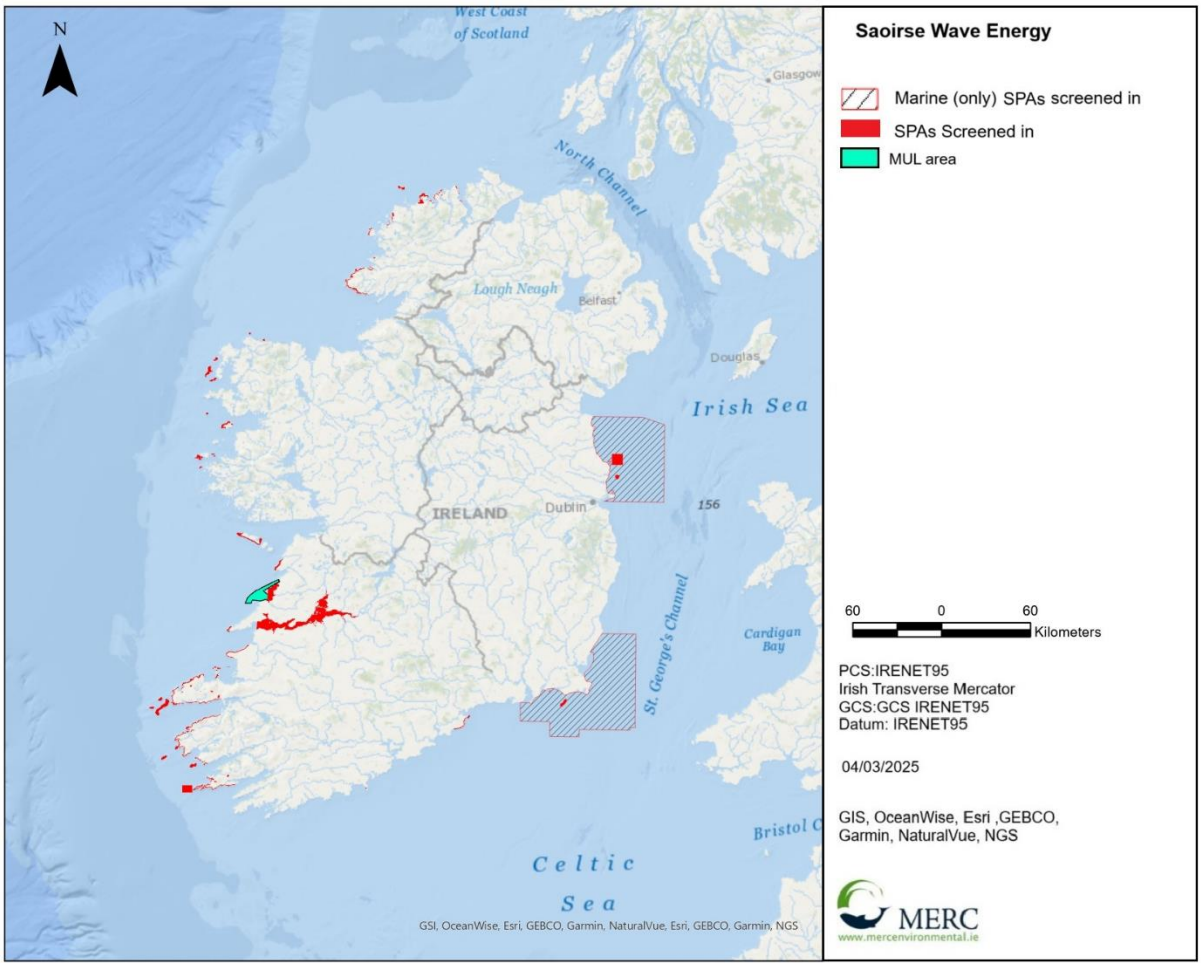

Figure 9. SPAs Screened in

Table 7. All SACs and their qualifying interests screened in

SAC	Hydrological distance (Km)	Qualifying interest
Carrowmore Point to Spanish Point and Islands SAC	0.15	Reefs [1170]Coastal lagoons [1150] Perennial vegetation of stony banks [1220] Petrifying springs with tufa formation (Cratoneurion) [7220]
Kilkee Reef SAC	0.19	Large shallow inlets and bays [1160] Reefs [1170] Submerged or partially submerged sea caves [8330]
Glengarriff Harbour and Woodlands SAC	205	Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae) [91E0] *Geomalacus maculosus* (Kerry Slug) [1024] *Rhinolophus hipposideros* (Lesser Horseshoe Bat) [1303] *Lutra lutra* (Otter) [1355] *Phoca vitulina* (Harbour Seal) [1365]
Roaringwater Bay and Islands SAC	200	Large shallow inlets and bays [1160] Reefs [1170] Submerged or partially submerged sea caves [8330] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] European dry heaths [4030] *Lutra lutra* (Otter) [1355] *Phocoena phocoena (Harbour Porpoise) [1351]* *Halichoerus grypus (Grey Seal) [1364]*
Donegal Bay (Murvagh) SAC	310	Mudflats and sandflats not covered by seawater at low tide [1140] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Dunes with *Salix repens* ssp. *argentea* (Salicion arenariae) [2170]

		Humid dune slacks [2190] *Phoca vitulina* (Harbour Seal) [1365]
Horn Head and Rinclevan SAC	350	*Halichoerus grypus* (Grey Seal) [1364]
Slieve Tooey/Tormore Island/Loughros Beg Bay SAC	284	*Halichoerus grypus* (Grey Seal) [1364]
St John's Point SAC	288	Large shallow inlets and bays [1160] Reefs [1170] Submerged or partially submerged sea caves [8330] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210] Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) [6410] Alkaline fens [7230] Limestone pavements [8240] *Euphydryas aurinia* (Marsh Fritillary) [1065] *Tursiops truncatus* (Common Bottlenose Dolphin) [1349]
West of Ardara/Maas Road SAC	315	Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Large shallow inlets and bays [1160] Annual vegetation of drift lines [1210] Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] Mediterranean salt meadows (Juncetalia maritimi) [1410] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Decalcified fixed dunes with *Empetrum nigrum* [2140]

		Atlantic decalcified fixed dunes (Calluno-Ulicetea) [2150] Dunes with *Salix repens* ssp. *argentea* (Salicion arenariae) [2170] Humid dune slacks [2190] Machairs (* in Ireland) [21A0] Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) [3110] Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea [3130] Northern Atlantic wet heaths with *Erica tetralix* [4010] European dry heaths [4030] Alpine and Boreal heaths [4060] *Juniperus communis* formations on heaths or calcareous grasslands [5130] Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210] Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) [6410] Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*) [6510] Blanket bogs (* if active bog) [7130] Depressions on peat substrates of the Rhynchosporion [7150] Alkaline fens [7230] *Vertigo geyeri* (Geyer's Whorl Snail) [1013] *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] *Euphydryas aurinia* (Marsh Fritillary) [1065] *Lutra lutra* (Otter) [1355] *Petalophyllum ralfsii* (Petalwort) [1395] *Najas flexilis* (Slender Naiad) [1833] *Phoca vitulina* (Harbour Seal) [1365] *Salmo salar* (Salmon) [1106]
Lambay Island SAC	587	Reefs [1170] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] *Phocoena phocoena* (Harbour Porpoise) [1351]

		Halichoerus grypus (Grey Seal) [1364] *Phoca vitulina* (Harbour Seal) [1365]
Lough Swilly SAC	396	Estuaries [1130] Coastal lagoons [1150] Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] Molinia meadows on calcareous, peaty or clayey-silt- laden soils (Molinion caeruleae) [6410]Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] *Lutra lutra* (Otter) [1355] *Phocoena phocoena* (Harbour Porpoise) [1351]
Galway Bay Complex SAC	36	Mudflats and sandflats not covered by seawater at low tide [1140] Large shallow inlets and bays [1160] Reefs [1170] Coastal lagoons [1150] Perennial vegetation of stony banks [1220] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Salicornia and other annuals colonising mud and sand [1310] Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] Mediterranean salt meadows (Juncetalia maritimi) [1410] Turloughs [3180] *Juniperus communis* formations on heaths or calcareous grasslands [5130] Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210] Calcareous fens with *Cladium mariscus* and species of the Caricion davallianae [7210] Alkaline fens [7230] Limestone pavements [8240] *Lutra lutra* (Otter) [1355] *Phoca vitulina (*Harbour Seal) [1365]

Inishbofin and Inishshark SAC	98	Coastal lagoons [1150] Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) [3110] Northern Atlantic wet heaths with *Erica tetralix* [4010] European dry heaths [4030] *Halichoerus grypus* (Grey Seal) [1364]
Slyne Head Islands SAC	76	Reefs [1170] *Tursiops truncatus* (Common Bottlenose Dolphin) [1349] *Halichoerus grypus* (Grey Seal) [1364]
Castlemaine Harbour SAC	122	Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Annual vegetation of drift lines [1210] Perennial vegetation of stony banks [1220] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Salicornia and other annuals colonising mud and sand [1310] Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] Mediterranean salt meadows (Juncetalia maritimi) [1410] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Dunes with *Salix repens* ssp. *argentea* (Salicion arenariae) [2170] Humid dune slacks [2190] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae) [91E0] *Petalophyllum ralfsii* (Petalwort) [1395] *Petromyzon marinus* (Sea Lamprey) [1095] *Lampetra fluviatilis* (River Lamprey) [1099] *Salmo salar* (Salmon) [1106] *Lutra lutra* (Otter) [1355]

Lough Melvin SAC	298	Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea [3130] Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) [6410] *Salmo salar* (Salmon) [1106] *Lutra lutra* (Otter) [1355]
Killala Bay/Moy Estuary SAC	250	Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Annual vegetation of drift lines [1210] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Salicornia and other annuals colonising mud and sand [1310] Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Humid dune slacks [2190] *Vertigo angustior* (Narrow-mouthed Whorl Snail) [1014] *Petromyzon marinus* (Sea Lamprey) [1095] *Phoca vitulina* (Harbour Seal) [1365]
Duvillaun Islands SAC	152	*Tursiops truncatus* (Common Bottlenose Dolphin) [1349] *Halichoerus grypus* (Grey Seal) [1364]
Inishkea Islads SAC	154	Machairs (* in Ireland) [21A0] *Petalophyllum ralfsii* (Petalwort) [1395] *Halichoerus grypus* (Grey Seal) [1364]

Ballysadare Bay SAC	273	Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Humid dune slacks [2190] *Vertigo angustior* (Narrow-mouthed Whorl Snail) [1014] *Phoca vitulina* (Harbour Seal) [1365]
Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC	271	*Estuaries [1130]* *Mudflats and sandflats not covered by seawater at low tide [1140]* *Embryonic shifting dunes [2110]Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120]* *Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]* *Juniperus communis formations on heaths or calcareous grasslands [5130]* *Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210]* *Petrifying springs with tufa formation (Cratoneurion) [7220]* *Vertigo angustior (Narrow-mouthed Whorl Snail) [1014]* *Petromyzon marinus (Sea Lamprey) [1095]* *Lampetra fluviatilis (River Lamprey) [1099]* *Phoca vitulina (Harbour Seal) [1365]*
Saltee Islands SAC	412	Mudflats and sandflats not covered by seawater at low tide [1140] Large shallow inlets and bays [1160] Reefs [1170] Submerged or partially submerged sea caves [8330] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] *Halichoerus grypus* (Grey Seal) [1364]

Hook Head SAC	390	Large shallow inlets and bays [1160] Reefs [1170] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] *Tursiops truncatus* (Common Bottlenose Dolphin) [1349] *Phocoena phocoena* (Harbour Porpoise) [1351]
Slaney River Valley SAC	460	Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] Mediterranean salt meadows (Juncetalia maritimi) [1410] Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260] Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae) [91E0] *Margaritifera margaritifera (*Freshwater Pearl Mussel) [1029] *Lampetra planeri* (Brook Lamprey) [1096] *Petromyzon marinus* (Sea Lamprey) [1095] *Lampetra fluviatilis* (River Lamprey) [1099] *Alosa fallax fallax* (Twaite Shad) [1103] *Salmo salar* (Salmon) [1106] *Lutra lutra* (Otter) [1355] *Phoca vitulina* (Harbour Seal) [1365]

Gweedore Bay and Islands SAC	310	Reefs [1170] Coastal lagoons [1150] Perennial vegetation of stony banks [1220]Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] Mediterranean salt meadows (Juncetalia maritimi) [1410] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with *Ammophila* *arenaria* (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Decalcified fixed dunes with Empetrum nigrum [2140]Atlantic decalcified fixed dunes (Calluno-Ulicetea) [2150] Dunes with *Salix repens* ssp. *argentea* (Salicion arenariae) [2170] Humid dune slacks [2190] Machairs (* in Ireland) [21A0] Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea [3130] European dry heaths [4030] Alpine and Boreal heaths [4060] *Juniperus communis* formations on heaths or calcareous grasslands [5130] *Euphydryas aurinia* (Marsh Fritillary) [1065] *Lutra lutra* (Otter) [1355] *Petalophyllum ralfsii* (Petalwort) [1395] *Najas flexilis* (Slender Naiad) [1833] *Phocoena phocoena* (Harbour Porpoise) [1351]

Clew Bay Complex SAC	215	Mudflats and sandflats not covered by seawater at low tide [1140] Large shallow inlets and bays [1160] Coastal lagoons [1150] Annual vegetation of drift lines [1210] Perennial vegetation of stony banks [1220] Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] Machairs (* in Ireland) [21A0] Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] *Lutra lutra* (Otter) [1355] *Phoca vitulina* (Harbour Seal) [1365]
Connemara Bog Complex SAC	58	Coastal lagoons [1150] Reefs [1170] Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) [3110] Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea [3130] Natural dystrophic lakes and ponds [3160] Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260] Northern Atlantic wet heaths with *Erica tetralix* [4010] European dry heaths [4030] Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) [6410] Blanket bogs (* if active bog) [7130] Transition mires and quaking bogs [7140] Depressions on peat substrates of the Rhynchosporion [7150] Alkaline fens [7230] Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] *Euphydryas aurinia* (Marsh Fritillary) [1065]

		Najas flexilis (Slender Naiad) [1833] *Salmo salar* (Salmon) [1106] *Lutra lutra* (Otter) [1355]
Slyne Head Peninsula SAC	74	Large shallow inlets and bays [1160] Reefs [1170] Coastal lagoons [1150] Annual vegetation of drift lines [1210] Perennial vegetation of stony banks [1220] Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] Mediterranean salt meadows (Juncetalia maritimi) [1410] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] Machairs (* in Ireland) [21A0] Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) [3110] Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea [3130] Hard oligo-mesotrophic waters with benthic vegetation of Chara spp. [3140] European dry heaths [4030] *Juniperus communis* formations on heaths or calcareous grasslands [5130] Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210] Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) [6410] Lowland hay meadows (*Alopecurus pratensis*, *Sanguisorba officinalis*) [6510] Alkaline fens [7230] *Petalophyllum ralfsii* (Petalwort) [1395] *Najas flexilis* (Slender Naiad) [1833] *Tursiops truncatus* (Common Bottlenose Dolphin) [1349]

Kilkieran Bay and Islands SAC	40	Mudflats and sandflats not covered by seawater at low tide [1140] Large shallow inlets and bays [1160] Reefs [1170] Coastal lagoons [1150] Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] Mediterranean salt meadows (Juncetalia maritimi) [1410] Machairs (* in Ireland) [21A0] Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea [3130] Lowland hay meadows (*Alopecurus pratensis*, *Sanguisorba officinalis*) [6510] *Lutra lutra* (Otter) [1355] *Najas flexili*s (Slender Naiad) [1833] *Phocoena phocoena* (Harbour Porpoise) [1351] *Phoca vitulina* (Harbour Seal) [1365]
Kenmare River SAC	131	Large shallow inlets and bays [1160] Reefs [1170] Submerged or partially submerged sea caves [8330] Perennial vegetation of stony banks [1220] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] Mediterranean salt meadows (Juncetalia maritimi) [1410] Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] European dry heaths [4030] *Juniperus communis* formations on heaths or calcareous grasslands [5130] Calaminarian grasslands of the Violetalia calaminariae [6130] *Vertigo angustior* (Narrow-mouthed Whorl Snail) [1014] *Rhinolophus hipposideros* (Lesser Horseshoe Bat) [1303] *Lutra lutra* (Otter) [1355]

		Phocoena phocoena (Harbour Porpoise) [1351] *Phoca vitulina* (Harbour Seal) [1365]
Lower River Shannon SAC	19	Sandbanks which are slightly covered by sea water all the time [1110] Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Large shallow inlets and bays [1160] Reefs [1170] Coastal lagoons [1150] Perennial vegetation of stony banks [1220 Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Salicornia and other annuals colonising mud and sand [1310] Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] Mediterranean salt meadows (Juncetalia maritimi) [1410] Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260] Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) [6410] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae) [91E0] *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] *Lampetra planeri* (Brook Lamprey) [1096] *Lutra lutra (*Otter) [1355] *Petromyzon marinus* (Sea Lamprey) [1095] *Lampetra fluviatilis* (River Lamprey) [1099] *Salmo salar* (Salmon) [1106] *Tursiops truncatus* (Common Bottlenose Dolphin) [1349]
Blasket Islands SAC	82	Reefs [1170] Submerged or partially submerged sea caves [8330] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] European dry heaths [4030]

		Phocoena phocoena (Harbour Porpoise) [1351] *Halichoerus grypus* (Grey Seal) [1364]
West Connaught Coast SAC	81	*Tursiops truncatus* (Common Bottlenose Dolphin) [1349] *Phocoena phocoena* (Harbour Porpoise) [1351]
Carnsore Point SAC	430	Mudflats and sandflats not covered by seawater at low tide [1140] Reefs [1170] *Phocoena phocoena* (Harbour Porpoise) [1351]
Rutland Island and Sound SAC	305	Large shallow inlets and bays [1160] Reefs [1170] Coastal lagoons [1150] Annual vegetation of drift lines [1210] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Humid dune slacks [2190] Phoca vitulina (Harbour Seal) [1365]
Blackwater Bank SAC	450	Sandbanks which are slightly covered by sea water all the time [1110] *Phocoena phocoena* (Harbour Porpoise) [1351]
Rockabill to Dalkey Islands SAC	562	Reefs [1170] *Phocoena phocoena* (Harbour Porpoise) [1351]
Codling Fault Zone SAC	575	Submarine structures made by leaking gases [1180] *Phocoena phocoena* (Harbour Porpoise) [1351]

Relevant QIs for European sites outside of Ireland within the relevant MU for Harbour porpoise (*Phocoena phocoena*).

Note: there are no sites within the relevant MU for *Tursiops truncatus* (Common Bottlenose Dolphin) outside of Ireland.
There are no sites for *Halichoerus grypus* (Grey Seal) or *Phoca vitulina* (Harbour Seal) outside of Ireland within foraging distance of the MUL area.

SAC	**Relevant QI**
Récifs et landes de la Hague SAC	Harbour porpoise (*Phocoena phocoena*)
Anse de Vauville SAC	Harbour porpoise (*Phocoena phocoena*)

Banc et récifs de Surtainville SAC	Harbour porpoise (*Phocoena phocoena*)
Chausey [Site code FR2500079]	Harbour porpoise (*Phocoena phocoena*)
Baie du Mont Saint-Michel	Harbour porpoise (*Phocoena phocoena*)
Estuaire de la Rance SAC	Harbour porpoise (*Phocoena phocoena*)
Baie de Lancieux, Baie de l'Arguenon, Archipel de Saint Malo et Dinard	Harbour porpoise (*Phocoena phocoena*)
Baie de Saint- Brieuc	Harbour porpoise (*Phocoena phocoena*)
Côte de Granit rose-Sept-Iles	Harbour porpoise (*Phocoena phocoena*)
Rivière Leguer, forêts de Beffou, Coat an Noz et Coat an Hay	Harbour porpoise (*Phocoena phocoena*)
Baie de Morlaix SAC	Harbour porpoise (*Phocoena phocoena*)
Abers - Côte des légendes	Harbour porpoise (*Phocoena phocoena*)
Ouessant-Molène	Harbour porpoise (*Phocoena phocoena*)
Côtes de Crozon	Harbour porpoise (*Phocoena phocoena*)
Chaussée de Sein	Harbour porpoise (*Phocoena phocoena*)
Mers Celtiques - Talus du golfe de Gascogne	Harbour porpoise (*Phocoena phocoena*)
Récifs du talus du golfe de Gascogne	Harbour porpoise (*Phocoena phocoena*)
Nord Bretagne DH	Harbour porpoise (*Phocoena phocoena*)
Relevant QIs for UK sites within the relevant MU for Harbour porpoise (*Phocoena phocoena*). **Note:** there are no sites within the relevant MU for *Tursiops truncatus* (Common Bottlenose Dolphin) outside of Ireland.	
North Channel SAC UK0030399	Harbour porpoise (*Phocoena phocoena*)
Strangford Lough UK0016618	Harbour porpoise (*Phocoena phocoena*)
Murlough UK0016612	Harbour porpoise (*Phocoena phocoena*)
North Anglesey Marine/Gogledd Môn Forol Side Code UK0030398	Harbour porpoise (*Phocoena phocoena*)
West Wales Marine/Gorllewin Cymru Forol UK0030397	Harbour porpoise (*Phocoena phocoena*)
Bristol Channel Approaches/Dynesfeydd Môr Hafren UK0030396	Harbour porpoise (*Phocoena phocoena*)

Table 8. Qualifying interests for all SPAs screened in.

SPA	**Distance (Km) ***	**Qualifying interest**
Mid-Clare Coast SPA	Overlapping	Cormorant (*Phalacrocorax carbo*) [A017] Barnacle Goose (*Branta leucopsis*) [A045] Ringed Plover (*Charadrius hiaticula*) [A137] Sanderling (*Calidris alba*) [A144] Purple Sandpiper (*Calidris maritima*) [A148] Dunlin (*Calidris alpin*a) [A149] Turnstone (*Arenaria interpres*) [A169] Wetland and Waterbirds [A999]
Cliffs of Moher SPA	6	Fulmar (*Fulmarus glacialis*) [A009] Kittiwake (*Rissa tridactyla*) [A188] Guillemot (*Uria aalge*) [A199] Razorbill (*Alca torda*) [A200] Puffin (*Fratercula arctica)* [A204] Chough (*Pyrrhocorax pyrrhocorax*) [A346]
Loop Head SPA	18	Kittiwake (*Rissa tridactyla*) [A188] Guillemot (*Uria aalge*) [A199]
Inishmore SPA	26	Kittiwake (*Rissa tridactyla*) [A188] Arctic Tern (*Sterna paradisaea*) [A194] Little Tern (*Sterna albifrons*) [A195] Guillemot (*Uria aalge*) [A199]
Iveragh Peninsula SPA	76	Fulmar (*Fulmarus glacialis*) [A009] Peregrine (*Falco peregrinus*) [A103] Kittiwake (*Rissa tridactyla*) [A188] Guillemot (*Uria aalge*) [A199] Chough (*Pyrrhocorax pyrrhocorax*) [A346]
Blasket Islands SPA	83	Fulmar (*Fulmarus glacialis*) [A009] Manx Shearwater (*Puffinus puffinus*) [A013] Storm Petrel (*Hydrobates pelagicus*) [A014] Shag (*Phalacrocorax aristotelis*) [A018] Lesser Black-backed Gull (*Larus fuscus*) [A183] Herring Gull (*Larus argentatus*) [A184] Kittiwake (*Rissa tridactyla*) [A188] Arctic Tern (*Sterna paradisaea*) [A194] Razorbill (*Alca torda*) [A200] Puffin (*Fratercula arctica)* [A204] Chough (*Pyrrhocorax pyrrhocorax*) [A346]
Clare Island SPA	108	Fulmar (*Fulmarus glacialis*) [A009] Shag (*Phalacrocorax aristotelis*) [A018] Common Gull (*Larus canus*) [A182] Kittiwake (*Rissa tridactyla*) [A188] Guillemot (*Uria aalge*) [A199]

		Razorbill (*Alca torda*) [A200] Chough (*Pyrrhocorax pyrrhocorax*) [A346
Skelligs SPA	116	Fulmar (*Fulmarus glacialis*) [A009] Manx Shearwater (*Puffinus puffinus*) [A013] Storm Petrel (*Hydrobates pelagicus*) [A014] Gannet (*Morus bassanus*) [A016] Kittiwake (*Rissa tridactyla*) [A188] Guillemot (*Uria aalge*) [A199] Puffin (*Fratercula arctica)* [A204]
Old Head of Kinsale SPA	142	Kittiwake (*Rissa tridactyla*) [A188] Guillemot (*Uria aalge*) [A199]
Helvick Head to Ballyquin SPA	151	Cormorant (*Phalacrocorax carbo*) [A017] Peregrine (*Falco peregrinus*) [A103] Herring Gull (*Larus argentatus*) [A184] Kittiwake (*Rissa tridactyla*) [A188] Chough (*Pyrrhocorax pyrrhocorax*) [A346]
The Bull And The Cow Rocks SPA	128	Storm Petrel (*Hydrobates pelagicus*) [A014] Gannet (*Morus bassanus*) [A016] Puffin (*Fratercula arctica)* [A204]
Saltees Islands SPA	208	Fulmar (*Fulmarus glacialis*) [A009] Gannet (*Morus bassanus*) [A016] Cormorant (*Phalacrocorax carbo*) [A017] Shag (*Phalacrocorax aristotelis*) [A018] Lesser Black-backed Gull (*Larus fuscus*) [A183] Herring Gull (*Larus argentatus*) [A184] Kittiwake (*Rissa tridactyla*) [A188] Guillemot (*Uria aalge*) [A199] Razorbill (*Alca torda*) [A200] Puffin (*Fratercula arctica)* [A204]
Kerry Head SPA	28	Fulmar (*Fulmarus glacialis*) [A009] Chough (*Pyrrhocorax pyrrhocorax*) [A346]
Dingle Peninsula SPA	51	Fulmar (*Fulmarus glacialis*) [A009] Peregrine (*Falco peregrinus*) [A103] Chough (*Pyrrhocorax pyrrhocorax*) [A346]
High Island, Inishshark and Davillaun SPA	90	Fulmar (*Fulmarus glacialis*) [A009] Barnacle Goose (*Branta leucopsis*) [A045] Arctic Tern (*Sterna paradisaea*) [A194]
Puffin Island SPA	107	Fulmar (*Fulmarus glacialis*) [A009] Manx Shearwater (*Puffinus puffinus*) [A013] Storm Petrel (*Hydrobates pelagicus*) [A014] Lesser Black-backed Gull (*Larus fuscus*) [A183] Razorbill (*Alca torda*) [A200] Puffin (*Fratercula arctica)* [A204]
Deenish Island and Scariff Island SPA	113	Fulmar (*Fulmarus glacialis*) [A009] Manx Shearwater (*Puffinus puffinus*) [A013]

		Storm Petrel (*Hydrobates pelagicus*) [A014] Lesser Black-backed Gull (*Larus fuscus*) [A183] Arctic Tern (*Sterna paradisaea*) [A194]
Beara Peninsula SPA	116	Fulmar (*Fulmarus glacialis*) [A009] Chough (*Pyrrhocorax pyrrhocorax*) [A346]
Duvillaun Islands SPA	141	Fulmar (*Fulmarus glacialis*) [A009] Storm Petrel (*Hydrobates pelagicus*) [A014] Barnacle Goose (*Branta leucopsis*) [A045]
West Donegal Coast SPA	254	Fulmar (*Fulmarus glacialis*) [A009] Cormorant (*Phalacrocorax carbo*) [A017] Shag (*Phalacrocorax aristotelis*) [A018] Peregrine (*Falco peregrinus*) [A103] Herring Gull (*Larus argentatus*) [A184] Kittiwake (*Rissa tridactyla*) [A188] Razorbill (*Alca torda*) [A200] Chough (*Pyrrhocorax pyrrhocorax*) [A346]
Lambay Island SPA	237	Fulmar (*Fulmarus glacialis*) [A009] 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] Guillemot (*Uria aalge*) [A199] Razorbill (*Alca torda*) [A200] Puffin (*Fratercula arctica)* [A204]
Horn Head to Fanad Head SPA	271	Fulmar (*Fulmarus glacialis*) [A009] Cormorant (*Phalacrocorax carbo*) [A017] Shag (*Phalacrocorax aristotelis*) [A018] Barnacle Goose (*Branta leucopsis*) [A045] Peregrine (*Falco peregrinus*) [A103] Kittiwake (*Rissa tridactyla*) [A188] Guillemot (*Uria aalge*) [A199] Razorbill (*Alca torda*) [A200] Chough (*Pyrrhocorax pyrrhocorax*) [A346] Greenland White-fronted Goose (Anser albifrons flavirostris) [A395]
Tory Island SPA	276	Fulmar (*Fulmarus glacialis*) [A009] Corncrake (*Crex crex*) [A122] Razorbill (*Alca torda*) [A200] Puffin (*Fratercula arctica)* [A204]
River Shannon and River Fergus Estuaries SPA	8	Cormorant (*Phalacrocorax carbo*) [A017] Whooper Swan (*Cygnus cygnus*) [A038] Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] Shelduck (*Tadorna tadorna*) [A048]

		Wigeon (*Tanas penelope*) [A050] Teal (*Anas crecca*) [A052] Pintail (*Anas acuta*) [A054] Shoveler (*Anas clypeata*) [A056] Scaup (*Aythya marila*) [A062] Ringed Plover (*Charadrius hiaticula*) [A137] Golden Plover (*Pluvialis apricaria*) [A140] Grey Plover (*Pluvialis squatarola*) [A141] Lapwing (*Vanellus vanellus*) [A142] Knot (*Calidris canutus*) [A143] Dunlin (*Calidris alpin*a) [A149] Black-tailed Godwit (*Limosa limosa*) [A156] Bar-tailed Godwit (*Limosa lapponica*) [A157] Curlew (*Numenius arquata*) [A160] Redshank (*Tringa totanus*) [A162] Greenshank (*Tringa nebularia*) [A164] Black-headed Gull (*Chroicocephalus ridibundus*) [A179] Wetland and Waterbirds [A999]
Bills Rocks SPA	121	Storm Petrel (*Hydrobates pelagicus*) [A014] Puffin (*Fratercula arctica)* [A204]
Seas of Wexford SPA	184	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] 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] 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] Guillemot (*Uria aalge*) [A199] Razorbill (*Alca torda*) [A200] Puffin (*Fratercula arctica)* [A204]
North-West Irish Sea SPA	226	Red-throated Diver (*Gavia stellata*) [A001] Great Northern Diver (*Gavia immer*) [A003] Fulmar (*Fulmarus glacialis*) [A009] Manx Shearwater (*Puffinus puffinus*) [A013] Cormorant (*Phalacrocorax carbo*) [A017] Shag (*Phalacrocorax aristotelis*) [A018]

		Common Scoter (*Melanitta nigra*) [A065] Little Gull (*Larus minutus*) [A177] Black-headed Gull (*Chroicocephalus ridibundus*) [A179] Common Gull (*Larus canus*) [A182] Lesser Black-backed Gull (*Larus fuscus*) [A183] Herring Gull (*Larus argentatus*) [A184] Great Black-backed Gull (*Larus marinus*) [A187] Kittiwake (*Rissa tridactyla*) [A188] Roseate Tern (*Sterna dougallii*) [A192] Common Tern (*Sterna hirundo*) [A193] Arctic Tern (*Sterna paradisaea*) [A194] Little Tern (*Sterna albifrons*) [A195] Guillemot (*Uria aalge*) [A199] Razorbill (*Alca torda*) [A200] Puffin (*Fratercula arctica)* [A204]
Magharee Islands SPA	44	Storm Petrel (*Hydrobates pelagicus*) [A014] Shag (*Phalacrocorax aristotelis*) [A018] Barnacle Goose (*Branta leucopsis*) [A045] Common Gull (*Larus canus*) [A182] Common Tern (*Sterna hirundo*) [A193] Arctic Tern (*Sterna paradisaea*) [A194] Little Tern (*Sterna albifrons*) [A195]
Inishglora and Inishkeeragh SPA	160	Storm Petrel (*Hydrobates pelagicus*) [A014] Cormorant (*Phalacrocorax carbo*) [A017] Shag (*Phalacrocorax aristotelis*) [A018] Barnacle Goose (*Branta leucopsis*) [A045] Lesser Black-backed Gull (*Larus fuscus*) [A183] Herring Gull (*Larus argentatus*) [A184] Arctic Tern (*Sterna paradisaea*) [A194]
Illanmaster SPA	161	Storm Petrel (*Hydrobates pelagicus*) [A014]
Stags of Broad Haven SPA	166	Storm Petrel (*Hydrobates pelagicus*) [A014] Leach's Storm-petrel (*Oceanodroma leucorhoa*) [A015]

- * Distance: As the crow flies

8. In-combination impacts

8.1. Approach to identification of in-combination effects

While a single project or plan may not in itself result a significant effect on the conservation objectives of a site, a combination of projects within a localised area may cause a significant effect on a site. Therefore, the cumulative impacts must be taken into consideration when assessing the possible impacts of a project.

Potential project related impacts were identified in section 6 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.

MARA has developed a stepwise approach for identifying in-combination plans and projects, as such, using professional and scientific judgement, the key steps for assessing cumulative effects employed were as follows:

- Defining the Cumulative Effects Spatial Scope (CESS)
- Defining the Cumulative Effects Temporal Scope (CETS)
- Impact identification
- Pathway identification
- Prediction
- Identification of Plans or Projects that could act in combination
- Screening Stage Cumulative Effects Assessment conclusion
- Managing cumulative impacts identified - to be carried out as part of Stage 2 AA process

For the proposed project the CESS has been defined as 5 km and the CETS as 5 years. The definition of the CESS is based on acoustic survey equipment effective deterrence ranges as per JNCC Guidance on Assessing the Significance of Noise Disturbance against Harbour Porpoise SACs Conservation Objectives (JNCC, 2020) and the CETS is the Maritime Usage Licence period.

Using the above 8 step approach, and following a search of relevant databases undertaken on the 3rd of March 2025, two projects have been identified as being within the CESS of the MUL area as detailed in

Table 9.

Table 9. Search of additional projects within or adjacent to ZoI.

Application licence no.	Applicant	Approximate Distance from the MUL Area	Proposed Activity	Project Status	Potential for cumulative effect
MUL240033	Uisce Éireann	Within	Survey to support a strategic modelling study of water currents. Including deployment of ADCPs, CTD measurements and bathymetric surveys (MBES & SBES)	Proposed. Application submitted 19/12/2024	Spatial overlap with MUL Area. Within the CESS. Possible temporal overlap Potential for noise inducing activities (MBES surveys)
ABP 321697	Fuinneamh Sceirde Teo.	Within	30 no. Offshore Wind Turbine generators with gravity based fixed-bottom foundations & all associated work	17/1/2025	Spatial overlap with MUL Area. Within the CESS. Possible temporal overlap Potential for noise inducing activities resulting from geophysical, geotechnical, benthic, unexploded ordnance (UXO) and metocean investigations

The following plans, related to the development of the maritime environment were also identified:

- Climate Action Plan 2023
- The Climate Action Plan 2024
- Designated Maritime Area Plans (DMAPs)

It is considered that likely significant in-combination effects between the identified projects and plans on the conservation objectives of Natura 2000 sites considered in this report cannot be excluded at this stage.

9. Transboundary effect

Transboundary effects refer to significant effects that a proposed development in one country may have on the environment of another. The United Nations Economic Commission for Europe (UNECE) Convention on Environmental Impact Assessment in a Transboundary Context, (referred to as the 'Espoo Convention') adopted in 1991 documents the requirement to consider transboundary impacts. The Espoo Convention requires that assessments are extended across borders between Parties of the Convention when a planned activity may cause significant adverse transboundary impacts.

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.

As a number of the sites screened in relate to countries outside of Ireland (France), transboundary effects cannot be excluded at this stage.

10. Conclusion

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.

The assessment concludes that, the proposed project may give rise to significant effects on the conservation objectives of a number of European sites without mitigation. Accordingly, it is concluded that Appropriate Assessment of the proposed project is required.

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