MERC Consultants
environmental and conservation services

Assessments of Impacts of the Maritime Usage Report

Department of the Environment, Climate and Communications: Geophysical Reconnaissance Survey in support of offshore renewable energy development

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1. Introduction

1.1 Overview

Ireland has moved to a plan-led approach to deliver our offshore wind targets. The Government is delivering our climate and energy ambitions for offshore wind energy through a number of overlapping phases:

- Phase One, which corresponds to the first offshore renewable electricity auction (ORESS 1)
- Phase Two, an accelerated work programme, focusing on near-term delivery based on technology with proven scalability in other jurisdictions, and which will procure the additional offshore wind capacity required to meet Government's 2030 target, and
- The fully plan-led Future Framework

Ireland's second offshore wind energy auction, ORESS 2.1 will be the first auction to take place in Phase Two and will procure up to 900 Megawatts of capacity from a State-selected designated area known as a Designated Maritime Area Plan (DMAP) off Ireland's south coast.

In support of ORESS 2.1, the Department of Environment Climate and Communications (DECC) is planning a Geophysical Reconnaissance Survey for indicatively 52 days. Specific dates are vessel schedule pending. Data acquired will be made publicly available to participants in the ORESS 2.1 energy auction process.

For this survey, DECC propose to use the Marine Institute R.V. *Tom Crean* to acquire and deliver new offshore geophysical data and knowledge. The primary objective of this survey is to gather data on the sub-surface geology within the upper 100 meters below the seabed. This information will be crucial in assessing the suitability of marine areas for potential offshore wind and grid infrastructure development within the South Coast DMAP.

The area that will be surveyed is a subsection of that outlined in Fig. 1, and will be refined pending the DMAP area published. It extends from the 75m bathymetry contour offshore to the 10m bathymetry contour and/or to approximately 300m from the coastline to the western extent, and 7.5km from land on the eastern extent.

The coastal area incorporated in the Cork Harbour approaches is to facilitate potential acquisition of baseline geophysical data in support of power cable routing for grid connection to offshore wind infrastructure. The final survey configuration and plan will be informed by the draft DMAP establishment process ongoing presently.

1.2 Objectives of this report

To allow the Competent Authority (MARA) to fully assess all potential impacts of the proposed maritime usage, this Assessment of Impact on the Maritime Usage (AIMU) report has examined the potential for project related impacts on the environment including the following elements:

- Assessment of impact on the environment with respect to the EIA Directive
- Assessment of conformity relative to the key objectives of the Water Framework Directive (WFD)
- Assessment of conformity relative to the key objectives of the Marine Strategy Framework Directive (MSFD)
- Assessment of consistency with the National Marine Planning Framework (NMPF)

2. Statement of Authority

This report was prepared by Louise Scally and Nick Pfeiffer 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 aquatic habitats and species in addition to the assessment and management of conservation interests. MERC were responsible for preparing the NPWS national monitoring of marine Annex I habitats for compliance under Article 17 of the EU Habitats Directive in the period 2015-2019. In this context MERC were responsible for the assessment and reporting of marine Annex I habitats in Ireland and were the authors of all Article 17 reports and overarching site monitoring reports. MERC are currently engaged in conducting surveys and preparing the relevant reports for the current (2022-2025) monitoring cycle.

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

Louise Scally 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 15 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 .

Nick Pfeiffer 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 2006 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. Details of the proposed project

3.1 Project location

The proposed broad geophysical target survey area is 475,408 Hectares. It encompasses an area from the nearshore out to the 75m contour stretching from approximately 8km east of Carnsore Point off the Wexford coast, west to Oyster Haven, County Cork (figure 1).

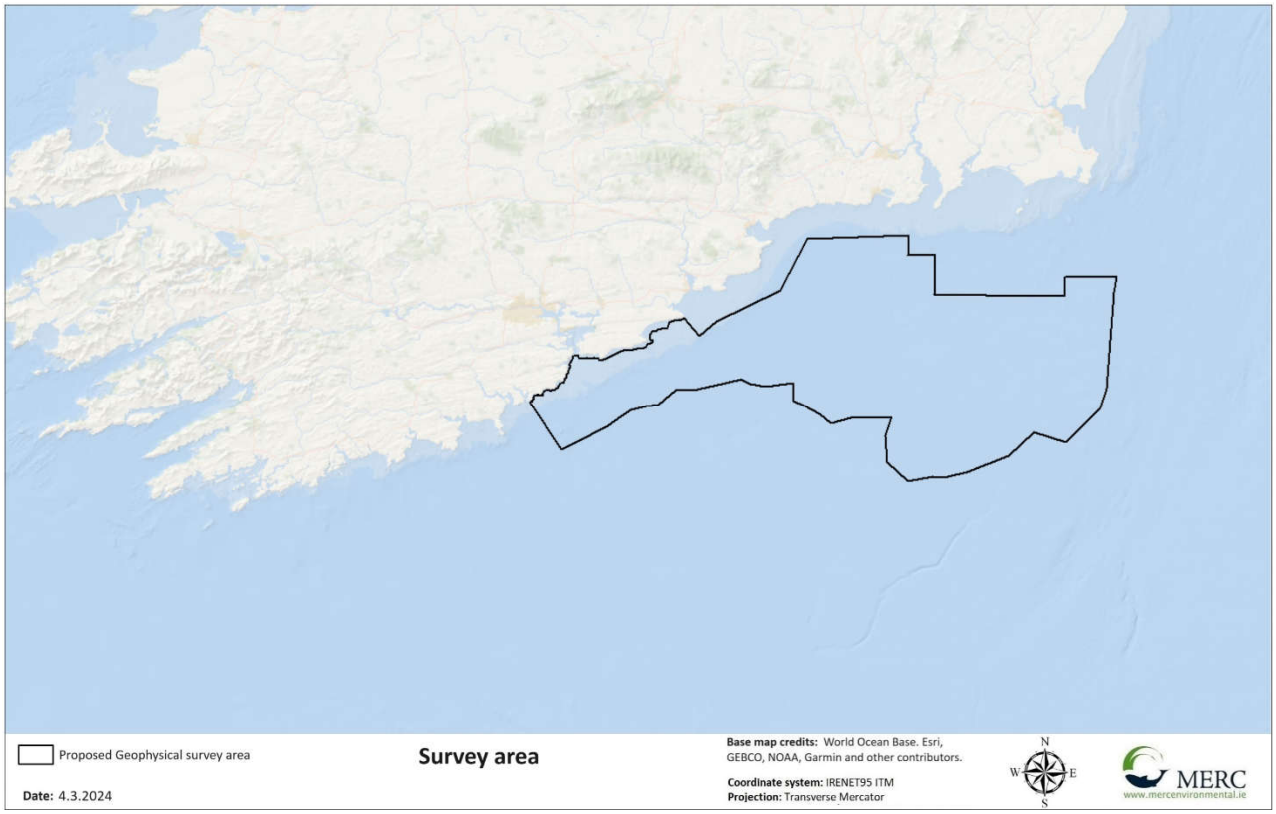

Fig. 1. Proposed project location

3.2 Scope of works

In support of ORESS 2.1, the Department of Environment Climate and Communications (DECC) is planning a Geophysical Reconnaissance Survey to take place between May to September 2024, for approximately 52 days. Specific dates are vessel schedule pending.

The reconnaissance survey data collected by this initial and future survey works will provide information in the upper 100 m of sub-surface geology, to inform the potential suitability of marine areas for possible offshore wind and grid infrastructure development, should these areas be identified as suitable for offshore wind and/or grid development within the final South Coast DMAP.

A suite of mapping instruments will be used in this geophysical reconnaissance survey. This includes multibeam, sub bottom profiler, deployment of a day or Hammon grab, side scan sonar, a sparker system and if further penetration is required, an air gun source. These will provide appropriate datasets for the various sub-bottom requirements for a ground investigation for offshore wind

development. The type of sub-bottom profiler and sparker system to be used to investigate the geology will be determined by a number of factors including:

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

Hence, it is common to utilise a combination of sub-bottom acoustic profilers to image the various depths of interest for engineering. The zones of interest would typically include:

- Shallow sub-seafloor (0-5 m) for inter-array and export cable protection or burial depths.
- Intermediate sub-seafloor (5-10 m) for anchoring and small structure foundations.
- Deeper sub-seafloor: (10-100 m) for large structures (e.g., piled foundations).

The acquisition of deeper sub seafloor geophysical data will be acquired utilising a sparker system and /or air gun to penetrate to the required depth of up to 100m.

See Table 1 for proposed equipment and specifications.

Table 1. Acoustic and benthic sampling equipment proposed to be operated on board the R.V. Tom Crean

Acoustic survey equipment				
Equipment	**Model**	**Deployment**	**Company**	**Sound Pressure Level re 1 µPA in water @ 1m from source**
Multibeam Echo sounder	EM2040 (200,300 & 400kHz)	Retractable hull mount	Konsberg Maritime	210
Sparker System & 48 channel hydrophone array	Dura-speak seismic sound source 300Hz to 1.2kHz	Towed system	Subsea Tehnologies	226
Sparker (backup)	Geospark 200	Towed system	Geus	223
Sub-bottom Profiler	Knudsen 3250 CHIRP (3.5-12kHz)	Vessel mount	Knudsen	223
Mini air-gun	Mini G Gun	Towed system	Sercel	230
Side scan Sonar	4205 sidescan 300 to 900 kHz	Towed system	Edgetech	228
Benthic sampling equipment				
Day Grab	N/A	Overboard	N/A	N/A
Hammon Grab	N/A	Overboard	N/A	N/A

Towed equipment will be restricted to a single 48 channel hydrophone and tail buoy, active streamer length approximately 150m, total towed instrumentation length approximately 200m. This will slightly restrict vessel manoeuvrability.

The reconnaissance data collected by the proposed survey will provide information in the upper 100m of sub-surface geology, to inform the potential suitability of marine areas for possible offshore wind and grid infrastructure development, should these areas be identified as suitable for offshore wind

and/or grid development within the final South Coast Designated Maritime Area Plan (DMAP), further reconnaissance surveys may be carried out in 2024.

Details of the survey vessel and proposed equipment to be used for the geophysical surveys are provided below.

3.2.1 Survey vessel

The Irish multi-purpose marine research vessel, the *RV Tom Crean,* will be used for the proposed surveys (figure 2). 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 specifications are given in Table 2 and the noise profile at a range of speeds given in Figures 3 to 5.

Fig. 2. R.V. Tom Crean

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

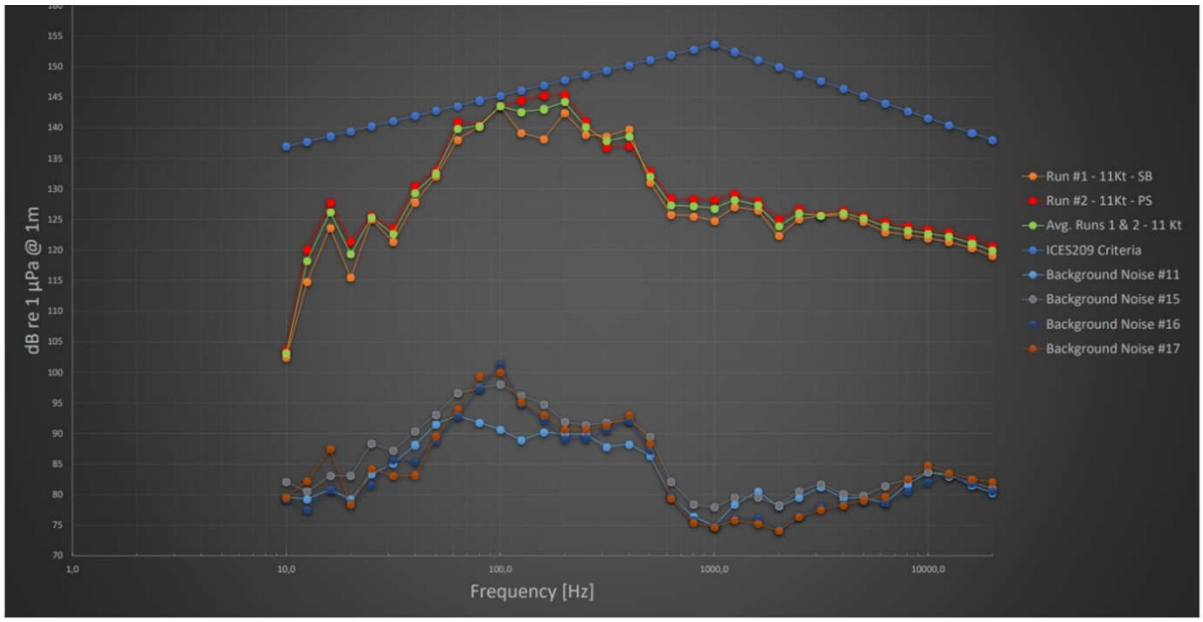

Fig. 3. (Run ID no. 1 and 2). Main verification at 11Kt distance corrected and averaged.
Distance correction is based on derived correction factors from the transmission loss function.

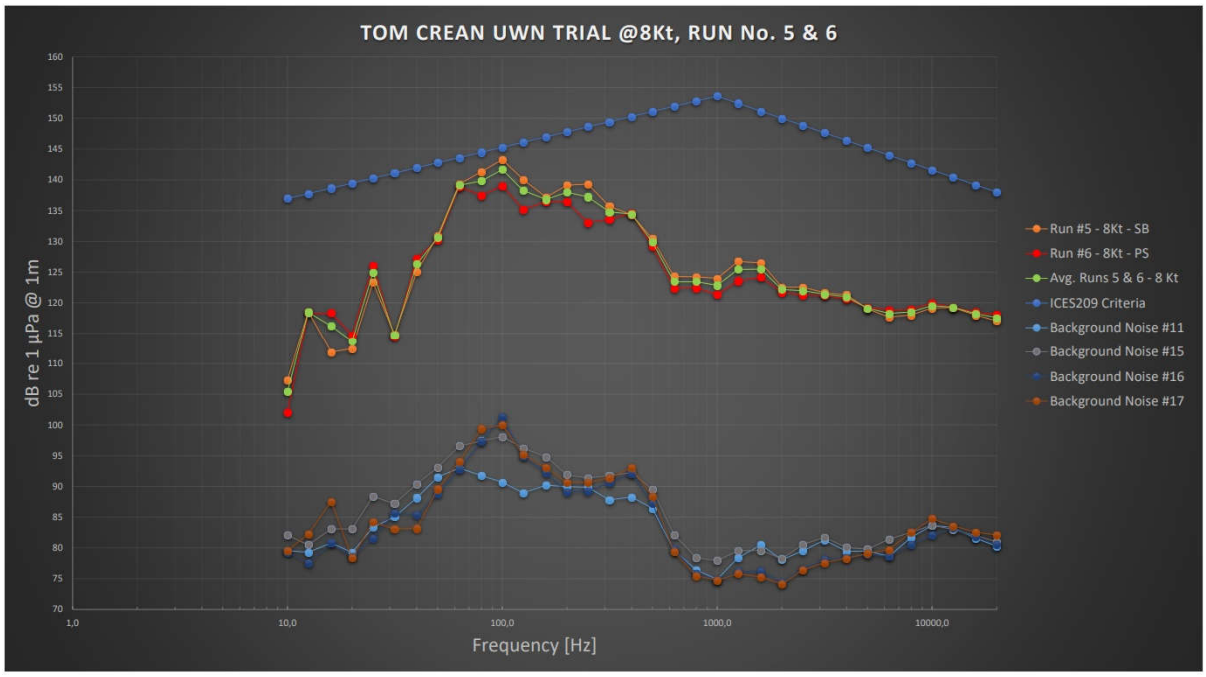

Fig. 4. Run Id no. 5 and 6 at 8Kt distance corrected and averaged.
Distance correction is based on derived correction factors from the transmission loss function.

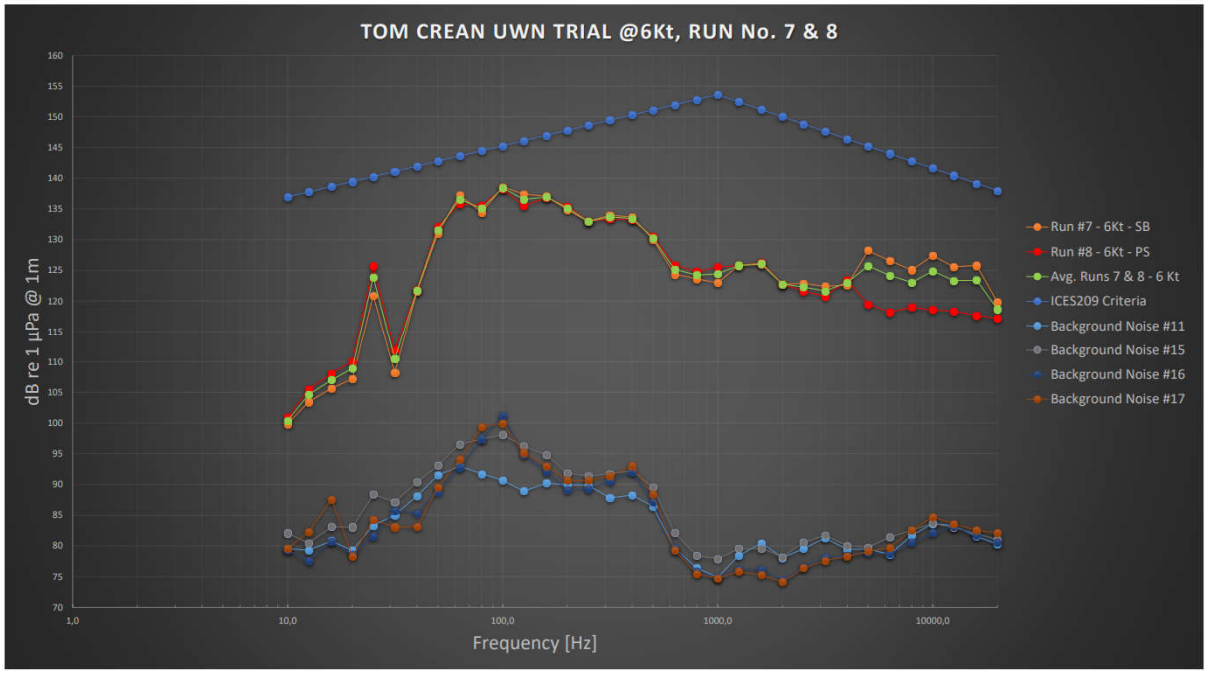

Fig. 5. Run Id No. 7 and 8 at 6Kt distance corrected and averaged.
Distance correction is based on derived correction factors from the transmission loss function.

3.2.2 Multibeam echosounder

A multibeam echosounder (MBES) is a type of sonar frequently used to map bathymetry. It operates by emitting an acoustic wave in a fan shape beneath the point of its transceiver attached 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.

3.2.3 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.

3.2.4 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.

3.2.5 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.

3.2.6 Side scan

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.

3.2.7 Day grab and 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 and are considered benign activity that do not impact the seabed at the scale required for monitoring soft or coarse sediments. They are solely designed for the sampling of soft or coarse sediments and therefore are not suitable for/or are deployed on reef/rock habitats.

4. Methods

A report containing Supporting Information for Screening for Appropriate Assessment (MERC, 2024a) and Annex IV Risk Assessment (MERC, 2024b) have also been carried out to support this licence application. Both reports were consulted during the preparation of this AIMU report.

This AIMU report has been prepared with reference to the following European Directives, national legislation and guidance on the provisions of, *inter alia*, the Environmental Impact Assessment Directive.

- Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment as amended by Directive 2014/52/EU (EIA Directive) (Codified Directive).
- Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA, 2022).
- Technical Guidance note: Obtaining a licence to carry out specified maritime usages in the Maritime Area under the Maritime Area Planning Act 2021. MARA, 2024 Ver 5.
- 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.
- Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Waters. Department of Arts, Heritage and the Gaeltacht, 2014.

A review of the baseline data was carried out by referring to the following reports and datasets:

- Department of Housing, Local Government and Heritage. National monuments service; wreck viewer.
- Integrated Mapping for the Sustainable Development of Ireland's Marine Resource (INFOMAR) 2024. Bathymetry, backscatter, sediment samples and sediment classification layers.
- Marine Institute (2022). Ireland's Marine Atlas: Fishing activity and Fish Species Distribution Layers
- Irish Ramsar Wetlands Committee. Ramsar sites Ireland.
- NPWS Designations viewer (SACs, SPAs, NHAs and pNHAs)
- Biodiversity Data Centre Maps: Habitats and Species.
- MERC (2024a). Supporting Information for Screening for Appropriate Assessment: Department of the Environment, Climate and Communications: Geophysical Reconnaissance Survey in support of offshore renewable energy development.
- MERC (2024b). EU Habitats Directive: Annex IV Risk Assessment: Department of the Environment, Climate and Communications: Geophysical Reconnaissance Survey in support of offshore renewable energy development

5. Environmental Report (EIA Directive: not of a class)

5.1 Background

The objective of Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment (the Environmental Impact Assessment, or EIA, Directive) is to ensure that projects that are likely to have a significant effect on the environment are adequately assessed before they are approved. An EIA is required for all projects detailed in Annex I of the EIA Directive and for all projects detailed in Annex II where the proposed project is likely to have significant effects on the environment. The proposed project does not fall within the classes defined under Annex I or Annex II of the EIA Directive. Therefore, it is not subject to the provisions of the EIA Directive.

Notwithstanding the fact that the proposed project is not subject to mandatory EIA, this AIMU has assessed the project relative to its potential to impact the receiving environment by virtue, *inter alia*, of its nature, size and location.

As such the following elements have been assessed and an analysis of the assessment is given in table 3 of this report:

- Land & Soils
- Water
- Biodiversity
- Fisheries and Aquaculture
- Air Quality
- Noise & Vibration
- Landscape/Seascape
- Traffic & Transport (including navigation)
- Cultural Heritage (including underwater archaeology
- Population & Human Health
- Major Accidents & Disasters
- Climate
- Waste
- Material Assets
- Interactions

5.2 Assessment of Impact

The Zone of Influence (ZoI) of the proposed project was established in the preparation of the SISAA (MERC, 2024a).

No direct or indirect pathway to freshwater, coastal or terrestrial habitats was established. For this reason the baseline of the receiving environment is focused solely on marine habitats, and species including marine mammals and avifauna that utilise the marine environment.

The bathymetry and predominant habitat types in the area is known from INFOMAR data. A description of the ecology of the receiving environment is provided in the SISAA (MERC, 2024a). Table 3 below provides a summary of the environmental baseline and an assessment of the potential for impact on the environment.

Table 3. Environmental baseline and assessment of impact

Protected sites
European sites (SAC's and SPA's)
There is no spatial overlap of the proposed project area and any European site. However, a number of European sites are present within the ZoI of the proposed project. A SISAA report (MERC, 2024a) has been provided as part of this application. The SISAA report has identified all European sites within the ZoI of the proposed project and concluded that there is no potential for impacts on any European site.
Additional designations (NHAs, pNHAs, Ramsar sites)
The proposed project is entirely marine and the SISAA did not identify any source path receptor link to any terrestrial, coastal or freshwater habitats or species. Sovereign Islands NHA and Keeragh Islands NHA are within the ZoI of the proposed project. The boundaries of both of these sites are coincident with the boundaries of Sovereign Island SPA and Keeragh Islands SPA respectively. The SISAA did not identify any potential for impact on either of these sites and therefore no potential for impact is considered possible. Capel Island and Knockadoon Head pNHA and Ballycotton Islands pNHA are located immediately adjacent to the proposed projects northern boundary. However, no SPR link that could impact on the biodiversity interests of wither of these sites are considered possible due to the scale and magnitude of the project activities in the subtidal area only. A review of the Ramsar database (https://www.ramsar.org/country-profile/ireland) indicates that no Ramsar sites overlap with the proposed area or are considered to be within the ZOI of the proposed project. There are seven Ramsar sites situated along the coastline to the north of the proposed project area. These sites (Cork Harbour, Ballycotton Bay, Ballymacoda, Blackwater Estuary, Dungarvan Harbour, Tramore Backstrand and Bannow Bay) are all largely coincident with the boundaries for SPAs associated with these areas. The SISAA (MERC 2024a) found no potential for impact on any of the related SPAs and therefore no project related impacts are considered possible.
Non-statutory Environmental Assessment
Population and Human Health
All acoustic surveys will be fully marine. Minor inconvenience may be encountered by fishing vessel operators during survey activities but this will be temporary and for a short time period. There is no potential for pollution as the survey vessel is MARPOL compliant and hydrocarbon usage with the survey equipment is negligible.
Biodiversity
<u>Benthic habitats</u>

A mosaic of different sediment types are recorded for this area. The habitat being described on the basis of Shipek grab samples taken as part of the INFOMAR programme over recent years. Shallow sublittoral sand and shallow sublittoral coarse sediment dominate the area is the deeper (>40m) sections of the proposed survey area. Closer inshore, a greater range of habitats are present which includes the aforementioned habitats in mosaic with shallow sublittoral mixed sediment and shallow sublittoral rock and biogenic reef. There are no records of any sensitive habitats for this area. The only intrusive equipment being used is a Day or Hammon grab and the SISAA (MERC, 2024a) has indicated that no potential for impact from this use of these equipment types is possible.

Coastal and terrestrial habitats

Not relevant. The proposed project is entirely within the subtidal marine environment and no direct or indirect links to coastal, freshwater or terrestrial habitats are possible.

Avifauna

The proposed project area provides foraging habitat for seabirds. Following a full review of the available data and the potential for impact on bird species, the SISAA (MERC, 2024a) concluded that there would be no likely significant effects on bird species within the zone of influence of the proposed project.

Marine Mammals

Data derived from the IWDG live sightings database and the ObSERVE aerial survey programme indicates a diverse range of marine mammals utilise this area of the coast. There are records for frequent live sightings of Common dolphin (*Delphinus delphis*), Common Porpoise (*Phocoena phocoena*), Fin Whale (*Balaenoptera physalus*), Humpback Whale (*Megaptera novaeangliae*), Minke Whale (*Balaenoptera acutorostrata*) and Grey Seal (*Halichoerus grypus*) within the ZoI of the proposed project. While occasional records for live sightings of additional cetacean species including Bottle-nosed Dolphin (*Tursiops truncates*) and Risso's Dolphin (*Grampus griseus*) are also available. Due to the distance from shore (minimum of 300m) it is considered unlikely that otter (*Lutra lutra*) utilise the proposed project area.

An Annex IV Risk Assessment was prepared for the proposed project (MERC 2024b). This assessment indicated the potential for impacts on a number of cetacean species should they be present in the proposed project area during selected elements of the acoustic survey. As such mitigation was proposed and this has been included in the “Summary of Mitigation” provided below.

In a similar manner to that identified in the Annex IV Risk assessment, it is considered that without mitigation, impacts on pinnipeds, including grey seal, may occur, without mitigation. However, provided the mitigation detailed in this AIMU report is implemented no potential for impact on pinnipeds is considered likely.

Fish

Commercial fisheries

Pot fishing occurs within sections of the proposed project site, especially towards the northern limits of the area closer to shore but also out to the 70 m contour (See figure 6).
Midwater trawling occurs towards in a small section towards the northern boundary of the site, while net fishing occurs through much of the site (Fig 6).

The site is a nursery area for the Cod, Herring, Haddock, Hake, Horse mackerel, Megrim, Whiting and White bellied Angler. It is also a recorded spawning area for Cod, Haddock, Herring and Whiting.

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. AS such the vessel does not have the potential to lead to any noise related, or other, impacts on commercial fisheries.

A noise modelling and environmental risk assessment (Thomsen *et al*, 2023) carried out for the proposed project assessed the potential for impact as a result of the use of the proposed acoustic equipment on Atlantic Herring. Atlantic Herring was used as a proxy for fish containing a swim bladder, such as the other commercial fish species detailed above.

The results of the noise modelling indicated that Atlantic herring, effects of Temporary Threshold Shift (TTS) and Permanent Threshold Shift (PTS) from a single pulse, as well as of the cumulative PTS, were found to be of equally short range for the airgun and the sparker. When multiple pulses were considered, TTS ranges were higher for the airgun, but also withina relatively small distance from the sound source and a resulting impact area up to 1.1 km^2. In contrast, the effect in form of behavioural reaction predicted for the use of airgun was much higher, reaching 13.6 km and an impact area of 460.5 km^2. In case of the sparker, behavioural changes are predicted within area up to 2.2 km^2.

While a behavioural response is predicted, it is considered that this would only have the potential to lead to temporary disturbance, over a short duration (days) and would therefore, not have the potential to lead to impacts on the fishery especially given the magnitude of the minor impact relative to the large nursery and spawning area available to these species.

Annex II fish species

The SISAA (MERC, 2024a) demonstrated that proposed project did not have the potential for impact on any Annex II fish species.

Aquaculture

There are no licensed aquaculture sites within the proposed project area.

Water, Air and Climate

While some sediment mobilisation as a result of benthic grab sampling will occur this will be temporary and short lived and does not have the potential to impact overall water quality.
While emissions to air as a result of vessel exhausts is unavoidable the level of such emissions would not be significantly above background levels in this area and would not have the potential to lead to Air Quality standards being exceeded. Therefore no Likely significant effects to air quality are anticipated. The proposed survey vessel is MARPOL compliant and regulated by the stringent control

of waste, waste water and non-indigenous species. As such, no waste production is associated with the proposed project.

The project does not have the potential to impact climate change trends. The proposed survey is intended to support offshore Renewable Energy projects which in the long term will have a positive effect on climate change and hence air and water quality.

Cultural heritage

A review of the National Monuments Service Historic Environment viewer and Wreck viewer and Infomar wreck data has been carried out. The review indicates over 250 recorded wreck sites within the proposed project area (Figure 7). There is no data associated with the majority of these wrecks. Where data is available it is generally for wrecks in the period of 1915 to 1918 indicating that these were wartime wrecks. The INFOMAR database holds records of all of these wrecks and the locations will be avoided during the deployment of benthic grab sampling equipment. Therefore no potential impacts on any historic wreck sites are considered possible.

Material Assets

No potential for any interaction with material assets has been identified. No infrastructure (e.g. subsea electrical or telecoms cables) or other marine based infrastructure is located within the proposed project area. The project, with the exception of limited sediment sampling, will have no physical interaction with the seabed that could affect material assets.

Cumulative impacts

Cumulative impacts were assessed as part of the preparation of the SISAA (MERC, 2024a). This report concluded that following a review of current sources of information for marine based projects or plans, none were identified that could lead to the potential for cumulative impacts with the proposed project. Cumulative impacts on other aspects of the environment, outside of the Natura 2000 network, are not considered possible due to the scale and scope of the proposed project and the findings of this AIMU report.

Summary of mitigations

The Annex IV Risk Assessment carried out in support of this project (MERC, 2024b) concluded that without mitigation the proposed project had the potential to impact on a number of Annex IV species should they be present in the area during surveys. To mitigate this potential for impact the following mitigation was proposed and is also recommended as part of the AIMU report:

NPWS (2014) provides guidance to manage the risk to marine mammals from man-made sound sources in Irish waters. This document provides guidance and mitigation measures to address key potential sources of anthropogenic sound that may impact negatively on marine mammals in Irish waters. The mitigation methods should follow the guidance prescribed by the National Parks and Wildlife Service. Specifically, in relation to Geophysical acoustic surveys, such as proposed in this project, the guidance set out in NPWS (2014), as stated below, should be fully implemented.

1. A qualified and experienced marine mammal observer (MMO) shall be appointed to monitor for marine mammals and to log all relevant events using standardised data forms (Appendix 6, NPWS, 2014).

2. Unless information specific to the location and/or plan/project is otherwise available to inform the mitigation process (e.g., specific sound propagation and/or attenuation data) and a distance modification has been agreed with the Regulatory Authority, acoustic surveying using the above equipment shall not commence if marine mammals are detected within a 500m radial distance of the sound source intended for use, i.e., within the Monitored Zone.

Pre-Start Monitoring

3. Sound-producing activities shall only commence in daylight hours where effective visual monitoring, as performed and determined by the MMO, has been achieved. Where effective visual monitoring, as determined by the MMO, is not possible the sound-producing activities shall be postponed until effective visual monitoring is possible.
4. An agreed and clear on-site communication signal must be used between the MMO and the Works Superintendent as to whether the relevant activity may or may not proceed, or resume following a break (see below). It shall only proceed on positive confirmation with the MMO.
5. In waters up to 200m deep, the MMO shall conduct pre-start-up constant effort monitoring at least 30 minutes before the sound-producing activity is due to commence. Sound-producing activity shall not commence until at least 30 minutes have elapsed with no marine mammals detected within the Monitored Zone by the MMO.
6. This prescribed Pre-Start Monitoring shall subsequently be followed by a Ramp-Up Procedure which should include continued monitoring by the MMO.

Ramp-up Procedure

7. In commencing an acoustic survey operation using the proposed acoustic equipment, the following Ramp-up Procedure (i.e., "soft-start") must be used, including during any testing of acoustic sources, where the output peak sound pressure level from any source exceeds 170 dB re: 1µPa @1m:
   (a) Where it is possible according to the operational parameters of the equipment concerned, the device's acoustic energy output shall commence from a lower energy start-up (i.e., a peak sound pressure level not exceeding 170 dB re: 1µPa @1m) and thereafter be allowed to gradually build up to the necessary maximum output over a period of 20 minutes.
   (b) This controlled build-up of acoustic energy output shall occur in consistent stages to provide a steady and gradual increase over the ramp-up period.
   (c) Where the acoustic output measures outlined in steps (a) and (b) are not possible according to the operational parameters of any such equipment, the device shall be switched "on" and "off" in a consistent sequential manner over a period of 20 minutes prior to commencement of the full necessary output.
8. In all cases where a Ramp-Up Procedure is employed the delay between the end of ramp-up and the necessary full output must be minimised to prevent unnecessary high-level sound introduction into the environment.
9. Once the Ramp-Up Procedure commences, there is no requirement to halt or discontinue the procedure at night-time, nor if weather or visibility conditions deteriorate nor if marine mammals occur within a 500m radial distance of the sound source, i.e., within the Monitored Zone.

Line Changes

10. Where the duration of a survey line or station change will be greater than 40 minutes the activity shall, on completion of the line/station being surveyed, either
(a) shut down and undertake full Pre-Start Monitoring, followed by a Ramp-Up Procedure for recommencement, or
(b) undergo a major reduction in seismic energy output to a lower energy state[1] where the output peak sound pressure level from any operating source is 165-170 dB re: 1µPa @1m, and then undertake a full Ramp-Up Procedure for recommencement.

11. Where the duration of a survey line or station change will be less than 40 minutes the activity may continue as normal (i.e., under full seismic output)

Breaks in sound output

12. If there is a break in sound output for a period greater than 30 minutes (e.g., due to equipment failure, shut-down, survey line or station change) then all Pre-Start Monitoring and a subsequent Ramp-up Procedure (where appropriate following Pre-Start Monitoring) must be undertaken.

13. For higher output survey operations which have the potential to produce injurious levels of underwater sound (see sections 2.4, 3.2) as informed by the associated risk assessment, there is likely to be a regulatory requirement to adopt a shorter 5–10-minute break limit after which period all Pre-Start Monitoring and a subsequent Ramp-up Procedure (where appropriate following Pre-Start Monitoring) shall recommence as for start-up.

Reporting

14. Full reporting on MMO operations and mitigation undertaken must be provided to the Regulatory Authority as outlined in Appendix 6 of NPWS (2014).

5.3. Conclusion. EIA Directive (not of a class)

The proposed project is not of a class whereby mandatory Environmental Impact Assessment (EIA) is required. Projects which do not meet the threshold may still require an EIA if the project is likely to have significant effects on the environment. This AIMU report has assessed the implications of the project, alone and in-combination with other projects on the receiving environment. It concludes that, based on the scale and scope of the proposed project and mitigation measures proposed, no impact on the receiving environment is likely. Therefore EIA is not required.

[1] *It is important that this significant reduction in sound output is to a minimum point (i.e., minimum peak sound pressure level) that in theory remains audible above most ambient sound and shipping noise and yet is also consistent with the Ramp-up Procedure.*

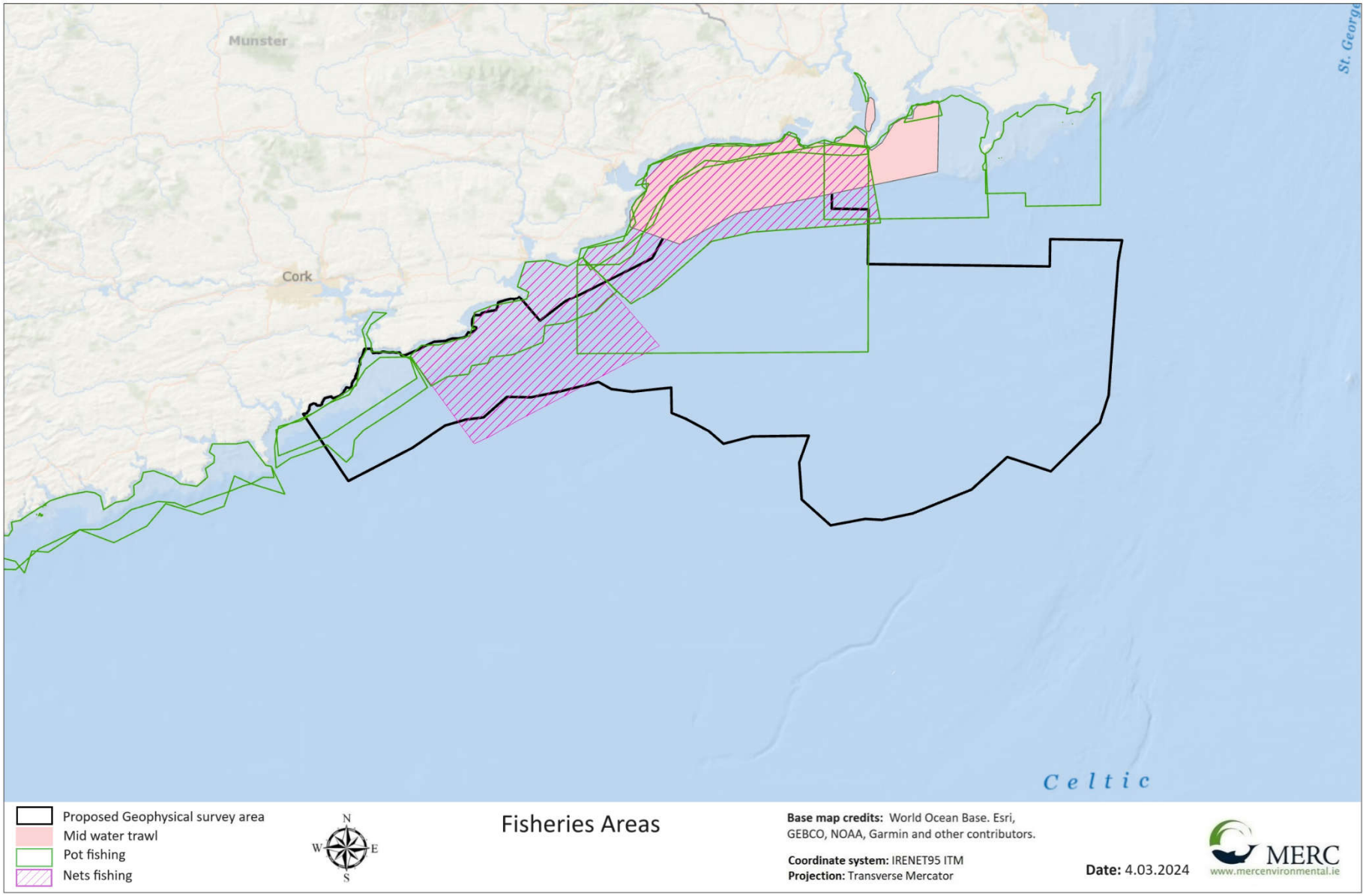

Fig. 6. Inshore commercial fishing

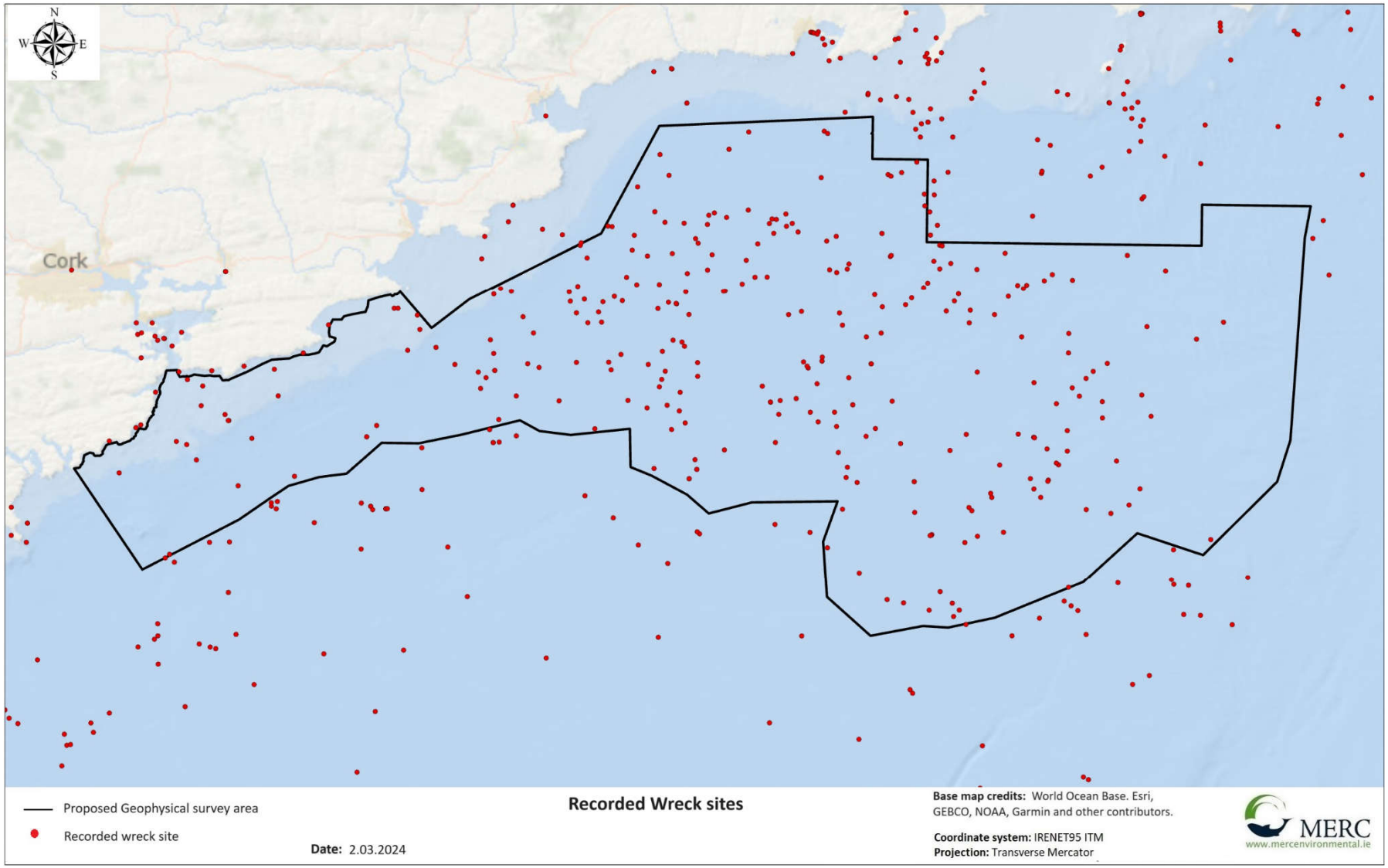

Fig. 7. Wreck site within proposed licence areas. Data: ©National Monuments Service wreck viewer.

6. Water Framework Directive

The key objectives of the Water Framework Directive (WFD) are set out in Article 4 of the Directive. It requires Member States to use their River Basin Management Plans and Programmes of Measures to protect and, where necessary, restore water bodies in order to reach good status, and to prevent deterioration. Thereby ensuring good qualitative and quantitative health, i.e. on reducing and removing pollution and ensuring that there is enough water to support wildlife at the same time as human needs.

This AIMU report has assessed the implications of the project on the receiving environment. It concludes that, based on the scale and scope of the proposed project no impact on the any receiving waterbody will occur. This conclusion is based on the fact that the vessel proposed for the surveys is MARPOL compliant and therefore does not have the potential to cause a deterioration in water quality. No other project related activity has been identified that could lead to a deterioration in water quality.

7. Marine Strategy Framework Directive

The key objective of the Marine Strategy Framework Directive (MSFD) is to protect the marine ecosystem and biodiversity upon which our health and marine-related economic and social activities depend. Its aim is to achieve good environmental status (GES) of the EU's marine waters and sustainably protect the resource base upon which marine-related economic and social activities depend.

To help EU countries achieve a good environmental status (GES), the directive sets out 11 illustrative qualitative descriptors. To achieve this goal of GES, the MSFD has set out a programme of measures to address identified stressors to achieving GES. A total of 28 separate measures have been set out. These measures are mostly focused on reducing pressures by improving water quality and preventing environmental damage. Negative impacts stated in the MSFD include, for example, pollution, biodiversity loss, seabed damage, overexploitation, spread of non-indigenous species, marine litter, underwater noise, and ocean warming and acidification.

This AIMU report has assessed the implications of the project on the receiving environment (table 4). It concludes that, based on the scale and scope of the proposed project, no impact on the marine environment in possible.

Table 4. MSFD Analysis

Descriptor	Analysis	Assessment
Descriptor 1: Biodiversity is maintained	Table 3 of this AIMU provides a description of the biodiversity baseline of the proposed project location and its environs. In addition a separate SISAA and Annex IV Risk Assessment were prepared for this project. All of which examined the potential for impact on various elements of the biodiversity of the proposed project area and potential for project related impacts on them. With the exception of potential impacts on selected marine mammals no potential for impact on biodiversity was recorded. Mitigation to ensure no impact on marine mammals occurred was proposed in this AIMU and the Annex IV Risk Assessment (MERC, 2024b).	Provided the mitigation outlined in table 3 of this AIMU is adhered to no potential for impact on this descriptor is considered possible.
Descriptor 2: Non-indigenous species do not adversely alter ecosystems	The survey vessel is MARPOL compliant and adheres to MARPOL regulations with respect to the introduction and spread of non-indigenous species. No other element of the proposed project has been identified that has the potential to introduce or spread. non-indigenous species.	No potential for impact.
Descriptor 3: Populations of commercial fish and shellfish species are healthy	Commercial fishing occurs within the proposed project area. This AIMU (Table 3) has considered impacts on commercial fisheries and has not identified any potential for impact.	No potential for impact.
Descriptor 4: Food webs ensure long-term abundance and reproduction of species	No project related impacts with the potential to impact food webs or affect long-term abundance and/or reproduction of species is considered possible.	No potential for impact.
Descriptor 5: Eutrophication is reduced	No impacts relative to eutrophication are possible.	No potential for impact.
Descriptor 6: Sea floor integrity ensures the proper functioning of ecosystems	Minor disturbance to the seafloor will occur during benthic sampling. Benthic sampling, by Day or Hammon grab as proposed for this project, is a tool used to assess environmental impact on marine sediments. It is a benign activity that does not have the potential to lead to any impacts on the proper functioning of ecosystems.	No potential for impact.

Descriptor 7: Permanent alteration of hydrographical conditions does not adversely affect ecosystems	The proposed project does not have the potential to cause any hydrographical changes.	No potential for impact.
Descriptor 8: Concentrations of contaminants give no pollution effects	The proposed project does not have the potential to lead to the introduction of any contaminants. The vessel is compliant with MARPOL regulations in this regard.	No potential for impact.
Descriptor 9: Contaminants in seafood are at safe levels	The proposed project does not have the potential to add to or alter contaminants in the seafloor.	No potential for impact.
Descriptor 10: Marine litter does not cause harm	The proposed project does not have the potential to lead to the littering. The vessel is compliant with MARPOL regulations in this regard.	No potential for impact.
Descriptor 11: Introduction of energy (including underwater noise) does not adversely affect the ecosystem	A separate noise assessment was carried out for this project (Thomsen *et al*, 2024). This report identified a narrow range (<3km) relative to the potential for TTS in selected marine mammals. As a result mitigation to ensure no impact on marine mammals occurred was proposed in this AIMU and the Annex IV Risk Assessment.	Provided the mitigation outlined in table 3 of this AIMU is adhered to no potential for impact on this descriptor is considered possible.

8. National Marine Planning Framework (NMPF)

The proposed project is considered to have limited potential impact on the overarching marine planning policies of the NMPF. Nonetheless, a review of these policies relative to the proposed project has been carried out and is documented in table 5 which indicates how the proposed project will be in compliance with the NMPF.

The NMPF sets out Overarching Marine Planning Policies (OMPPs) that will apply to all marine activities or development. These include policies in relation to, *inter alia*, co-existence with biodiversity, coastal and island communities, and infrastructure.

Table 5. Assessment of compliance with the National Marine Planning Framework (NMPF)

Environmental-Ocean Health	
Biodiversity & Protected Marine Sites	
Biodiversity	The project is supported by the following documents: • Supporting Information for Screening for Appropriate Assessment (SISAA) • Annex IV Risk Assessment • Assessment of Impact on Maritime Usage Report (AIMU) The conclusion of the SISAA is that there will be no adverse effects to the integrity of any European site. The conclusion of the Annex IV Risk Assessment and AIMU is that, with mitigation, no impact on any marine mammal will occur. Furthermore, the scale and scope of the project is considered too small to lead to any adverse effects on either the local or wider marine environment.
Protected Marine Sites	The SISAA did not identify any potential for impacts on any European site. The AIMU did not identify the potential for impact on additional protected marine sites.
Non-indigenous Species	The SISAA and AIMU did not identify any potential for the introduction of non-indigenous species.
Water Quality	The SISAA and AIMU did not identify potential for impacts on water quality.
Sea-floor and Water Column Integrity	The scale and scope of the project does not have the potential to impact Sea-floor and Water Column Integrity as documented in the AIMU.
Marine Litter	The scale and scope of the project does not have the potential to intentionally or accidentally contribute to the impacts on marine litter policy as documented in the AIMU.
Underwater Noise	Underwater noise was fully considered in the SISAA and Annex IV Risk Assessment. The SISAA concluded that there was no likelihood of any underwater noise issue that could have the potential to impact species sensitive to underwater noise (e.g. marine mammals) within any European sites. The Annex IV Risk assessment concluded that, with mitigation, there was no potential for impact on any Annex IV species. The AIMU concluded that, with mitigation, there was no potential for impact on any marine mammal.
Air quality	Not relevant: The project does not have the potential to impact air quality.
Climate Change	The proposed project will support future ORE development, which will, in turn, contribute to Climate resilience through reducing CO2 emissions.

Economic – Thriving Maritime Economy	
Co-existence	No potential for significant impact. The proposed works are temporary in nature (days). While disturbance to commercial fisheries activity may occur, this disturbance will be of a temporary nature (days) and will not have a significant impact on commercial fishery activity in the area. no other significant activities have been identified.
Infrastructure	No potential for impact on the infrastructure policy. No permanent infrastructure is proposed.
Social – Engagement with the sea	
Access	No access issues have been identified.
Employment	Not applicable. It is considered the Employment Policy 1 is not relevant to the proposed project.
Heritage assets	A review of the Historic Environment Viewer and National monument service wreck viewer (Accessed March 2024) indicated the presence of numerous historic wreck sites within the area. However, the proposed project will have very limited contact with the seabed (acoustic surveys) with no potential for impact. The survey vessel carries detailed mapping of the wreck sites in the area and will avoid deployment of a Day or Hammon grab at those locations. Therefore no potential for impact on heritage assets is considered possible.
Rural Coast and Island Communities	This policy is not considered relevant to the proposed project.
Seascape and Landscape	No impact possible. All survey instrumentation to be deployed in the subtidal.
Social Benefits	The proposed project in itself will not provide any social benefits. However, it is being carried out to support ORE, which in the medium to long term will provide social benefits include job creation, Energy access & affordability, Climate resilience through reducing CO2 emissions.
Transboundary	No transboundary effects are possible.

The Sectoral Marine Planning Policies for each individual marine sector or activity are detailed in the NMPF. No element of the proposed project is considered contrary to these policies.

8.1 Conclusion

A review of the application has been undertaken to conduct a geophysical reconnaissance survey which will include multibeam, sub bottom profiler, deployment of day and/or Hammon grab, side scan sonar, a sparker system and if further penetration is required, a single air-gun source, against the requirements of the National Marine Planning Framework (NMPF). The conclusion of which, is that the proposed project is fully compliant with the overall objectives and policies of the NMPF.

9. References

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