US to Ireland Subsea Fibre Optic Cable

APPLICATION FOR MARITIME USAGE LICENCE

FOR MARINE SURVEY & SITE INVESTIGATION WORKS AT CASTLEFREKE, LONG STRAND, CO. CORK & GLANDORE BAY

REF: LIC230031

Assessment of Impacts of the Maritime Usage (AIMU) Report

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MDM
McMahon Design & Management Ltd
- Consulting Engineers - Project Managers -
15 The Seapoint Building, Clontarf Rd., Dublin 3
Tel: +353-1-8536500 Fax: +353-1-8536800
E-mail: info@mdmeng.ie www.mdmeng.ie

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1.0 INTRODUCTION

1.1 This Assessment of Impacts of the Maritime Usage (AIMU) Report has been prepared by McMahon Design and Management Ltd on behalf of the applicant and forms part of an application for a Maritime Usage Licence for Marine Survey and Site Investigations for cable route and landfall options traversing Glandore Bay, County Cork between Galley Head to the East and Creggane Point to the West.

1.2 The applicant plans to investigate the feasibility of constructing a new subsea telecoms cable system, linking United States to Ireland, from a landfall on the north east coast of the USA to a landfall at Glandore Bay, County Cork on the south west coast of Ireland as shown in Figure 1 below.

1.3 This report is produced in support of an application to the Maritime Area Regulatory Authority (MARA) for a maritime usage licence to conduct marine survey and site investigations under the Maritime Area Planning Act 2021, as amended, and should not be used for any other purpose apart from that expressly stated in this document.

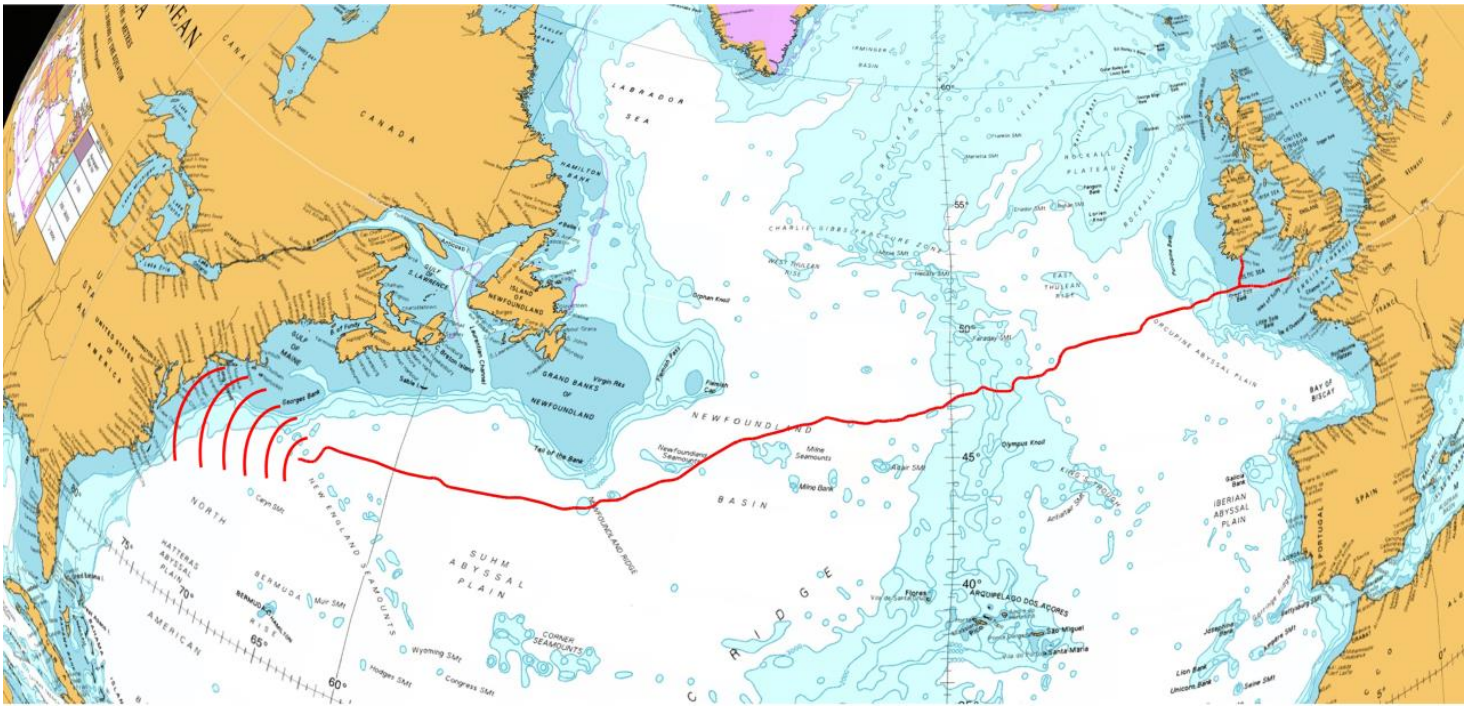


Figure 1. Proposed Telecoms Cable System (final configuration subject to change)

2.0 PROJECT DESCRIPTION

The License Application Area is situated off the coast of County Cork (Figure 2). The survey corridor has length of 898.5 km and a total area of 16,880 km^2. A cable route corridor of approx. 500m width will be surveyed within the licence application area. The survey corridor will be approximately 3 x Water Depth (up to 10km in width) in areas where the water depth is greater than 1500m off the Continental Shelf.

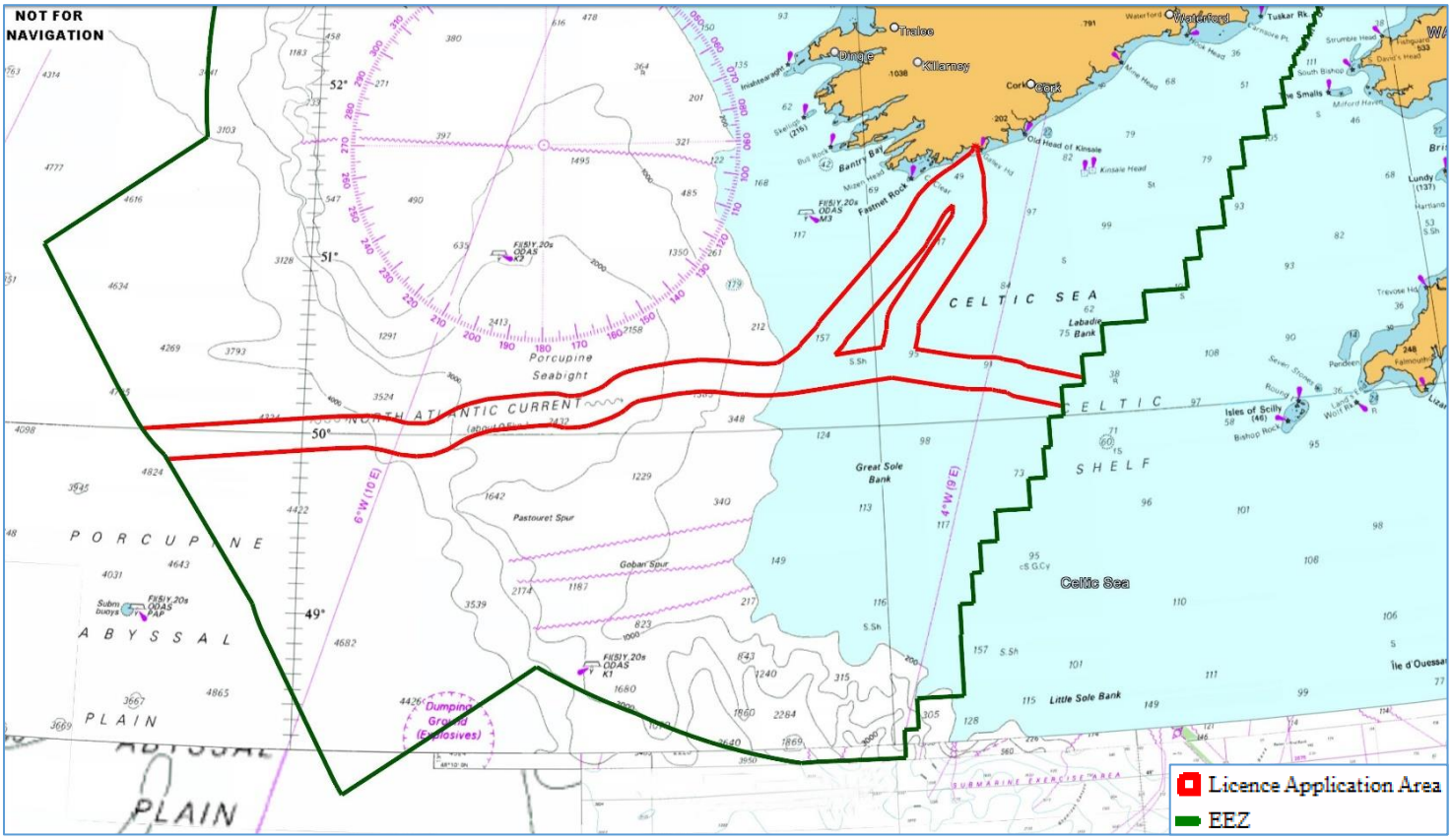


Figure 2. Proposed Survey Licence Application Area.

2.1 The licence application area covers two potential landfalls close to Rosscarbery, County Cork, with survey corridors through Rosscarbery Bay to a potential landfall at Ownahincha / Little Island Strand to the West and a landfall at Long Strand to the East. The general location is shown in Figure 3. A more detailed overview of the route and landfalls is provided in the Works Methodology report.

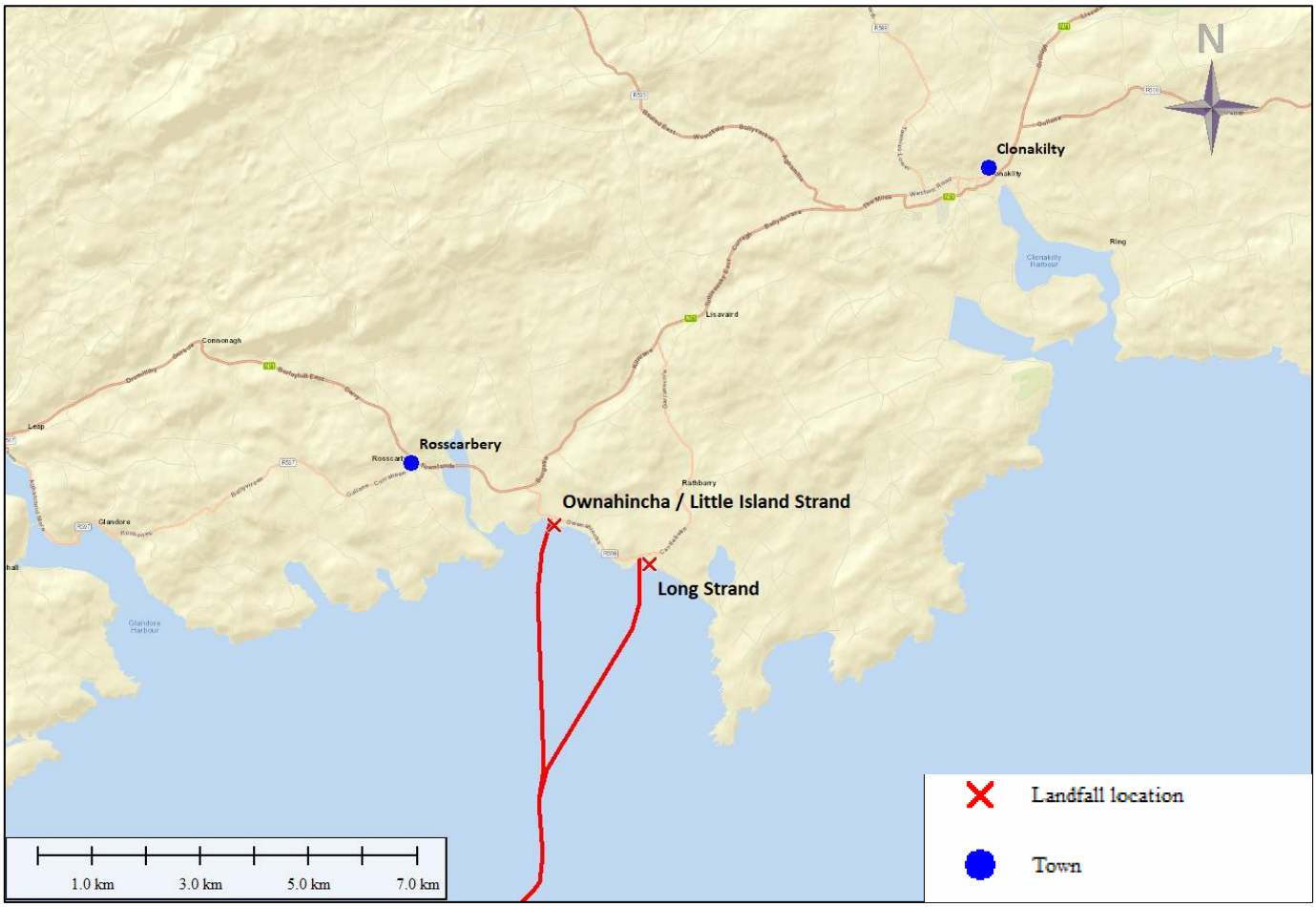


Figure 3. Landfall Locations.

2.2 The principal objective of the Marine Survey & Site Investigations is to ascertain a feasible and safe route for cable system design, deployment, survivability and subsequent maintenance with due regard for environmental and ecological considerations. The survey will also enable decisions to be made on cable armouring and burial. The survey will identify the necessary water depths, route features, seabed obstructions, seabed geomorphology and cable hazards and will also provide detailed information on the seabed sediment, subsurface stratigraphy and upper sediment layers to support cable route and installation engineering. The site investigations will provide "ground-truthing" of the geophysical data along the route.

2.3 The objectives of the marine geophysical survey shall be:

- To collect up to date high-resolution bathymetry along a 500m wide cable corridor (or 3 x Water Depth up to 10km in Deepwater) within the Maritime Usage License Application Area;

- To obtain information on the seabed surface (type, texture, variability, etc.) and in particular, to identify any seabed features that may be of interest.
- Identify any shallow geohazards and man-made hazards (including but not limited to outcropping, boulders, shallow gas, wrecks, debris etc.);
- Determine the stratigraphy of the upper layers of the seabed along the cable route and quantify the variability in the lateral and vertical extents to depths of 2-5m
- Identify any seabed obstructions;
- Identify sensitive marine habitats which will need to be avoided during site investigations and sampling.

2.4 The works will be carried out predominantly by seabed mapping techniques (geophysical survey) with some selective sampling of the upper layers of the seabed (geotechnical survey). Once the results of the survey are obtained and analysed a preferred route corridor will be determined, design and method statements will be developed and a final Route Position List (RPL) will be defined as part of a further submission for a MAC and consent for installation works.

Statement of Consistency with the National Marine Planning Framework (NMPF)

2.5 The NMPF details how marine-based human activities will interact with each other and the marine environment. It is the marine equivalent of the National Planning Framework. It enables the Irish Government to "direct decision makers, users and stakeholders towards strategic, plan-led and efficient use of our marine resources" (Department of Housing, Local Government and Heritage, 2021). It brings together the various EU Directives mentioned previously to set a clear direction for managing our seas. The survey work's adherence to EU Directives, coupled with the localised and temporary nature of the work, ensures that it will be consistent with the NMPF.

2.6 As stated in the Telecommunications chapter of the National Marine Planning Framework (March 2021), guaranteeing existing and future international telecommunications connectivity is critically important to support the future needs of society and enterprise in Ireland. The value of the digital economy in Ireland is estimated at €12.3bn or 6% of GDP and is expected to grow significantly over the coming years. In an increasingly interconnected world, continued investment in

sustainable telecommunications connectivity will be critical to ensuring that Ireland can address digital related challenges, enabling citizens to participate and benefit fully from a more integrated digital single market, improving skills, reducing the digital divide, fostering and strengthening innovation, and providing better job opportunities.

2.7 Recent developments at European level, including an initiative led by the Portuguese presidency – the "European Data-Gateway Platforms Strategy" as part of "Shaping Europe's Digital Future" –outlines an increased ambition to further strengthen the international connectivity of the EU including in respect of telecommunications and subsea telecommunications connectivity. '2030 Digital Compass: The European way for the Digital Decade' also sets a vision, targets, and avenues for a successful digital transformation of Europe by 2030. Europe's digital leadership and global competitiveness is dependent on strong internal and external connectivity. In that regard, the Commission highlights the importance of improving connectivity with external partners including via subsea cables.

2.8 In March 2021, Minister Eamon Ryan, on behalf of Ireland, signed the Declaration on "European Data Gateways as a key element of the EU's Digital Decade." In doing so, Ireland joined 24 EU Member States, as well as Iceland and Norway, in committing to reinforcing digital connectivity between Europe and its global partners. The development of the new fibre optic cable system will support and enhance these policy objectives.

Statement of Consistency with the Marine Strategy Framework Directive

2.9 The Marine Strategy Framework Directive (MSFD) is European legislation, which aims to protect the marine environment. It requires the application of an ecosystem-based approach to the management of human activities, enabling a sustainable use of marine goods and services.

2.10 To implement the MSFD, Ireland is required to:

- Describe what they consider is a clean, healthy, and productive sea.
- Monitor and assess the quality of their seas against Good Environmental Status
- Ensure they take appropriate action by 2020 to maintain or achieve Good Environmental Status.

2.11 This process started in 2012, with a review every six years. Marine Strategy Framework Directive habitat mapping was consulted during the preparation of the Ecological Impact Assessment Report (EcIA) for this application.

2.12 Due to the temporary nature of the survey works, there will be no permanent or lasting change or development to the Licence Area.

3.0 PROPOSED SURVEYS

3.1 The surveys proposed within the Licence Application Area are:

- Landfall Beach Survey
- Marine Geophysical Survey
- Marine Site Investigations and Seabed Sampling
- Underwater Video Survey
- Archaeology Survey

3.2 Table 1 below summarises the requirements and activities for the cable route survey. Further details are provided in the Schedule of Works.

Survey Area	Survey Requirements
Landfall Beach Survey	Non-intrusive topographic (GPS Rover, Total Station or UAV Aerial Drone) and geophysical (Ground Penetrating Radar (GPR), Electrical Resistivity Tomography (ERT), metal detector) survey of the beach along the line of the proposed cable route at each landfall is required to the low water mark.
Landfall Beach Survey	Site Investigations may include 3 Trial Pits on the beach (target depth 2.5m), Bar probes on the beach at 10m spacing (approx. 6 to 8) and Bar probes from the Low Water Line to the 3m water depth contour at 10m spacing. (approx. 6 to 8).
Landfall Beach Survey	Ecological and Archaeological walk-over survey on beach and intertidal to Low Water Mark.
Inshore Marine Survey	Geophysical survey with a small craft or Unmanned Survey Vessel (USV) using Multibeam Echosounder (MBES), sidescan sonar, marine magnetometer and sub-bottom profile equipment.
Offshore Marine Survey	Geophysical survey with primary survey vessel or Unmanned Survey Vessel (USV) using Multibeam Echosounder (MBES), sidescan sonar, marine magnetometer and sub-bottom profile equipment.
Deepwater Survey	Geophysical survey using Multibeam Echosounder (MBES).
Offshore Marine Survey	Site Investigations including: Cone Penetration Tests - up to 96 No. along the route corridor to a target depth of 2m to 3m.
Offshore Marine Survey	Site Investigations including: Grab Samples - up to 26 No. along the route corridor, Gravity Cores / Vibrocores - up to 48 No. along the route corridor to a target depth of 3m.
Licence Application Area	Underwater Video Survey as required.

Table 1. Cable Route Survey Requirements.

4.0 SURVEY METHODOLOGY

Landfall Beach Survey

4.1 A non-intrusive topographic and geophysical survey of the beach along the line of the proposed cable route at each landfall will be carried out to the low water mark.

4.2 The topographical survey would typically be carried out by GPS Rover, Total Station or UAV Aerial Drone using photogrammetry or LiDAR techniques. The terrestrial geophysical survey will comprise remote sensing techniques such as Ground Penetrating Radar or Electrical Resistivity Tomography (ERT) to establish subsurface features and depth to bedrock and magnetometer or handheld marine metal detector to locate buried ferrous objects.

4.3 Intertidal and beach surveys (walkover survey) will be carried out on the beach by the project ecologist and the project archaeologist.

4.4 Landfall Site Investigations will be undertaken on the beach to establish the depth and nature of the sediment and depth to bedrock. The focus of the site investigations will be on the upper layers of sediment to assess the feasibility of cable burial and installation techniques. The following may be undertaken at each landfall:

- 3 Trial Pits on the beach (target depth 2.5m).
- Bar probes on the beach at 10m spacing (approx. 6 to 8).
- Bar probes from the Low Water Line to the 3m water depth contour at 10m spacing. (approx. 6 to 8).

Marine Geophysical Survey

4.5 Marine Geophysical Survey will be carried out from the low water mark at each landfall with a small shallow draft survey vessel, primary survey vessel or Unmanned Survey Vessel (USV) using Multibeam Echosounder (MBES), sidescan sonar, marine magnetometer and sub-bottom profile equipment. Sub-bottom profile equipment will be able to discern the nature and density of the upper 3 metres of seabed and will be used on a non-interfering basis with other sounding systems. A minimum of five to seven survey lines, based upon the water depth, will be run to obtain the required data coverage as indicated in Table 2. The Deepwater area extending seaward from

1,500m water depth to the Maritime Area limits will be surveyed by the primary survey vessel using Multibeam Echosounder (MBES) equipment. A continuous bathymetric swathe will be obtained, centred on the preliminary route and along all wing lines needed to complete the route corridor coverage. One survey line, based upon the Survey RPL, is required.

Survey Area	Depth Range	Survey Corridor Width	Min. # of Lines	Min. Overlap	Typical Survey Speed
Inshore	3m to 15m	500m	7	SSS: 100% MBES Bathy: 20%	4 knots
Offshore	15m to 100m	500m	7	SSS: 100% MBES Bathy: 20%	4 knots
Offshore	100m to 1,000m	500m	5	SSS: 100% MBES Bathy: 20%	4 knots
Offshore	1,000m to 1,500m	500m	7	SSS: 100% MBES Bathy: 20%	4 knots
Offshore	> 1,500m	3 x WD Max. approx. 10,000m	1	NA	4 knots

Table 2 Marine Geophysical Survey.

Marine Site Investigations and Seabed Sampling

4.6 The purpose of the marine site investigations and seabed sampling is to evaluate the physical properties of the superficial seabed sediments along the cable route. These methodologies will ensure that a full understanding of the subsurface is achieved, focussing on the upper 3 metres of sediment to subsequently develop a cable burial assessment, installation and burial plan.

4.7 The scheduled site investigations and seabed sampling within Maritime will comprise of the following techniques:

- Up to 96 CPTs (2m to 3m)
- Up to 48 Gravity Cores / Vibrocores (3m)
- Up to 26 Grab Samples

4.8 Indicative locations for the relevant site investigation activities (Gravity or Vibrocore and CPT's) are shown in Figure 4. Site investigations and seabed sampling will only be undertaken up to a limit of 1,500m water depth. Typically, individual sampling positions will be determined following initial interpretation of the geophysical survey data. The positioning of individual site investigation locations will also take into consideration environmental constraints such as the position of sensitive habitats or archaeological features.

Underwater Video Survey

4.9 Underwater video camera system may be used for inspections of the seabed to investigate seabed obstructions, marine archaeology or benthic habitats. An underwater drop-down camera system or similar may be used in a series of video transects which would be georeferenced and later mapped in GIS.

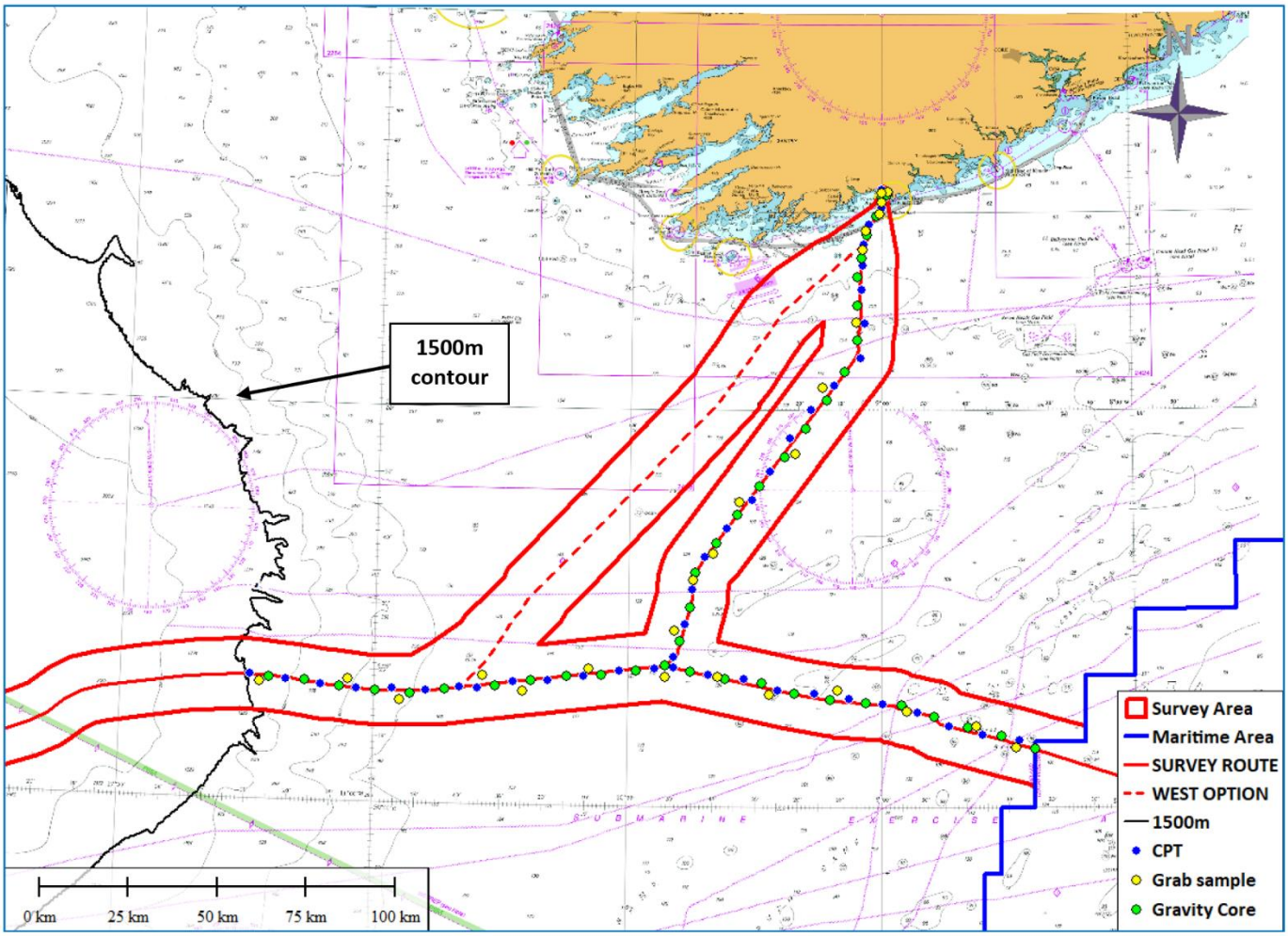


Figure 4. Indicative CPT, Grab sample and GC Locations.

Archaeology Survey

4.10 The proposed survey specification takes into account archaeological data acquisition to enable professional archaeological interpretation and analysis of data. The survey equipment deployed and data acquisition and processing shall comply with the requirements of the National Monuments Service, Underwater Archaeology Unit. Walk over surveys will be conducted within the intertidal area to check for marine archaeology features and evidence of features of cultural heritage significance.

Survey Vessel Requirements

4.11 Offshore survey vessels are typically between 15m and 75m in length with potential for smaller vessels to be used in nearshore / shallow water areas. Offshore survey vessel typically have an endurance of approximately 14 to 28 days. A vessel with a shallow water draft will be utilised for the inshore survey area. An unmanned surface vehicle (USV) and/or autonomous surface vehicle (ASV) may also be used for the geophysical survey. The survey vessels may use a local port for personnel / equipment mobilisation, bunkering and provisioning.

4.12 All survey vessels will be fit for purpose, will possess all relevant classification certificates and capable of safely undertaking the survey work required. The primary survey vessel will use dynamic positioning for accurate navigation and station keeping. A deck mounted crane or A-frame will be utilised for equipment deployment and recovery. Health, safety, environment and welfare considerations will be a priority and will be actively managed during the course of the survey scopes of work. Appointed contractors will be required to comply with all legislation relevant to the activities within their scope of work.

4.13 The vessels will conform to the following minimum requirements as appropriate:

- Compliance with Safety of Life at Sea (SOLAS), International Maritime Organization (IMO) and national requirements for operating within Irish territorial waters.
- Station-keeping and sea keeping capabilities required to carry out the proposed survey operations safely;
- Calibrated equipment and spares with necessary tools for all specified works;
- Endurance (e.g. fuel, water, stores) to undertake the required survey works;

- Sufficient qualified staff to allow the survey operations to be carried out efficiently, (typically 24 hour continuous for offshore survey, 12 hour for nearshore survey); and
- Appropriate accommodation and crew welfare facilities.

4.14 Survey vessels will follow appropriate Biosecurity protocols and regulations such as the International Maritime Organisation (IMO) Guidelines for the control and management of ships' ballast water, to minimise the transfer of harmful aquatic organisms and pathogens.

Survey Duration

4.15 The intention is to commence the survey as soon as feasible following license award, taking into account survey vessel availability, the overall transatlantic cable route survey programme, seasonality and suitable weather windows. The exact mobilisation dates will not be known until the process of procuring a contractor and issue of the licence is complete. It is anticipated that the marine geophysical survey and site investigations activities within the Maritime Usage Licence area will take less than 4 months in total and ideally will be completed in one operation. However, depending on operational factors this may be split up over 8 months.

4.16 The estimated time required to complete the cable route survey campaign activities is described in Table 3 below.

Activity	Typical Time Period Required for Activity	Total Number of Site Investigation Locations	Total Time for Survey Activity
Inshore Geophysical Survey	3 to 4 days (weather and sea state dependent)	500m cable route corridor	3 to 4 days (weather and sea state dependent)
Offshore Geophysical Survey	20 to 23 days (weather and sea state dependent)	500m cable route corridor	20 to 23 days (weather and sea state dependent)
Deepwater MBES Survey	7 to 9 days (weather and sea state dependent)	3 x Water Depth (10km maximum)	7 to 9 days (weather and sea state dependent)
CPT	30 minutes - 3 hours in any one location	96	192 hours within total 16 days of Site Investigations campaign (weather and sea state dependent, excluding transit between locations)
Gravity Corer	30 minutes - 3 hours in any one location	48	96 hours within total 16 days of Site Investigations campaign (weather and sea state dependent, excluding transit between locations)
Vibro Corer	30 minutes - 3 hours in any one location	48	96 hours within total 16 days of Site Investigations campaign (weather and sea state dependent, excluding transit between locations)
Grab Samples	20 minutes – 2 hours in any one location	26	26 hours within total 16 days of Site Investigations campaign (weather and sea state dependent, excluding transit between locations)

Table 3. Estimated Time and Duration of Survey Activities.

5.0 SCREENING FOR MANDATORY EIA

General

5.1 The EIA Directive 2011/92/EU on the assessment of the effect of certain public and private projects on the environment, as amended by EIA Directive 2014/52/EU, sets out the process by which the likely significant effects of a project on the environment are assessed. The Planning and Development Regulations 2001 (as amended) transpose the requirements of the 2014 EIA Directive into planning consent procedures.

5.2 As stated in the regulations an environmental impact assessment (EIA) shall be carried out where either the proposed development would be of a class specified in Part 1 of Schedule 5 of the regulations (as amended) or Part 2 of Schedule 5 of the same regulations.

- Part 1 of Schedule 5 identifies projects of a class that will always have the potential for significant environmental effects and therefore will always require an EIA.

- Part 2 of Schedule 5 identifies projects that may have an environmental impact and, therefore, thresholds or criteria have been set by member states for the requirements of EIA.

5.3 It is a matter for the MARA as the competent authority, to determine whether a formal EIA Screening determination is required having regard to the provisions of the EIA Directive and Schedule 5 of the Planning Regulations. The information in this report is provided to inform the determination on a requirement for EIA screening, and if required, to inform the screening assessment and determination.

5.4 This report does not comprise an Environmental Impact Assessment Screening Report or an Environmental Impact Assessment (EIA) Report, nor does it form part of an Environmental Impact Assessment under the provisions of the EIA Directive 2011/92/EU, as amended by EIA Directive 2014/52/EU.

Screening for Mandatory EIA

5.5 EIA is required in one of three circumstances:

a) Project Type – Is the proposed development "a project" as understood by Article 1(2)(a) of Amended 2011/92/EU Directive? Is the proposed development of a class specified in Part 1 of Schedule 5 of the Planning and Development Regulations, 2001 (as amended) and exceeds any specified relevant quantity area or other limit specified?

Or

b) Mandatory Thresholds – Is the proposed development of a class specified in Part 2 of Schedule 5 of the Planning and Development Regulations, 2001 (as amended)? Does the Project exceed the applicable thresholds as listed in the Schedule 5 of the Planning & Development Regulations 2001 (as amended)?

Or

c) Sub-threshold Development – Is the proposed development of a class specified in Part 2 of Schedule 5 of the Planning and Development Regulations, 2001 (as amended), does not exceed the relevant quantity, area

or other limit, but is in a sensitive location and / or of a type that could lead to significant effects on the environment.

5.6 **Project Type**

Article 1(2)(a) of the Amended 2011/92/EU Directive provides the following definition for a project: "the execution of construction works or of other installations or schemes" "other interventions in the natural surroundings and landscape including those involving the extraction of mineral resources"

5.7 The proposed cable route survey and site investigation works comprises temporary and short term investigations including the undertaking of non-intrusive geophysical survey, localised marine site investigations and seabed sampling such as CPT and Vibrocores as detailed by Section 4 above. The proposed cable route survey and site investigation works do not comprise a project for the purposes of EIA.

5.8 A review of the project types in Part 1 of Schedule 5 as described above have been considered in the preparation of this report. The proposed cable route survey and site investigation works is not a project type or class listed in Part 1 of Schedule 5 of the Regulations.

5.9 **Mandatory Thresholds**

A review of the project types in Part 2 of Schedule 5 have been considered in the preparation of this report. The proposed cable route survey and site investigation works is not a project type or class listed in Part 2 of Schedule 5 of the Regulations. For clarity, it is considered that the site investigations (shallow vibrocores, gravity cores and seabed CPT's) proposed as part of the cable route survey do not constitute a project type under Class 2 Extractive Industry (e) as it does not involve 'deep drilling' and also falls within the exception for drilling for investigating the stability of the soil.

5.10 **Sub Threshold Development**

It is the view of the applicant that the proposed cable route survey and site investigations do not comprise a project for the purposes of EIA and do not come within any class of development to which the EIA Directives apply or which requires mandatory EIA as defined in Schedule 5 (Part 1 & Part 2). The survey operations

(geophysical and site investigations) are both temporary and short term in nature and not of a type that could lead to significant effects on the environment.

6.0 SCREENING OF SIGNIFICANCE OF EFFECTS ON THE ENVIRONMENT

Questions to be Considered	Yes / No /? Briefly describe	Is this likely to result in a significant impact? Yes/No/? – Why?
Brief Project Description: Marine Survey and Site Investigations for cable route and landfall options for a fibre optic cable system landing in Glandore Bay, Co Cork.		
1. Will construction, operation, decommissioning or demolition works of the Project involve actions that will cause physical changes in the locality (topography, land use, changes in waterbodies, etc.)?	Yes. The excavation of possible trial pits on the beach, collection of grab samples, gravity cores & vibrocores of the seabed sediments will cause temporary and localised disturbance of the seabed and limited suspended sediments. There will be no topographic or land use changes.	The seabed is regularly disturbed by natural processes. The cumulative volume of sediment collected in the grab samples and shallow cores is small. Any sediment disturbed or suspended by the sampling will settle almost immediately. Any trial pits on the beach will be backfilled immediately with the excavated material. Overall, the work relates to the marine geophysical survey, site investigations and landfall surveys. The survey is transient, of short duration, with reinstatement of any areas of seabed impacted by sampling of the seabed completed naturally by tidal movements and currents. No likely significant impact.
2. Will construction or the operation of the Project use natural resources such as land, water, materials or energy, especially any resources which are non-renewable or are in short supply?	Yes. The marine survey and site investigations operations will be carried out by vessels or equipment that will use fuels such as diesel.	No likely significant impact.
3. Will the Project involve the use, storage, transport, handling or production of substances or materials which could be harmful to human health, to the environment or raise concerns about actual or perceived risks to human health?	Yes. The marine survey and site investigations operations will be carried out by vessels or equipment that will use fuels such as diesel and oil based lubricants which have potential to be harmful to the environment in the event of an accidental fuel spill.	Normal vessel operating standards and precautions and mandatory maritime regulations such as the MARPOL Convention on Marine Pollution will ensure that the risk of an accidental release of harmful materials such as fuels will be low. To minimise risk at the landfall, machinery used to excavate any trial pits will only be fueled on the hard stand area of a car park or road, at least 10m from a drain or gulley. Spill kits will be available on site for the duration of works. No likely significant impact.
4. Will the Project produce solid wastes during construction or operation or decommissioning?	Yes. A very small amount of non-hazardous refuse will be produced on board from the normal day to day operations of the survey vessels such as kitchen waste, consumables etc.	No waste material will be dumped into the sea. All refuse waste shall be stored on board the vessel and safely disposed of onshore in accordance with the MARPOL Convention. No likely significant impact.

Questions to be Considered	Yes / No /? Briefly describe	Is this likely to result in a significant impact? Yes/No/? – Why?
5. Will the Project release pollutants or any hazardous, toxic or noxious substances to air or lead to exceeding Ambient Air Quality standards in Directives 2008/50/EC and 2004/107/EC)?	No.	The surveys will be undertaken by vessels which comply with EU requirements in terms of operational controls and environmental standards. Air quality standards will not be exceeded. No likely significant impact.
6. Will the Project cause noise and vibration or the releasing of light, heat energy or electromagnetic radiation?	Yes. The Marine Survey uses acoustic / sonar techniques which emit underwater noise. Survey vessels also generate noise from engines, props etc.	The potential impacts from the survey are described in the Supporting Information for Screening of Appropriate Assessment and Natura Impact Statement accompanying the application. The best practice guidelines "Guidance to manage the risk to marine mammals from man-made sounds in Irish waters, NPWS 2014" is the standard practice to mitigate the risk to marine mammals from marine surveys and will be implemented for the duration of the survey operations including pre-start monitoring, soft start and ramp up procedures. A qualified and experienced marine mammal observer (MMO) will be employed during the surveys to monitor for marine mammals and log all sightings and events. No likely significant impact.
7. Will the Project lead to risks of contamination of land or water from releases of pollutants onto the ground or into surface waters, groundwater, coastal wasters or the sea?	Yes. Vessels or equipment will use fuels such as diesel and oil based lubricants which have potential to be harmful to the environment in the event of an accidental fuel spill. Pollution may arise from machinery present in the intertidal habitat to excavate trial pits.	To minimise risk, all machinery will only be fuelled on the hard stand area of a car park or road, at least 10m from a drain or gulley. Normal vessel operating standards and precautions and mandatory maritime regulations such as the MARPOL Convention on Marine Pollution will ensure that the risk of an accidental release of harmful materials such as fuels will be low. Spill kits will be available on site for the duration of works. No likely significant impact.
8. Will there be any risk of accidents during construction or operation of the Project that could affect human health or the environment?	Yes. Marine survey vessels operate at low vessel speeds when carrying out survey operations and will be stationary at times when deploying and recovering equipment. This may pose an increased risk of vessel to vessel collision.	A notice to mariners will be published in advance of survey operations to inform the public and other marine users In the locality. The survey vessels will display the appropriate lights, shapes and have active AIS. Compliance with the requirements of the International Regulations for Preventing Collisions at Sea will be followed at all times and it is expected that there will be no impact on shipping movements in the area. Survey vessels will follow appropriate Biosecurity protocols and regulations such as the International Maritime

Questions to be Considered	Yes / No /? Briefly describe	Is this likely to result in a significant impact? Yes/No/? – Why?
		Organisation (IMO) Guidelines for the control and management of ships' ballast water, to minimise the transfer of harmful aquatic organisms and pathogens. No likely significant impact.
9. Will the Project result in environmentally related social changes, for example, in demography, traditional lifestyles, employment?	No.	The survey operations are of short durations and will not result in any direct social changes such as demography, traditional lifestyles or employment. No likely significant impact.
10. Are there any other factors that should be considered such as consequential development which could lead to environmental impacts or the potential for cumulative impacts with other existing or planned activities in the locality?	Yes. The applicant is aware of proposals for renewable energy developments sites and associated marine survey across the South and Southwest Coast. Cumulative impact of these developments is taken into account in this application. In due course, an application for the installation of the cable system will be made.	The NIS and supporting information did not identify any significant environmental cumulative impacts arising from the planned survey operations. To minimise risk of cumulative impacts on fisheries, shipping and general navigation, notice to mariners, local fisheries liaison and other mitigation measures will be considered. No likely significant impact.
11. Is the project located within or close to any areas which are protected under international, EU, or national or local legislation for their ecological, landscape, cultural or other value, which could be affected by the Project?	Yes. In terms of European designated sites, the proposed licence application area intersects with Kilkeran Lake and Castlefreke Dunes SAC (SITECODE = 001061) at Long Strand and is adjacent to the Galley Head to Duneen Point SPA (SITECODE = 004190).	The applicant NIS concluded that, with the implementation of specified mitigations measures, the proposed development alone or in combination with other activities, would not cause any adverse effect on the integrity of any European sites. The geophysical survey data will be analysed to identify any known or previously unrecorded wrecks or potential cultural heritage features which will be avoided by any intrusive survey activities such as sampling or CPT's. With the implementation of specified mitigations measures, no likely significant effects on cultural heritage or archaeology is foreseen. The coastline along the proposed licence application area is described as Indented Estuarine Coast and designated a high value landscape in the Cork County Development Plan 2022 to 2028. The surveys are temporary in nature and will not present a negative impact on the landscape. No likely significant impact.

Questions to be Considered	Yes / No /? Briefly describe	Is this likely to result in a significant impact? Yes/No/? – Why?
12. Are there any other areas on or around the location that are important or sensitive for reasons of their ecology e.g. wetlands, watercourses or other waterbodies, the coastal zone, mountains, forests or woodlands, that could be affected by the Project?	Yes, The Ownahincha River discharges into the sea at Ownahincha Strand and there are sand dunes adjacent to Little Island Strand which are not designated or protected under national or international legislation.	With the implementation of specified mitigations measures, the proposed marine survey and site investigations are not likely to cause any significant adverse effects on the Ownahincha River, the Little Island sand dunes or the wider coastal zone and water bodies. No likely significant impact.
13. Are there any areas on or around the location that are used by protected, important or sensitive species of fauna or flora e.g. for breeding, nesting, foraging, resting, overwintering, migration, which could be affected by the Project?	No	Due to the localised and temporary nature of the marine survey and site investigations and with the implementation of specified mitigations measures in relation noise and general disturbance, the proposed surveys are not likely to cause any significant adverse effects on any sensitive species of fauna or flora. No likely significant impact.
14. Are there any inland, coastal, marine or underground waters (or features of the marine environment) on or around the location that could be affected by the Project?	Yes, The Ownahincha River discharges into the sea at Ownahincha Strand and the licence application area comprises intertidal and subtidal water bodies.	Due to the localised and temporary nature of the marine survey and site investigations and with the implementation of specified mitigations measures, the proposed marine survey and site investigations are not likely to cause any significant adverse effects on the Ownahincha River or the coastal zone and related water bodies. No likely significant impact
15. Are there any areas or features of high landscape or scenic value on or around the location which could be affected by the Project?	Yes. The coastline along the proposed licence application area is described as Indented Estuarine Coast and designated a high value landscape in the Cork County Development Plan 2022 to 2028. and there are sand dunes adjacent to Little Island Strand and Long Strand.	The surveys are temporary in nature and will not present a negative impact on the landscape or scenic qualities of the area. No likely significant impact.
16. Are there any routes or facilities on or around the location which are used by the public for access to recreation or other facilities, which could be affected by the Project?	Yes	The landfall survey will take place on the beach. No public facilities will be impacted by the proposed works. The existing access paths will be used by staff and machinery to access the beach. Use of these routes will be short term and will not inhibit the use of these areas by the public. Public access will be maintained at all times. No likely significant impact.

Questions to be Considered	Yes / No /? Briefly describe	Is this likely to result in a significant impact? Yes/No/? – Why?
17. Are there any transport routes on or around the location that are susceptible to congestion or which cause environmental problems, which could be affected by the Project?	No	The landfall survey locations of Ownahincha, Little Island & Long Strand comprise a small coastal settlement with a static caravan park and holiday apartments close to Ownahincha. The area is not affected by strategic routes or significant traffic volumes. Traffic generated during the landfall surveys is expected to be 1-2 vehicles per day over an overall period of approximately 3 to 5 days. The majority of the vessel traffic traversing the offshore marine survey corridor is made up of fishing vessels transiting to the harbour at Union Hall, which is approx. 8km west of the survey route. No congestion of vessel movements is expected as a result of the marine survey operations and any disruption will be temporary and of short duration. No likely significant impact.
18. Is the Project in a location in which it is likely to be highly visible to many people?	No	The location of the survey corridor (landfall and offshore marine) is not visible from any large urban settlements with the sand dunes at Long Strand and Little Island Strand providing further visual screening of the survey corridor. The surveys are temporary in nature and given the existing marine vessel traffic in the general area, the survey will not present a negative visual impact. No likely significant impact.
19. Are there any areas or features of historic or cultural importance on or around the location that could be affected by the Project?	There are 143 shipwrecks within the proposed application area.	An Archaeology Assessment of the foreshore has been prepared which considers the works in combination with historical and cultural sensitivity of the area. A Marine Archaeology Assessment will be undertaken for the final 500m survey corridor before survey works are undertaken which will consider the works in combination with historical and cultural sensitivity of the area. The geophysical survey data will be analysed to identify any known or previously unrecorded wrecks or potential cultural heritage features which will be avoided by any intrusive survey activities such as sampling or CPT's With the implementation of specified mitigations measures, no likely significant effects on cultural heritage or archaeology is foreseen No likely significant impact.

Questions to be Considered	Yes / No /? Briefly describe	Is this likely to result in a significant impact? Yes/No/? – Why?
20. Is the Project located in a previously undeveloped area where there will be loss of greenfield land?	No	The survey is temporary in nature. No likely significant impact.
21. Are there existing land uses within or around the location e.g. homes, gardens, other private property, industry, commerce, recreation, public open space, community facilities, agriculture, forestry, tourism, mining or quarrying that could be affected by the Project?	Yes	The landfall survey will take place on the beach which is used for public recreation. Public access will be maintained at all times. Any impact on vessel movements within the survey corridor such as by local fishers or recreational sailing vessels as a result of the marine survey operations will be temporary and of short duration. No likely significant impact.
22. Are there any plans for future land uses within or around the location that could be affected by the Project?	No	There is no indication of any plans for future land uses that could be affected by the project. No likely significant impact.
23. Are there areas within or around the location which are densely populated or built-up, that could be affected by the Project?	No	The area around the proposed landfalls is not densely populated or built-up. No likely significant impact.
24. Are there any areas within or around the location which are occupied by sensitive land uses **e.g. hospitals, schools, places of worship, community facilities, that could be affected by the Project?**	No	The landfall survey will take place on the beach which is used for public recreation. Public access will be maintained at all times. No likely significant impact.
25. Are there any areas within or around the location which contain important, high quality or scarce resources e.g. groundwater, surface waters, forestry, agriculture, fisheries, tourism, minerals, that could be affected by the Project?	The proposed survey route passes through known cod nursery grounds. The survey route also overlaps with known haddock spawning grounds, hake nursery, black-bellied monkfish nursery horse mackerel nursery and spawning grounds, megrim nursery, the range of Atlantic salmon, white monkfish nursery and blue whiting nursery and spawning grounds. The proposed survey route passes through a small region of known nephrops grounds also.	The cod nursery grounds span for the majority of the Irish coastline and therefore the specific area of the fish nursery in which the survey works will take place is not of high importance to this species. This is also the case of the black-bellied monkfish nursery, hake nursery, horse mackerel nursery and spawning grounds, megrim nursery, the range of Atlantic salmon, white monkfish nursery and blue whiting nursery and spawning grounds. There is no significant overlap with fishing activities in the region with exception to the pot fishery of lobster, crab and shrimp, however these fishing grounds are quite large and due to the short term survey works, there should be no impact on the interests of this fishery. The proposed survey works should not result in the

Questions to be Considered	Yes / No /? Briefly describe	Is this likely to result in a significant impact? Yes/No/? – Why?
		direct mortality of any fish species due to the slow-moving nature of the survey vessel or have any long lasting effects on any habitats of significant importance to any of the aforementioned fish species Further information on fisheries is included in the EcIA Report. No likely significant impact.
26. Are there any areas within or around the location which are already subject to pollution or environmental damage e.g. where existing legal environmental standards are exceeded, that could be affected by the Project?	No	Ownahincha, Little Island Strand has achieved an Excellent Water Quality rating for the four consecutive years 2018 to 2021 and there is no knowledge of pollution or environmental damage in the wider area. No likely significant impact.
27. Is the Project location susceptible to earthquakes, subsidence, landslides, erosion, flooding or extreme or adverse climatic conditions **e.g. temperature inversions, fogs, severe winds, which could cause the Project to present environmental problems?**	Yes, Coastal fog or adverse stormy weather and related sea states can occur in the licence application area and wider coastal / offshore marine zones.	The survey vessels and equipment will be operated in accordance with the weather limitations and will be fit for purpose. No likely significant impact.

7.0 ENVIRONMENTAL APPRAISAL

Archaeology and Cultural Heritage

7.1 An Archaeological Desktop Study of the foreshore has been prepared by Mizen Archaeology on behalf of the applicant to assess the potential impacts of the survey on archaeology and cultural heritage at the landfalls.

7.2 The proposed licenced survey area does not contain any recorded sites or monuments within the foreshore. However, within a 1km radius of the two possible landfall sites there are a number of sites from the Bronze Age through to the Post-Medieval period.

7.3 To address the potential impacts of any temporary trial pits on the foreshore, the intertidal and beach area will be the focus of an archaeological survey comprising visual walkover survey accompanied by a hand-held metal detection survey. This will be carried out on both strands by an underwater archaeologist under licence approved by the National Monuments Service. The intertidal surveys will be undertaken at low Spring tides. A camera, DGPS and metal detector will be deployed, scanning a series of survey lines in a grid pattern on the beach and intertidal zones. The survey will be carried out to determine the location of all known or previously unknown visible or buried archaeological or cultural heritage features in advance of the landfall site investigations.

7.4 If a geophysical survey/remote sensing survey is proposed for the foreshore area, the results of this should be made available to the archaeologist to review in advance of the foreshore/intertidal archaeological survey being undertaken to inform that survey. It is recommended that all groundworks in the foreshore be archaeologically monitored by a suitably qualified underwater archaeologist licenced under the National Monuments Acts.

7.5 Within the marine area (subtidal inshore and offshore) along this stretch of coast are a high number of recorded shipwrecks with 143 within the application area. Figures 5 & 6 show the distribution of the wrecks as recorded in the Wreck Inventory of Ireland Database, with both known and unknown identities.

7.6 There is a high potential for preservation of wrecks, wreck material or artefacts associated with wrecking events within and adjacent to the proposed survey application

area. A Desktop Marine Archaeology Assessment will be undertaken for the final 500m marine survey corridor before survey works are undertaken which will identify the known wrecks or artefacts of cultural heritage within that area and consider the works in combination with historical and cultural sensitivity of the area.

7.7 The results of the marine geophysical survey should be archaeologically assessed and interpreted by a suitably qualified archaeo-geophysicist or should be made available to the contracting archaeologist who is experienced in the interpretation of such raw data. The results should be assessed in regard to the known recorded shipwreck sites and all identified anomalies should be georeferenced and plotted within the proposed survey line. The results should inform the locations of the SI works to ensure all identifiable negative impacts on known or potential underwater cultural heritage are minimalised and mitigated.

7.8 If feasible, an archaeologist may be on board the SI works vessel when the grab samples, etc. are being taken to monitor and assess them in real time for any cultural heritage content and to ensure, if there is, that no further impact to the archaeology occurs. Alternatively, the results of all samples should be provided to the shore based archaeologist to inspect and ensure the identification of any archaeology that may be present and to inform the resultant archaeological report.

People and Human Health

7.9 The geographic extents of the survey area is predominantly offshore with limited survey and site investigations planned at the beach landfalls. The most significant settlements in the vicinity of the landfalls are Clonakilty (9km northeast, population of approx. 4592) and Rosscarbery (2km northwest, population of approx. 490) as shown in Figure 7. The landfall survey locations of Ownahincha, Little Island Strand & Long Strand comprise a small coastal settlement with a static caravan park and holiday apartments close to Ownahinch and also some one-off houses nearby.

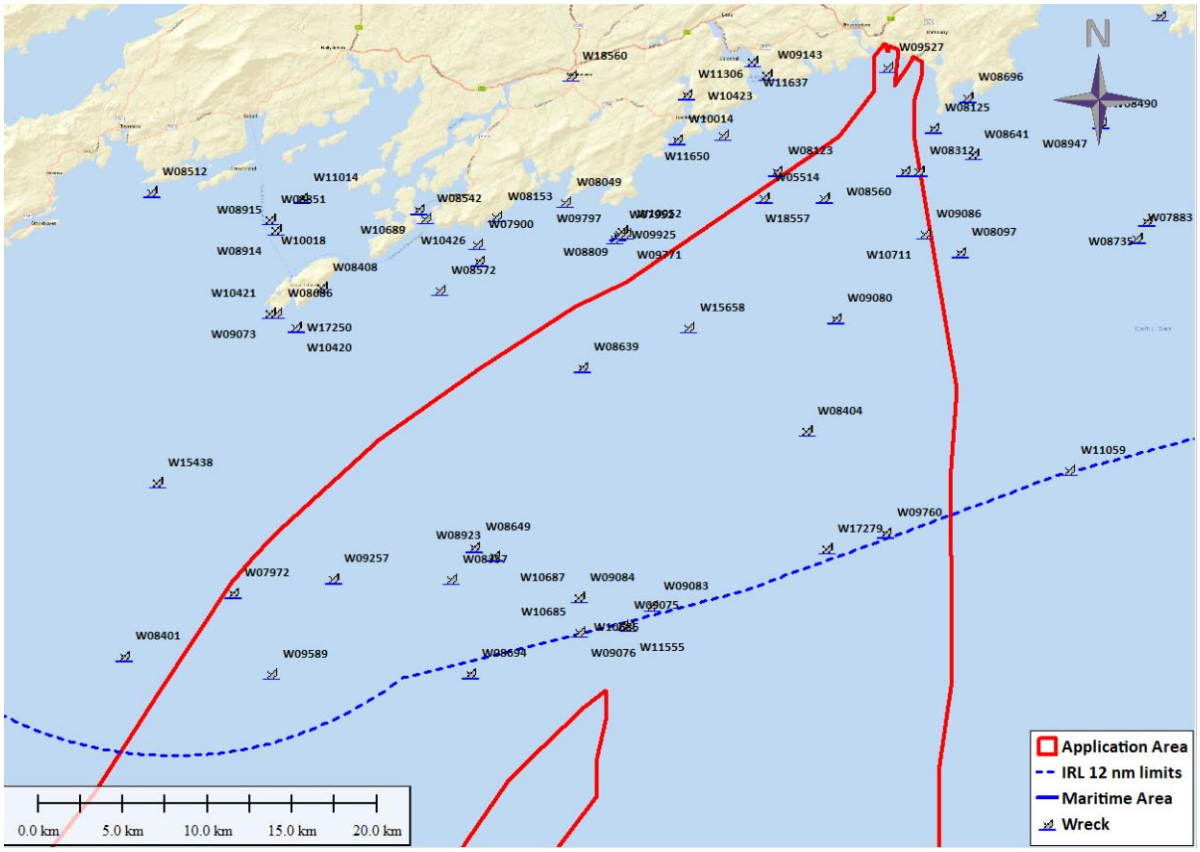


Figure 5. Known wrecks in relation to proposed survey area within 12nm limits.

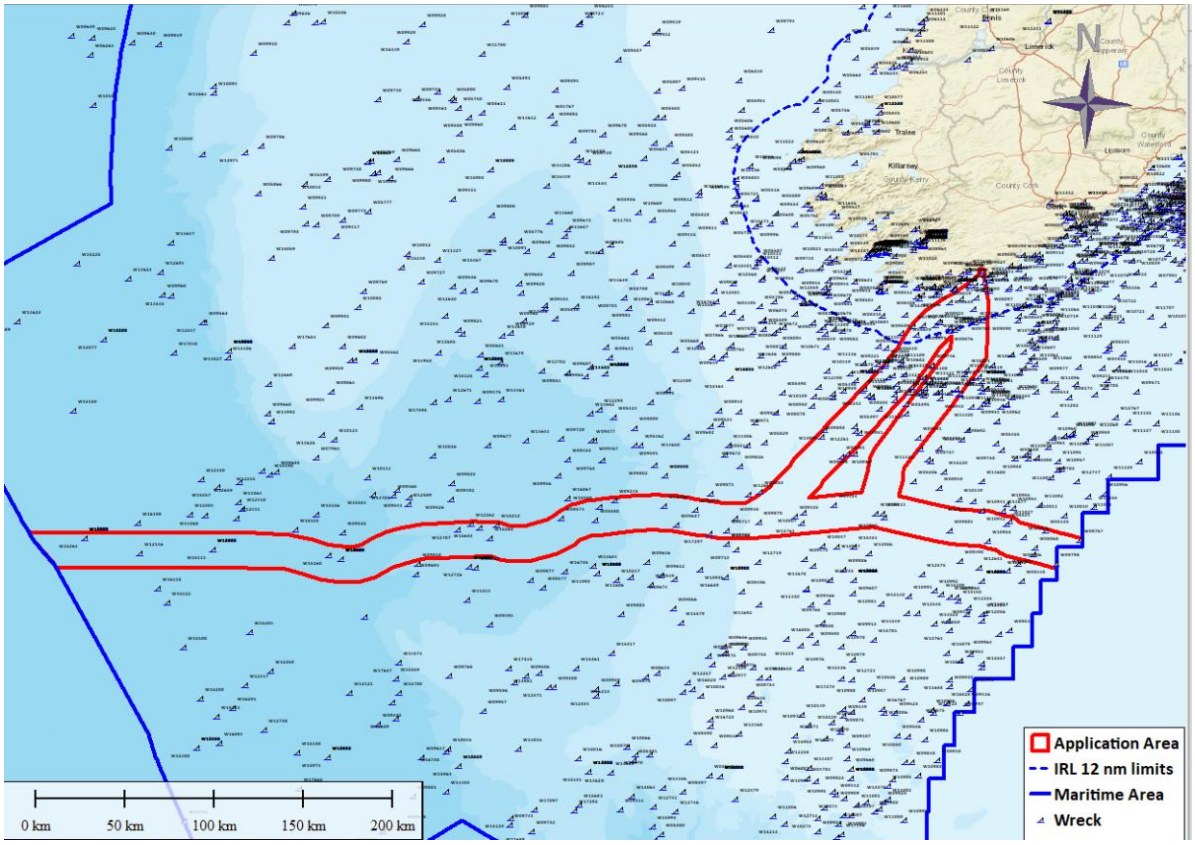


Figure 6. Overview of wreck locations within application area offshore.

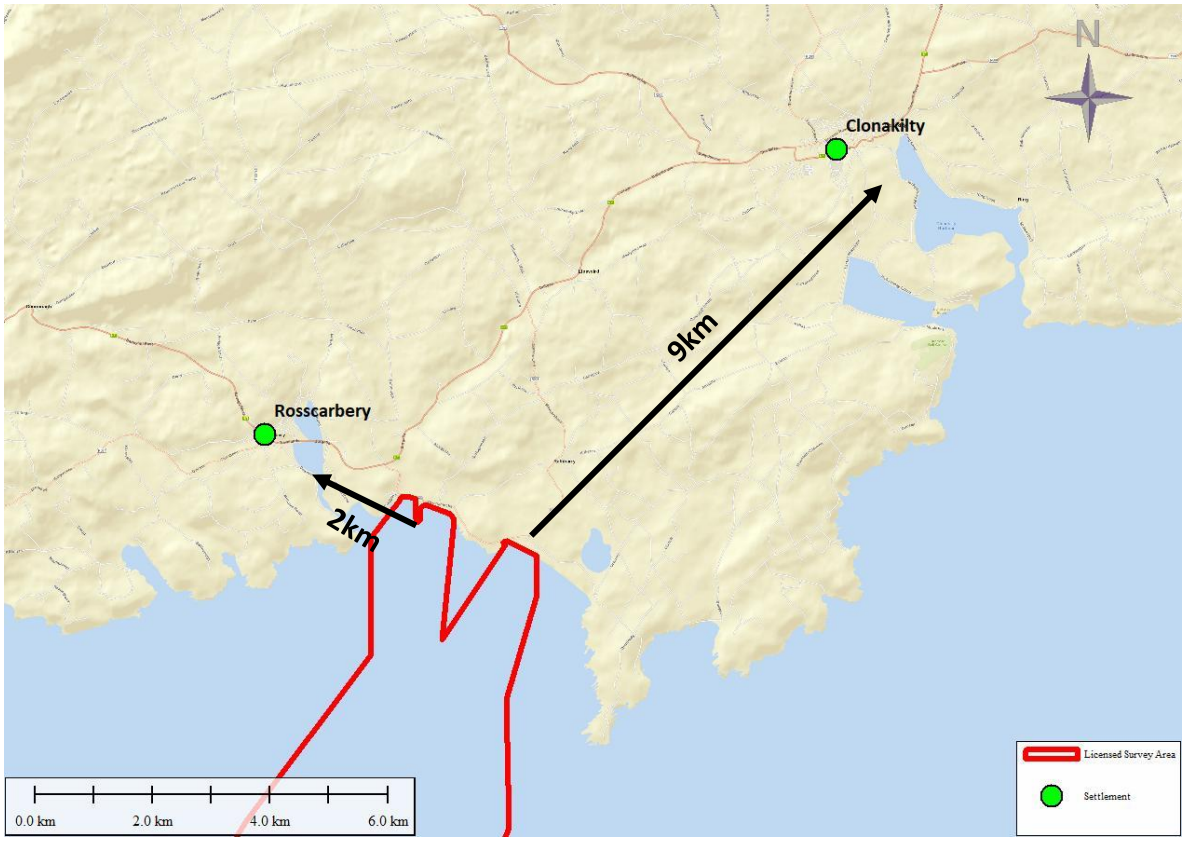


Figure 7. Settlements close to survey area.

7.10 At Long Strand, any requirement for beach access for vehicles or equipment will be solely via the existing track way adjacent to the Fish Basket Café and at Ownahincha / Little Island Strand, access for vehicles or survey equipment will be via the existing established access tracks from the R598. No vehicles or equipment will traverse the sand dune systems. Public access to the beach will be maintained at all times during the survey operations but in the interests of public safety, beach users may be temporarily diverted away from certain areas while surveys or site investigations are underway.

7.11 All proposed surveys and site investigations will be conducted in accordance with all relevant national and international Health and Safety Legislation and Regulations, such as the Safety, Health and Welfare at Work Act 2005 (No. 10 of 2005) and Safety, Health and Welfare at Work (General Application) Regulations 2007 (S.I. No. 299 of 2007), as amended and in adherence to all major international shipping conventions, adopted by the International Maritime Organization (and the International Labour Organization) concerning maritime safety and pollution prevention. With the implementation of these, there will be no impact nor any significant effects on people and human health during the proposed survey activities

7.12 Site visits were carried out on at low tide in the 17th December 2022 and 14th March 2024 by Bryan Deegan MCIEEM. The proposed terrestrial access route and location of trial pits was walked and photographed (Plates 1 – 8, 2022),(Plates 9-16, 2024). Observations were made on a receding tide, as well as at Low Water.

LS2 Sand Shores

7.13 The intertidal access routes consists of Littoral Sediment-Sand shores. As seen in Plates 1-8 the sediment was coarse and appeared to be well trodden. No fauna or flora were noted along the intertidal route of both sites. There was a drift line at Long Beach. However, there was a minor and patchy drift line at Glandore Bay. No seagrass (Zostera sp) was seen. There was significant local pedestrian and canine activity at the restaurant and along the beaches. At Glandore Bay a stream was noted on site. This stream was in flood during the site assessment. Based on an examination of satellite and orthophotography imagery the location of the stream fluctuates significantly within the intertidal. As noted during the 2024 follow-up survey, sand on Rosscarbery Bay has since been shifted by tidal cycles and storms revealing a surface water outfall pipe that was not visible during the 2022 survey (Plate 14). It should also be noted that the route that the watercourse takes when traverses the intertidal had also changed from a meandering route in 2022 to a more direct linear route to the sea in 2024.

CD2 Marram Dunes and ED2 Bare Ground

7.14 A section of the proposed survey overlaps with the Kilkeran Lake and Castlefreke Dunes SAC and the dune system form an important component of the qualifying interests. [1150] Coastal Lagoons*, [2110] Embryonic Shifting Dunes , [2120] Marram Dunes (White Dunes) and[2130] Fixed Dunes (Grey Dunes)are all features of interest of this SAC. Based on the conservation objectives supporting document [2110] Embryonic Shifting Dunes, [2120] Marram Dunes (White Dunes) and [2130] Fixed Dunes (Grey Dunes) and in the vicinity of the existing beach access at Long Strand. Species within the vicinity of the proposed project include Marram grass (Ammophila arenaria), Bracken (Pteridium aquilinum), bramble (Rubus fruticosus agg.). No invasive works are proposed in the vicinity of the dune systems. Works in the dune system relate to machinery and pedestrian access on existing paths and localised works in the intertidal.

Plates 1-4. Long Strand. (Clockwise from top left) Beach access at road(TL), Access to beach (TR), Area of trial pits (BL) & coarse sand at pit locations (BR)

Plates 5-8. Rosscarbery Bay (Clockwise from top left) Beach access (TL), Beach (TR), Coarse sandy/gravel lower shore (BL) & stream in flood (BR)

Plates 9-12 Long Strand (Clockwise from top left) Access to beach (TL), Area of trial pits (TR), Beach assess and Fish Basket (BL), & coarse sand and dune locations (BR) (14th March 2024)

Plates 13-16 Rosscarbery Bay (Clockwise from top left) Access to beach (TL), Exposed SW outfall (TR), Exposed SW outfall in beach (BL), & stream in flood (BR) (14th March 2024)

Species: Birds

7.15 The proposed survey works is not located within a SPA. The intertidal element of the survey works are on popular beaches with a car parks, restaurants and existing human and dog walking activity. These habitats are highly disturbed. The site was visited during the overwintering bird season (Dec. 2022 & March 2024). No birds were roosting on the shores during the site visit. .

Species: Amphibians

7.16 The common frog (Rana temporaria) was not observed in the surrounding terrestrial areas. NPWS records of rare and threatened species in addition to the NBDC sightings records were investigated and showed no records in proximity of the landfall or beach area. No drainage ditches were observed in the terrestrial element of the proposed survey works. However, the coastal lagoon and Long Strand drains into the sand near the site access. No amphibians of conservation importance are recorded on NPWS data.

Freshwater Biodiversity

7.17 It should be noted that a watercourse (identified as 'Owennashingaun' by the EPA) outfalls to the marine environment at Owenahincha Beach, Glandore Bay. This watercourse was observed in high flow during the site visits on 17th December 2022 and 14th March 2024 and no biodiversity was associated with this watercourse. It should be noted that this area is a highly mobile moderately exposed beach and based on an examination of satellite and orthophotography imagery the route that this watercourse takes in the intertidal alters regularly.

Terrestrial Mammals

7.18 No badger setts or evidence of terrestrial mammals of conservation importance were seen in the vicinity of the landfall areas. Records of sightings of the badger, pine marten, otter and hedgehog were examined from the NBDC and NPWS rare and threatened species records showed no records in proximity of the landfall areas.

7.19 It should be noted that otters (Lutra lutra) are a qualifying interest of the Roaringwater Bay and Islands SAC (8.1 km from the proposed survey works). Otters were not observed onsite. However, given the distance to this SAC (8.1 km), otter may be present at the time of the survey works. The survey works are solely in the terrestrial/intertidal

elements of Glandore Bay and Long Strand, and the marine environment. Vessel speeds are slow (4 kn) for a limited period in Glandore Bay and Long Strand and impacts will be localised in nature. Following commencement of the survey works, underwater noise levels would increase gradually as the vessel approaches otter species. Otter would easily avoid the vessel as noise levels increase as speeds are slow.

7.20 Vessel activity in the vicinity of this SAC is 8.1 km offshore in the deeper water off the coast of Glandore Bay / Long Strand. This temporary disturbance is deemed to be insignificant in relation to potential effects on otter from Roaringwater Bay. In the absence of mitigation measures, no significant impacts on otter species are foreseen as a result of the proposed survey works.

Cetacean Species

7.21 Figures 8 & 9 show all cetacean species sighted in the vicinity of the proposed survey works, as recorded by IWDG sightings scheme. Cetacean activity has been seen in the vicinity of the proposed survey works. Species seen in the area include Fin Whale (Balaenoptera physalus), Risso's dolphin (Grampus griseus), common dolphin (Delphinus delphis), humpback whale (Megaptera novaeangliae), Sperm whale (Physeter macrocephalus), bottle-nosed dolphin (Tursiops truncatus), long-finned pilot whale (Globicephala melas), minke whale (Balaenoptera acutorostrata) and harbour porpoise (Phocoena phocoena). Conservation sites of Ireland containing Grey Seals are demonstrated in Figure 10.

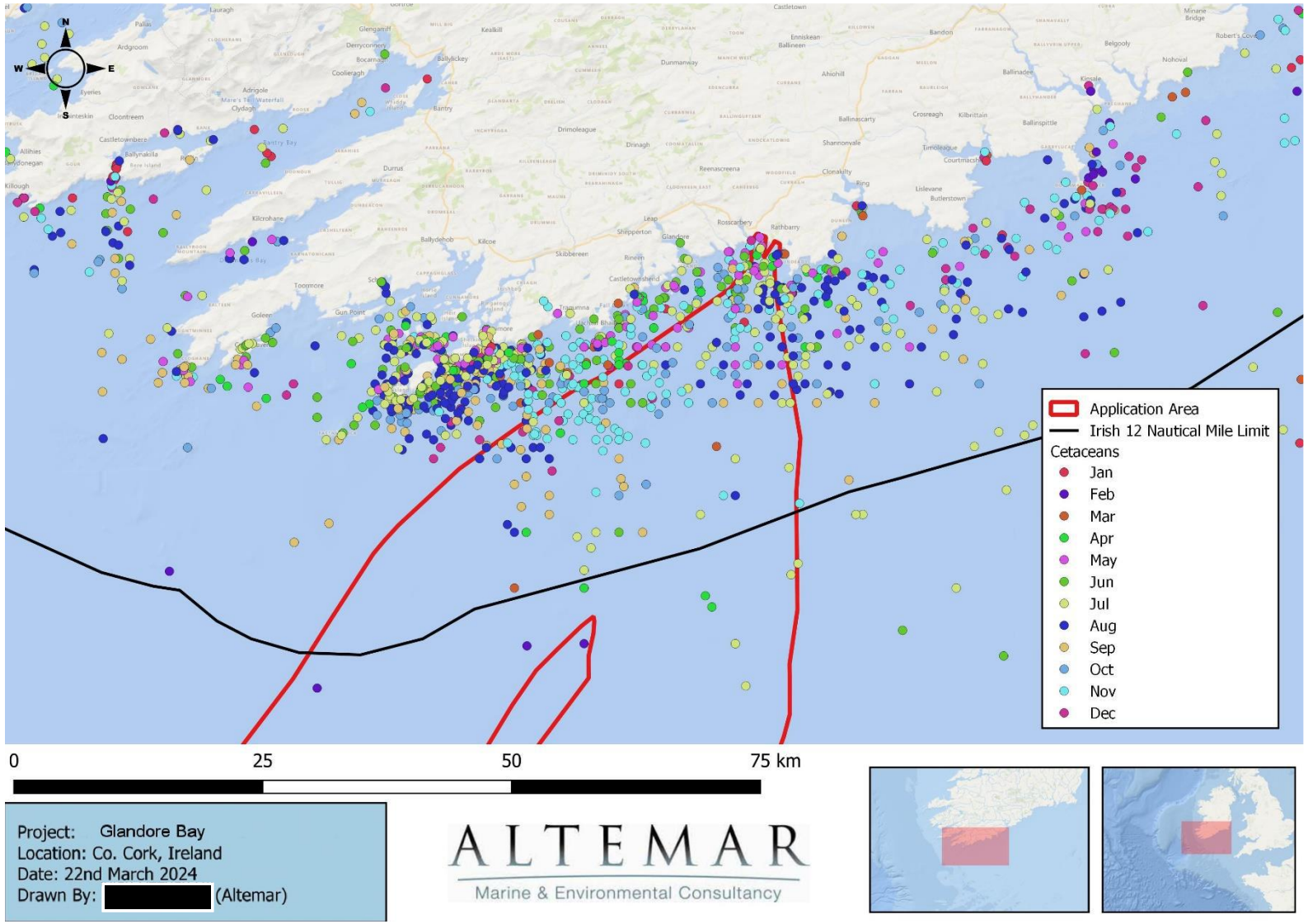


Figure 8. Cetacean Sightings (IWDG) within 12nm limits.

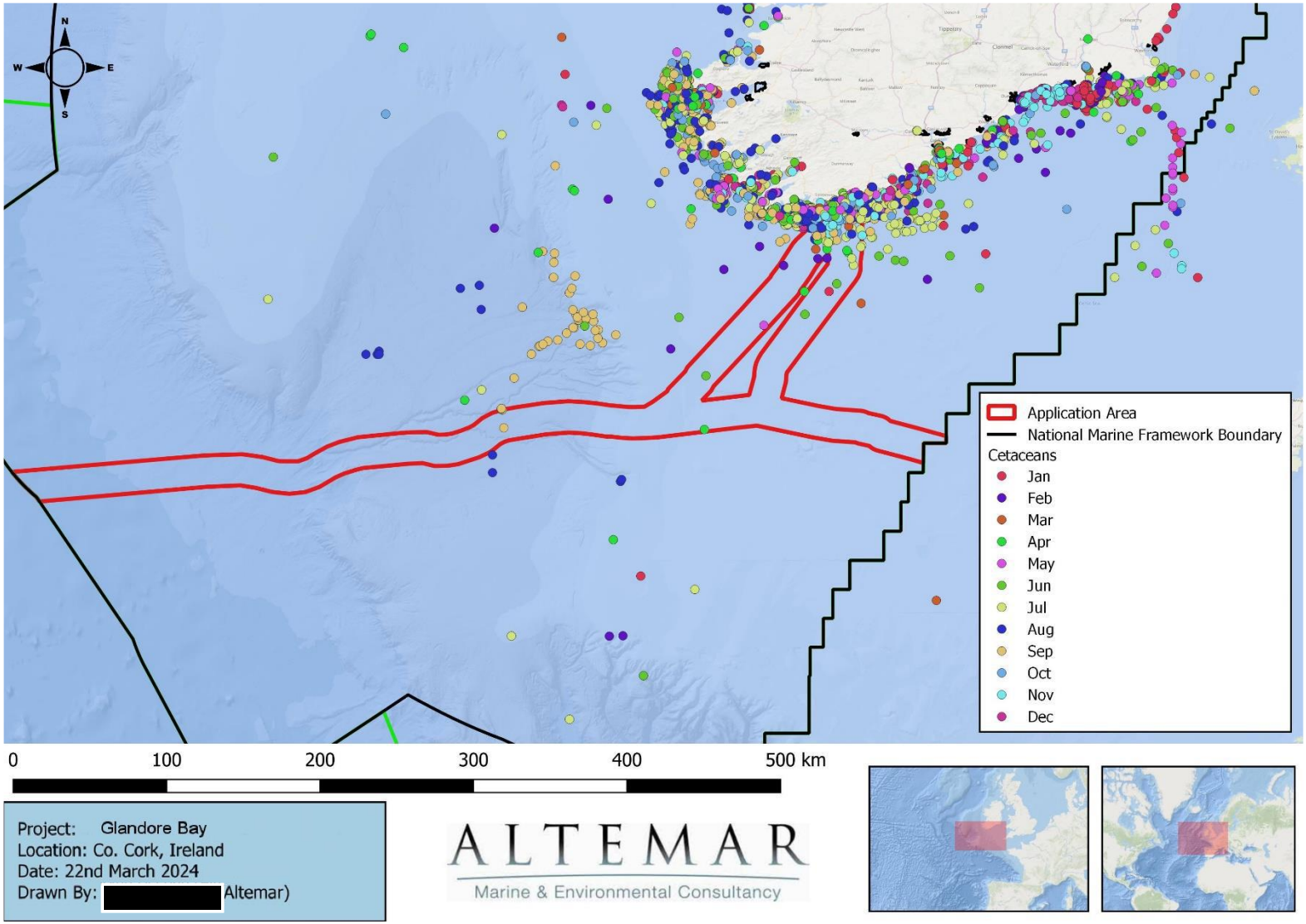
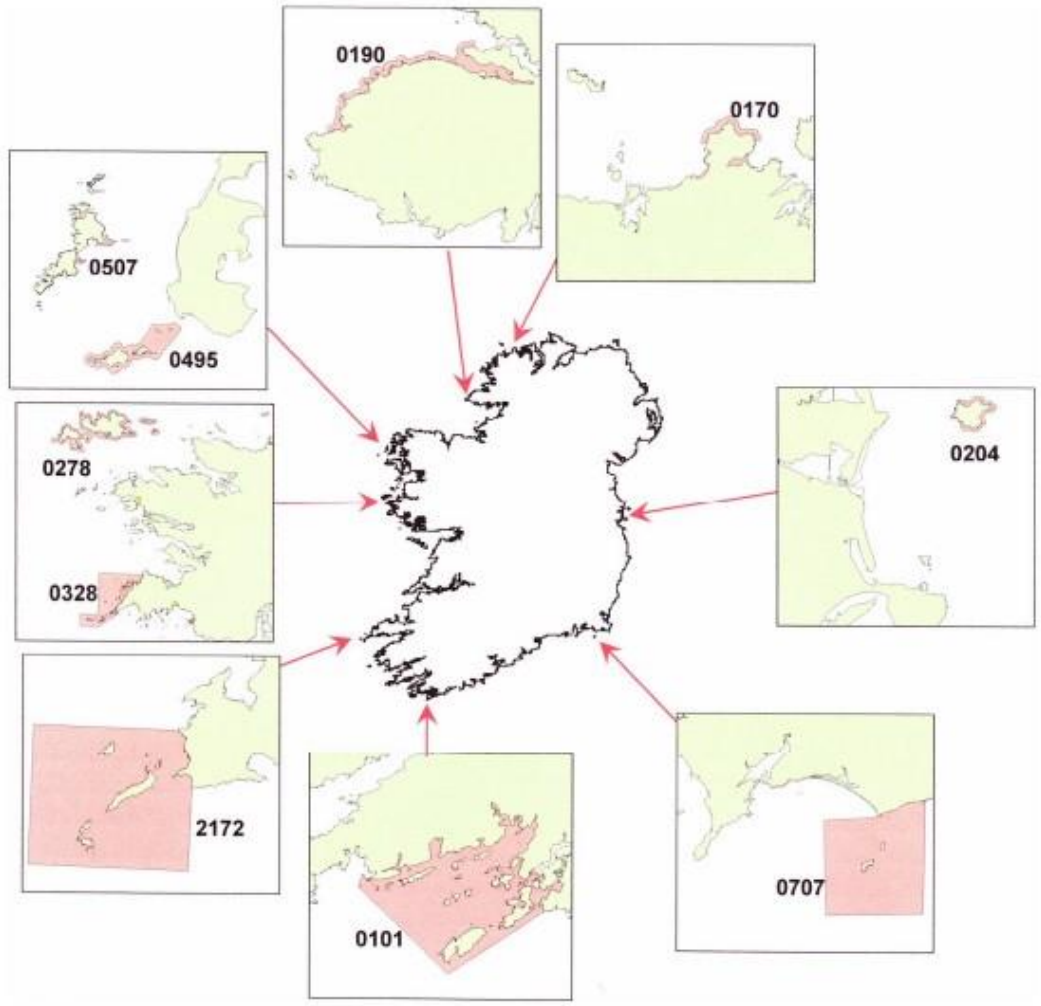


Figure 9. Cetacean Sightings (IWDG) within 12nm limits.

Grey seal population monitoring, 2009 - 2012



Legend:

Site code	Conservation Site Name	County
000147	Horn Head and Rinclevan SAC	Donegal
000190	**Slieve Tooey/ Tormore Island/ Loughros Beg Bay SAC**	Donegal
000495	**Duvillaun Islands SAC**	Mayo
000507	**Inishkea Islands SAC**	Mayo
000278	**Inishbofin and Inishshark SAC**	Galway
000328	**Slyne Head Islands SAC**	Galway
002172	**Blasket Islands SAC**	Kerry
000101	Roaringwater Bay and Islands SAC	Cork
000707	**Saltee Islands SAC**	Wexford
000204	**Lambay Island SAC**	Dublin

Figure 10. Grey seal conservation sites.

Reptiles

7.22 The leatherback turtle (Dermochelys coriacea) is the only turtle species that is protected under Annex IV of the Habitats Directive in Ireland. This species has been recorded within both the marine and terrestrial aspects of the license area (NBDC, 2022) and is another seasonal visitor. Leatherback turtles migrate north during the summer months to more temperate waters, some visit the northeast Atlantic and Irish waters where they feed on jellyfish before turning south again in Autumn (NPWS, 2019). These sightings mostly range from the late 1970s to the early 2000s, however, there are some more recent sightings from 2018 and 2019 located within the application area. There is, therefore, a possibility that the leatherback turtle may be present at the time of survey works.

Historic Records of Biodiversity

7.23 The National Biodiversity Data Centre's online viewer was consulted in order to determine the extent of biodiversity and/or species of interest in the area. Appendix I of the ECiA report provides a list of all species recorded in custom polygons drawn to the outline of the survey area and 10km grid areas that possess a specific designation, such as Invasive Species or Protected Species.

Potential Effects

7.24 The marine and intertidal survey of a deep sea fibre-optic cable is a complex and challenging procedure. From the beginning of the planning stage to determining the final cable route, careful thought has gone into ensuring the longevity of the cable and uninterrupted service. This, in tandem with licencing and environmental legislation results in the routing of the cable in as stable an environment as possible that will have minimal impact on the environment and threat of anthropogenic disturbance. The marine survey is to identify the optimal route for the cable. The survey elements may involve intertidal trial pits/bar probes and acoustic/geophysical survey offshore.

7.25 It should be noted that the entire project was designed in consultation with Altemar in order to limit the potential impact of the proposed project. As a result, the footprint of the proposed works is small, using existing formal terrestrial routes and involve the placing of machinery or personnel on existing paths and not within the dune systems. No works are proposed in the vicinity of the dunes and beach access is wide enough on

the beaches to allow for machinery to enter the intertidal without impacting on the dune systems. As noted in plates 1-16 the sand on these beaches is coarse and there is a paucity of infauna. It would be expected that any trial pits would cause minor short term effects on the beach and given the moderately exposed nature of the beaches and the coarse sand on site, effects on the beach would only last several tides. However, mitigation measures will be in place to ensure that the features of interest are not impacted by the proposed works, particularly while accessing the site.

7.26 The terrestrial activities may involve the movement of personnel and machinery on existing wide worn paths (through dune habitats), roads and car park areas. No excavation is proposed in the terrestrial areas. The principal elements of the terrestrial activities are the facilitation of access for machinery. Intertidal works involve excavation of trial pits and bar probes during a single falling tide on each beach. Temporary compaction would occur in localised areas, but these areas are on existing paths that have undergone compaction.

7.27 The presence of any machinery and personnel in the intertidal may temporarily disturb wildlife. Disturbance of the sediments in the intertidal will occur due to trial pit/sampling works. Pollution generated from machinery/construction activities could potentially impact the intertidal and terrestrial habitats.

7.28 In the subtidal the process will involve a ship moving at a speed of approximately 4kn and generating acoustic noise with the use of acoustic equipment. In addition sampling will also generate localised noise but also localised disturbance of sediment. However, as the vessel will be stationary during sampling (cores, grabs etc.) this disturbance of silt will be very localised. During the acoustic survey disturbance of cetaceans may occur due to the presence of the vessel and underwater noise.

Land and Soils

7.29 Long Strand is a long and uninterrupted stretch of sand and is buffered to the North from the R598 (Clonakilty Rd) and L4006 (to Galley Head) by a belt of grassy coastal sand dunes. Ownahincha / Little Island Strand is effectively two beaches linked by a spit at Iron Rock with shingle and Ownahincha River to the west and with sand, dunes and rocky inlets to the east. The R598 (Clonakilty Rd) runs parallel to the beach, separated by a belt of grassy coastal sand dunes on the eastern side.

7.30 The underlying bedrock strata in this area is defined as the Castlehaven Formation from the Upper Devonian period (Figure 11). The Castlehaven Formation consists of purple mudstones and siltstones with sandstone bodies. These are sedimentary deposits of a non-marine alluvial plain, where shallow lakes developed following flooding events. It is thought that the lake waters dried up rapidly giving way to strongly oxidising conditions, resulting in the development of haematite (a hydrated form of iron oxide), which has imparted the purple colour to the rock.

7.31 Bedrock strata exposed are noticeably inclined, and in many places dipping at steep angles into the subsurface. There are dipping outcrops of this bedrock visible along the headland to the West of Long Strand (Figure 12). Originally laid down as horizontal layers of sediment, these layers of rock were inclined (folded and pushed upright). There are no designated sites of Geological Heritage located in proximity to the survey area.

7.32 The seabed substrate along the proposed survey area consists of mainly sand across the intertidal and nearshore zones. Muddy sands and areas of hard or rocky substrata interspersed with channels of sands are indicated within the survey corridor offshore, progressing to predominantly sands and coarse substrate close to the 12nm IRL limits and beyond into the deeper waters of the Atlantic. (Figures 13, 14)

7.33 The seabed is regularly disturbed by natural processes. The cumulative volume of sediment collected in the grab samples and shallow cores is small. Any sediment disturbed or suspended by the sampling will settle almost immediately. Any trial pits on the beach will be backfilled immediately with the excavated material. Overall, the work relates to the marine geophysical survey, site investigations and landfall surveys. The survey is transient, of short duration, with reinstatement of any areas of seabed impacted by sampling completed naturally by tidal movements and currents. There will be no significant impact nor any significant effects on land and soils within the survey area as a result of the proposed survey activities

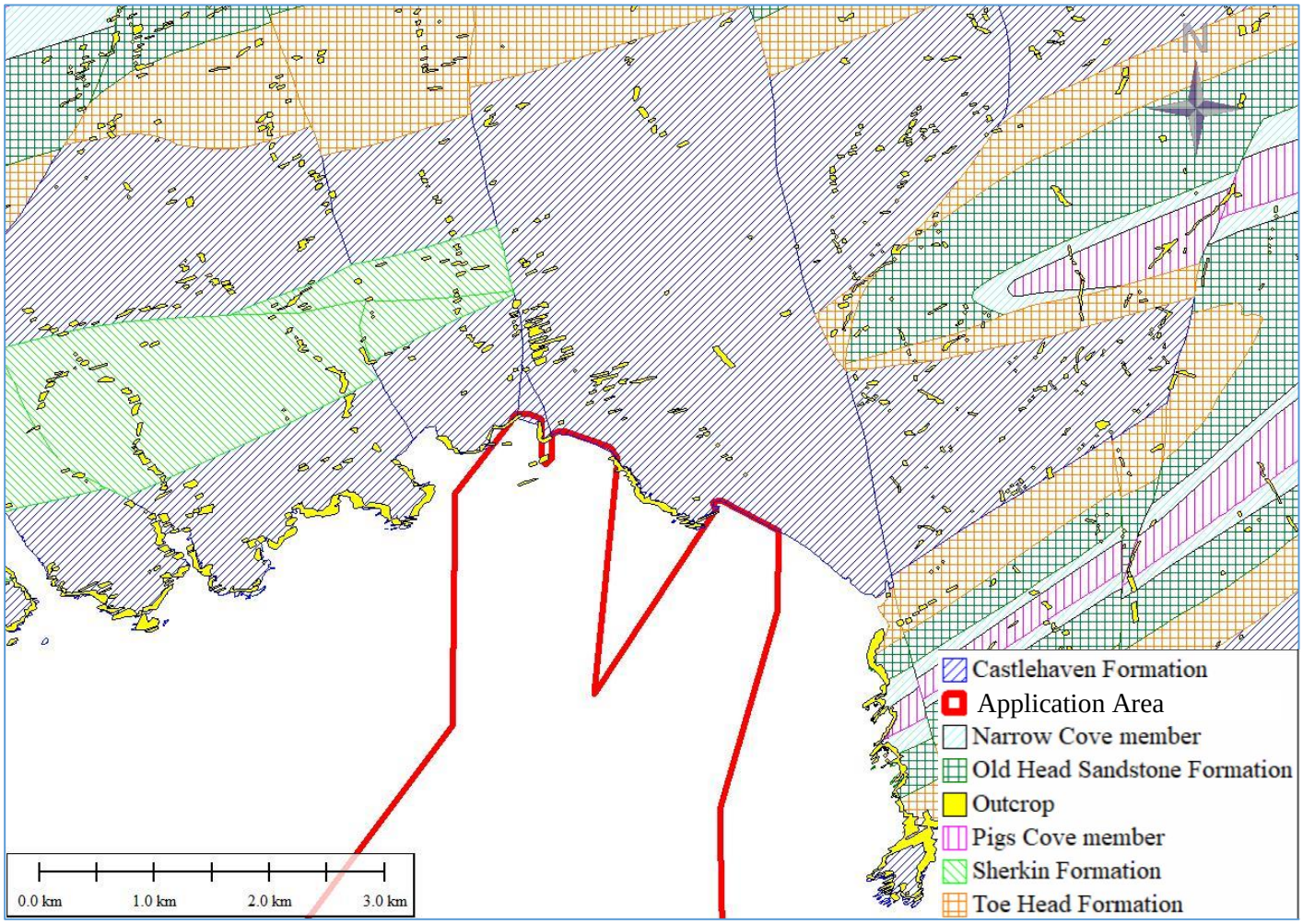


Figure 11. Geology of Landfall.

Figure 12. Bedrock outcrop (Castlehaven Formation) at Long Strand.

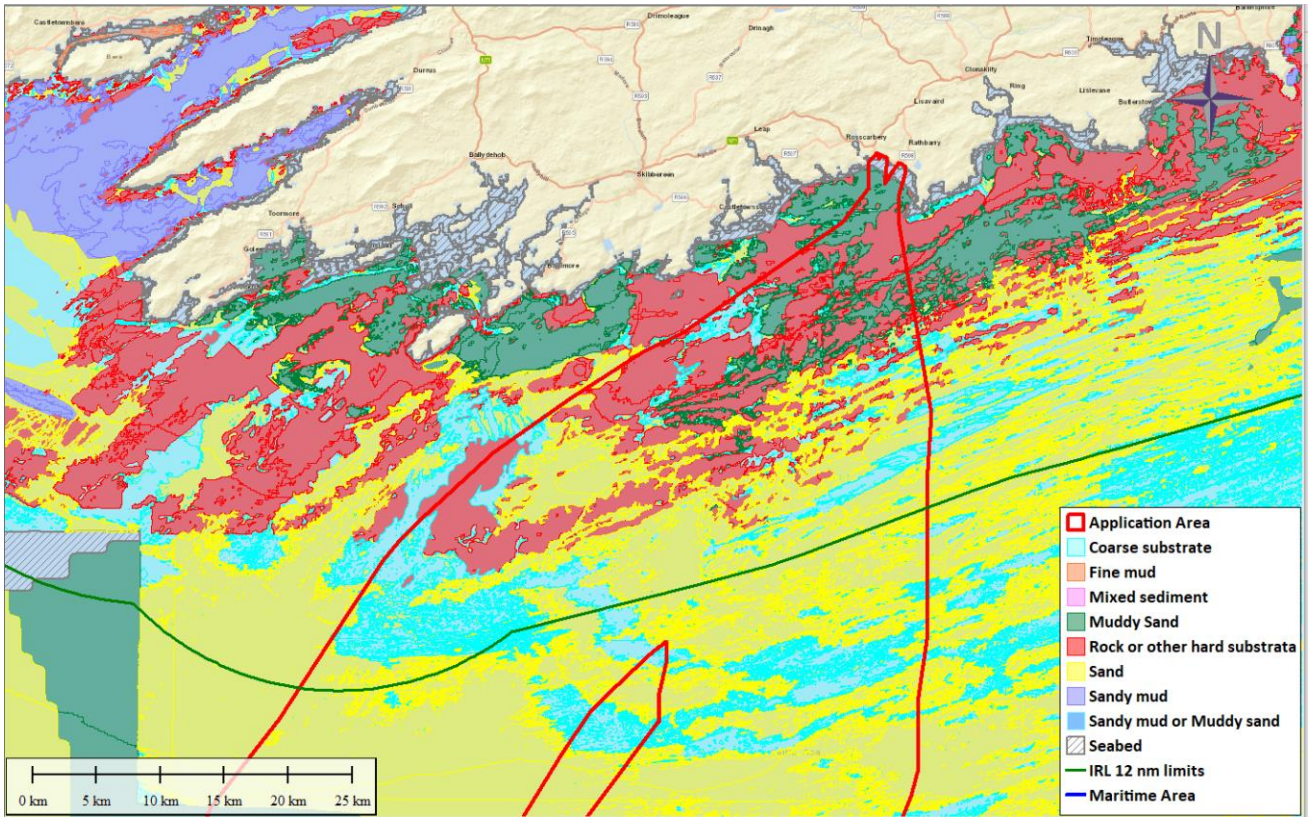


Figure 13. Indicative Seabed Sediments within Application Area close to Ireland.

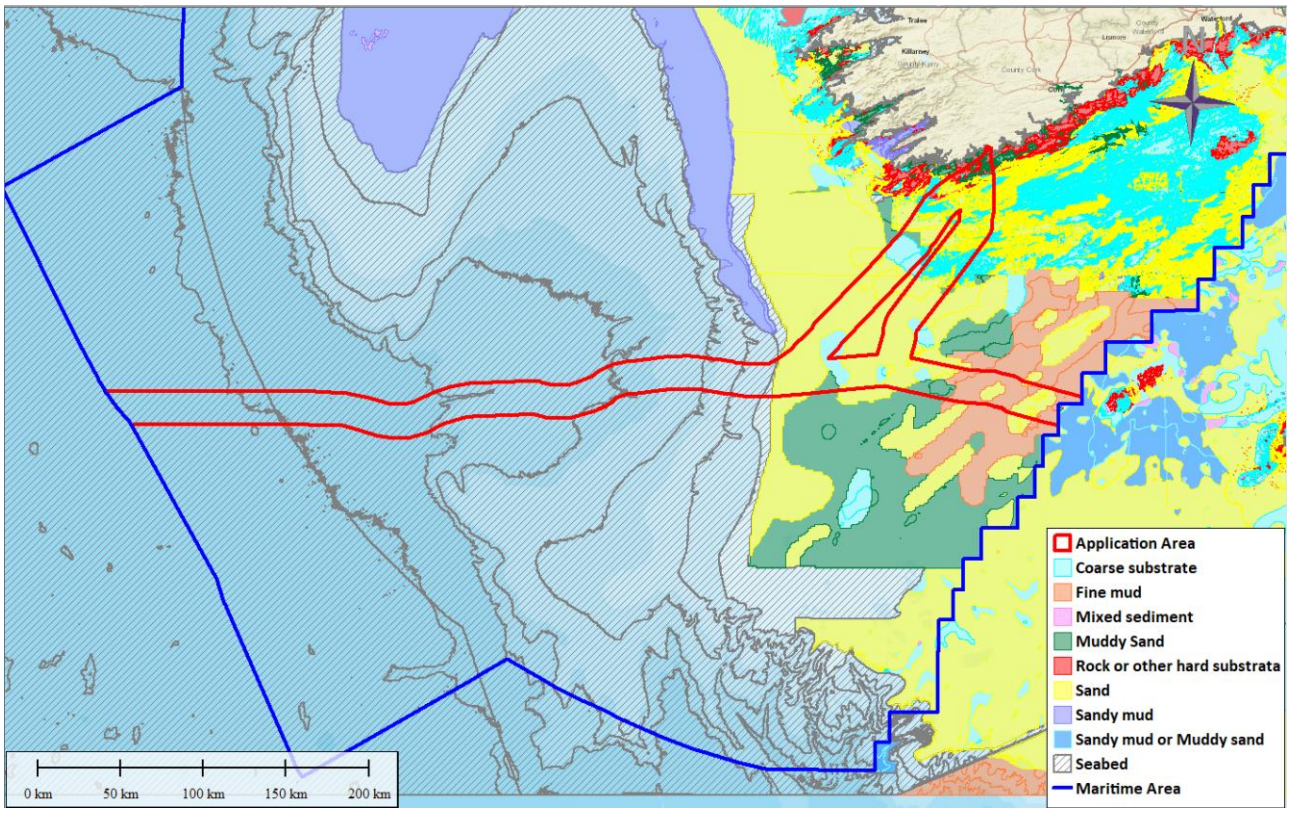


Figure 14. Indicative Seabed Sediments Offshore. (Emodnet)

Landscape & Seascape

7.34 The survey area consists of landfall survey locations at Ownahinch Beach, Little Island Strand & Long Strand which are bounded by the R598 regional road to the North and Glandore Bay to the South. The majority of the survey area comprises a marine corridor in a general South – South West direction through Glandore Bay.

7.35 In the Cork County Development Plan (2022 – 2028), the Coastal Landscape in proximity to the survey area is characterised as 'Indented Estuarine Coast' with 'Very High' Landscape Value and Sensitivity and is deemed to have 'National' importance.

7.36 The Marine Institute Regional Seascape Character Assessment for Ireland published in 2020 defined the Seascape Character Area in the survey area as Atlantic Celtic Bays and Estuaries and classified the seascape as complex indented small peninsulas, low cliffs and small sandy beaches that is subject to influence of both Atlantic Ocean and Celtic Seas.

7.37 Given the nature of the survey operations which will be small scale, temporary and conducted over a short timeframe, the visual impact will be limited to the presence of the survey vessels in Glandore Bay. The location of the survey corridor (landfall and offshore marine) is not visible from any large urban settlements with the sand dunes at Long Strand and Little Island Strand providing further visual screening of the survey corridor.

7.38 The surveys are temporary in nature and given the existing marine vessel traffic in the general area, the survey will not present a negative visual impact. There will be no significant impact on the landscape and seascape as a result of the proposed survey operations.

Hydrology and Water Bodies

7.39 The two inshore coastal waterbodies through which the license area traverses (Rosscarbery Bay and Western Celtic Sea) are classed as intermediated and unpolluted under the Water Framework Directive (WFD) (Figures 15 & 16). In compliance with the WFD objectives, the proposed activities associated with the survey operations are not anticipated to result in a deterioration in a designated water body or protected area and

will not jeopardise the attainment of good status or the potential to achieve good ecological and chemical status.

7.40 It should be noted that a watercourse (identified as 'Owennashingaun' by the EPA) outfalls to the marine environment at Owenahincha Beach, Glandore Bay. This watercourse was observed in high flow during the site visit by Altemar on 17th December 2022 and no biodiversity was associated with this watercourse. This area is a highly mobile moderately exposed beach and based on an examination of satellite and orthophotography imagery the route that this watercourse takes in the intertidal alters regularly.

7.41 Refuelling of equipment, machinery or plant will not take place on the foreshore. To minimise risk, all machinery will only be fuelled on the hard stand area of a car park or road, at least 10m from a drain or gulley. All survey vessels will comply with the International Convention for the Prevention of Marine Pollution from Ships (MARPOL) as per best practice which will reduce the risk of contamination incidents or accidents.

7.42 Survey vessels will follow appropriate Biosecurity protocols and regulations such as the International Maritime Organisation (IMO) Guidelines for the control and management of ships' ballast water, to minimise the transfer of harmful aquatic organisms and pathogens.

Air and Climate

7.43 The survey area (at the landfalls) is designated as Zone D of the EPA Air Quality Zones which comprises rural areas located away from large population centres and is not located near any existing sources of significant air pollution. During the survey, there will be no releases of emissions to air, other than routine vessels exhausts. Air Quality standards will not be exceeded.

7.44 The operation of the survey vessels will result in the emission of exhaust gases associated with fossil fuel use. The transport of people, equipment and materials and use of machinery to dig trial pits will also result in emissions of exhaust gases. Given the nature of the survey operations which will be conducted over a short timeframe, the quantity

of emissions will be small and effects contributing to climate change will not arise. There will be no significant impact on the air and climate as a result of the proposed survey.

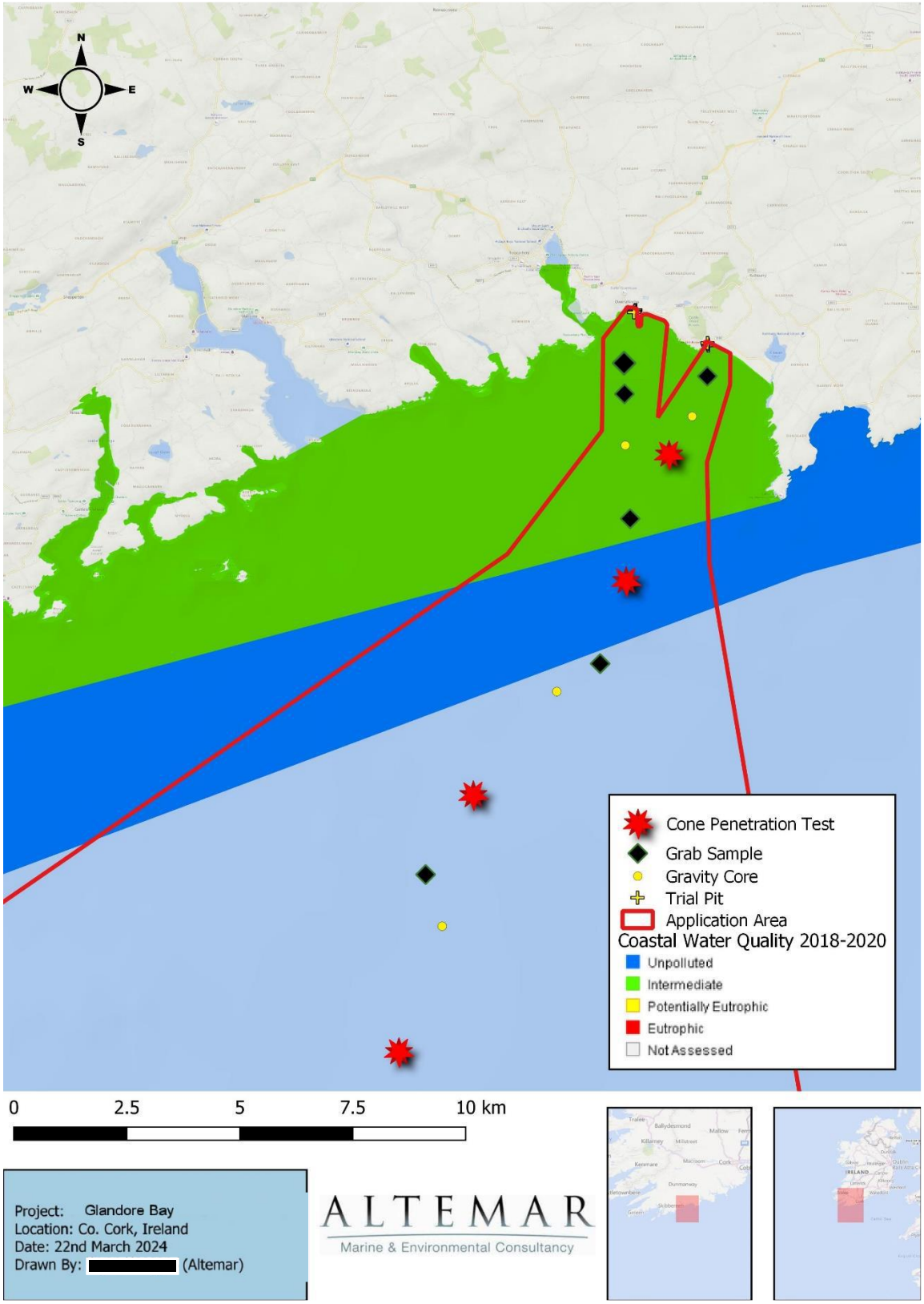


Figure 15. Coastal Water Quality.

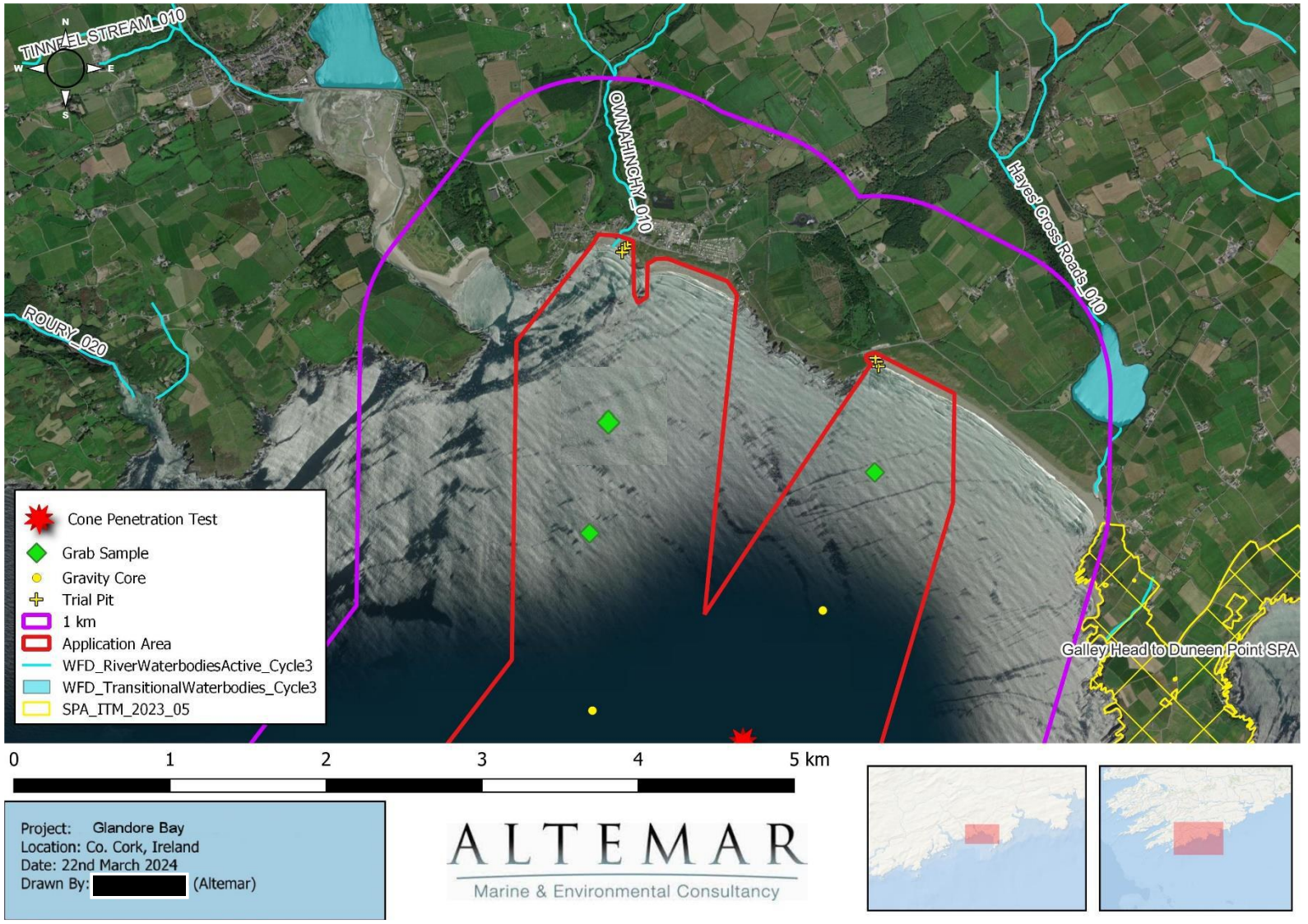


Figure 16. Coastal Waterbodies.

Noise and Vibration

7.45 Shipping and general vessel traffic is a major contributor to background noise in oceans and seas. Vessels generally produce low frequency continuous sound. The vessels associated with the survey and sampling operations will contribute to background ocean noise. As seen in Figure 17-20 below, there is existing vessel traffic (shipping, fishing, recreation) transiting the survey area which generates anthropogenic sound and therefore the operation of the survey vessel in the area will not create significant additional noise or disturbance. Marine mammals are often seen in close proximity to human activity and exhibit some tolerance to anthropogenic noise and other stimuli and range over a wide area when foraging.

7.46 The multi-beam and single beam echosounders, side-scan sonar and sub-bottom profiler are noise emitting technologies. The sound levels and frequencies of the sources are at higher frequency than the frequencies which the most sensitive cetacean are capable of hearing. Acoustic disturbance could occur during the site investigations due to the use of a wide range of frequencies during the geophysical surveys and the localised noise during sampling operations. Noise generated from vibro-coring will be of low intensity, very localized, will move around the survey area and may result in short-term displacement.

7.47 The risk of disrupting the life cycle of marine mammals is considered to be extremely low. The geophysical and geotechnical surveys could cause temporary displacement from the immediate area and if it occurs, it would only occur during short periods. Any effect is likely to be quite localized and of relatively short duration. The potential for impact was considered within the Applicant's NIS assessment and Risk Assessment for Annex IV Species.

7.48 The survey operations shall comply with the NPWS (2014) "Guidance to manage the risk to marine mammals from man-made sound sources in Irish waters". These guidelines would be deemed adequate to mitigate the negative impacts of the proposed works. Cetaceans in the vicinity of the vessel during start up procedures would be given ample time to leave the site with the soft start procedures outlined in the guidelines. In addition, vessel speeds are extremely slow which would give marine mammals ample opportunity to move from the area. With the implementation of mitigation measures,

there is no significant risk for potential impact on cetacean and any possible disturbance from the works would be contained within the very limited local disturbance from the presence of vessels.

Navigation & Shipping

7.49 There are no designated shipping lanes, Traffic Separation Zones, Vessel Traffic Services (VTS) or anchorages within the survey application area. The Fastnet Rock Traffic Separation Scheme is located approximately 22km West of the survey area (Figure 17). The Commissioners of Irish Lights is the responsible authority for the principal navigation buoys and lights on or around the coast of Ireland. There are no Aids to Navigation situated within the survey area.

7.50 The Port of Cork and Ringaskiddy Terminal is the largest commercial port along the south coast and is located c.70km to the east of the survey area. Figures 17 & 18 show AIS data for 2021 representing the vessel traffic in the area, excluding fishing vessels.

7.51 Within Glandore Bay, the majority of vessel movements are related to fishing vessels transiting to the fisheries harbour at Union Hall, 8km West of the survey area (Figure 19, 20). In summer, pleasure craft and sailing vessels traverse the survey area as they navigate along the coast between Kinsale, Fastnet and Baltimore/Schull.

7.52 Further offshore, commercial shipping traffic crosses the survey area as it routes through the Fastnet TSS. This shipping activity transits to and from the commercial ports on the west coast (Whiddy Island terminal, Shannon Foynes and Galway) and also shipping routes through the Atlantic. The survey route is North of the general route that transatlantic traffic takes to approach the English channel.

7.53 During the marine survey operations, survey vessels will display lights, shapes and internationally recognised identification or warning signals. Other vessels will be requested to maintain a safe distance from survey vessels due to their restricted manoeuvrability.

7.54 Mitigation measures will be in place to ensure compliance with the International Regulations for Preventing Collisions at Sea and standards, including the issuing of a formal marine notice. Local liaison with fishers will also be undertaken. As the surveys

will be temporary and of limited duration, the effect on shipping and navigation is expected to be minor.

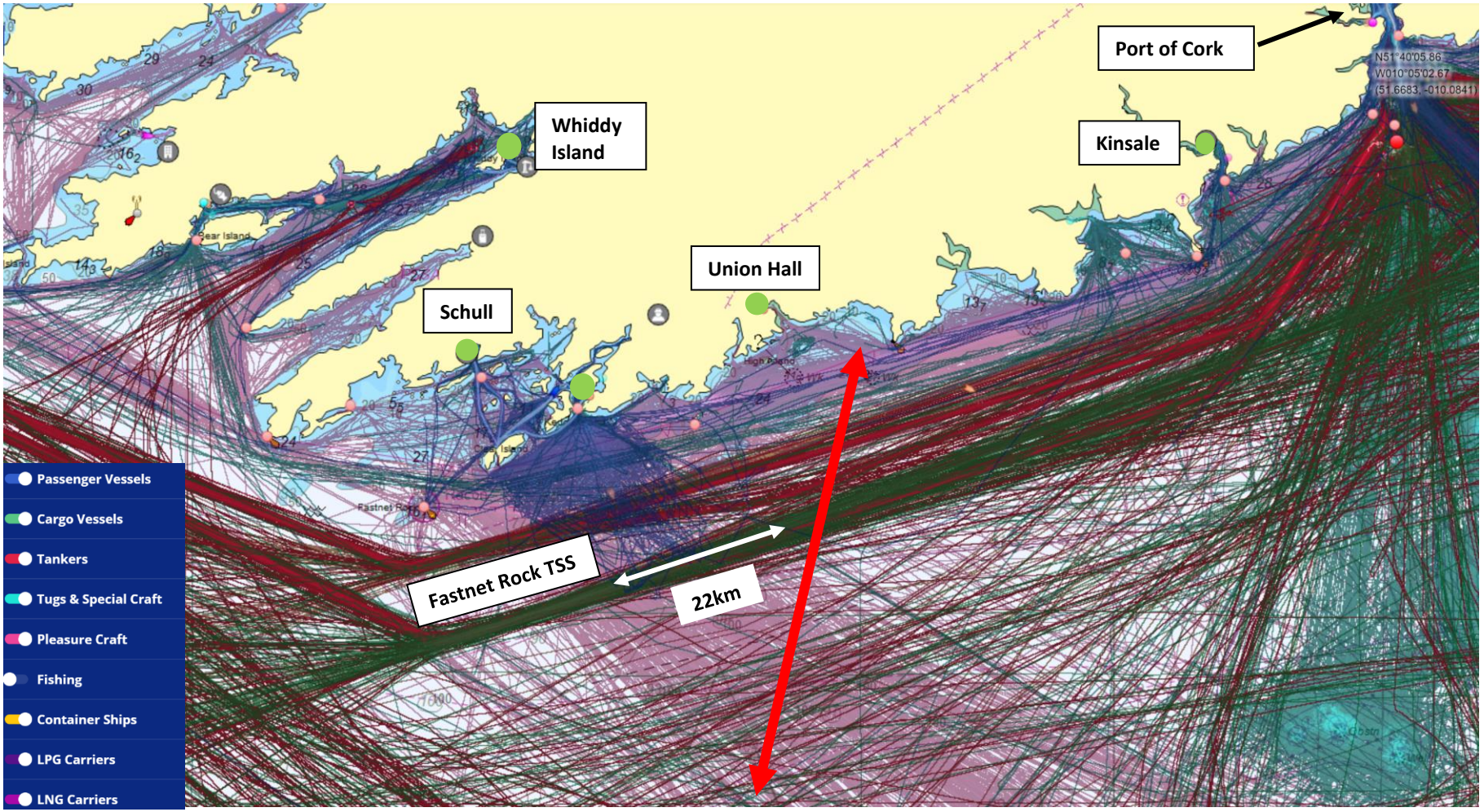


Figure 17. Shipping Traffic (AIS, 2021)

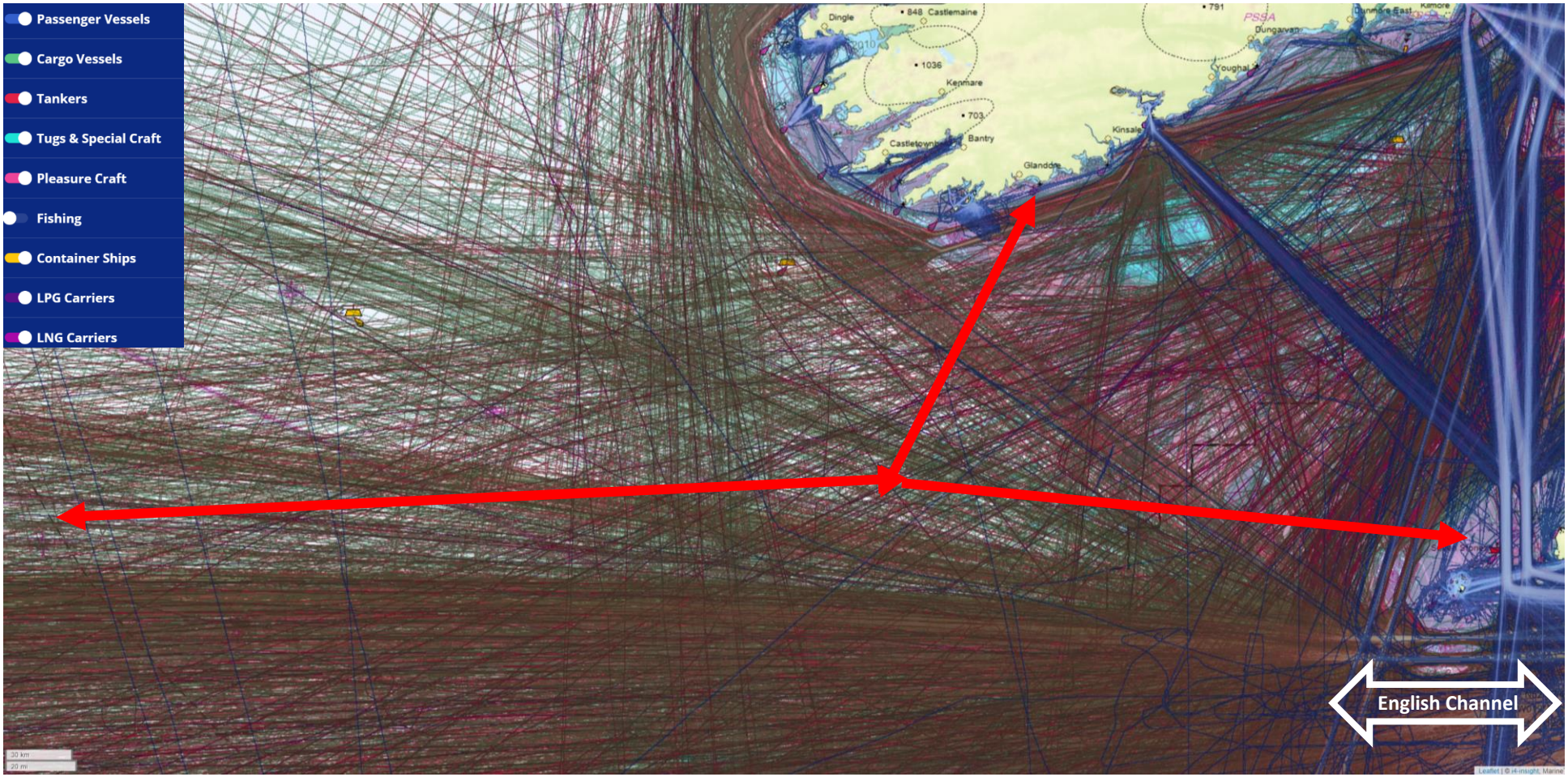


Figure 18. Shipping Traffic Overview (AIS, 2021).

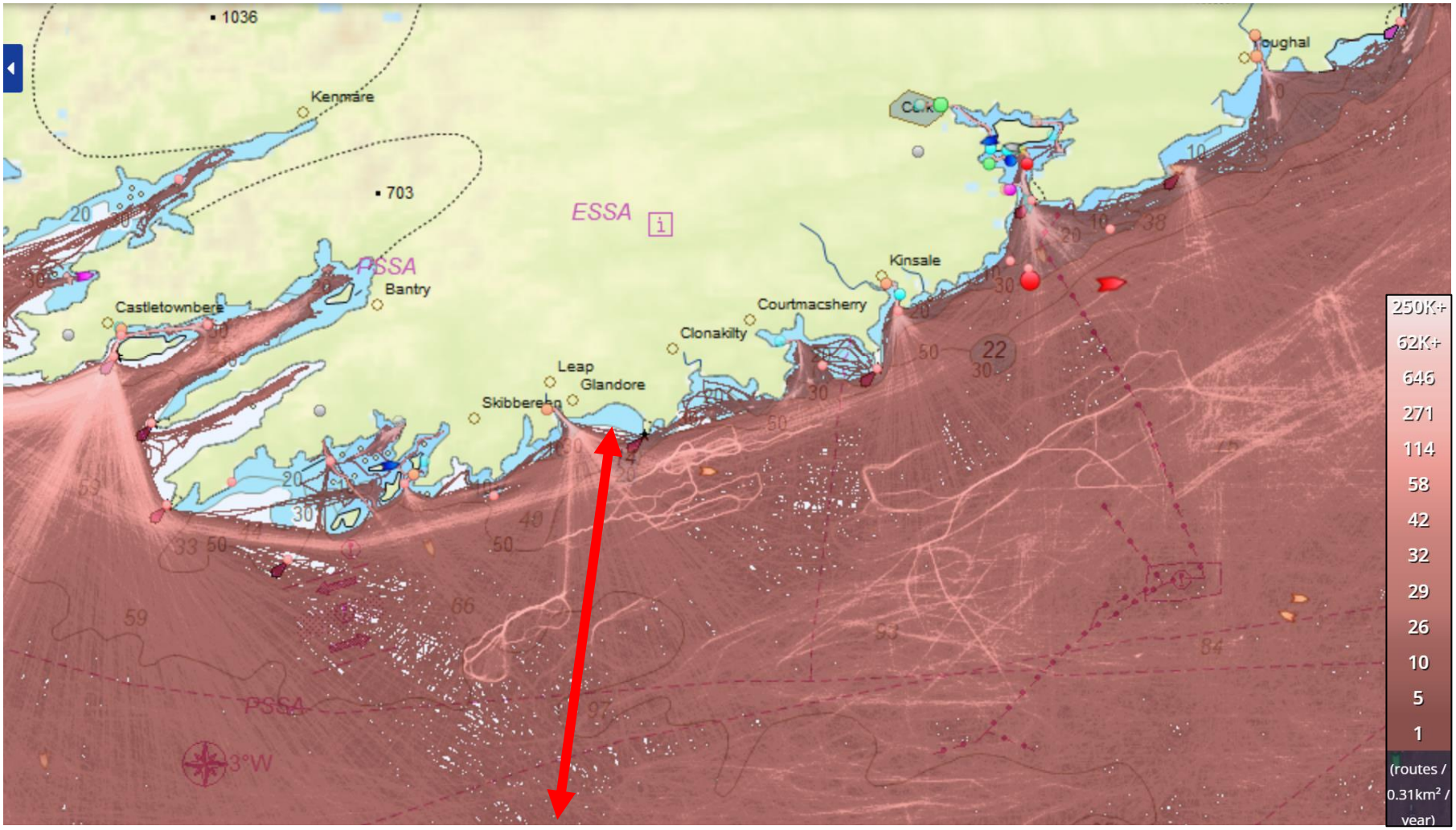


Figure 19. Fishing Vessel Traffic (AIS 2021)

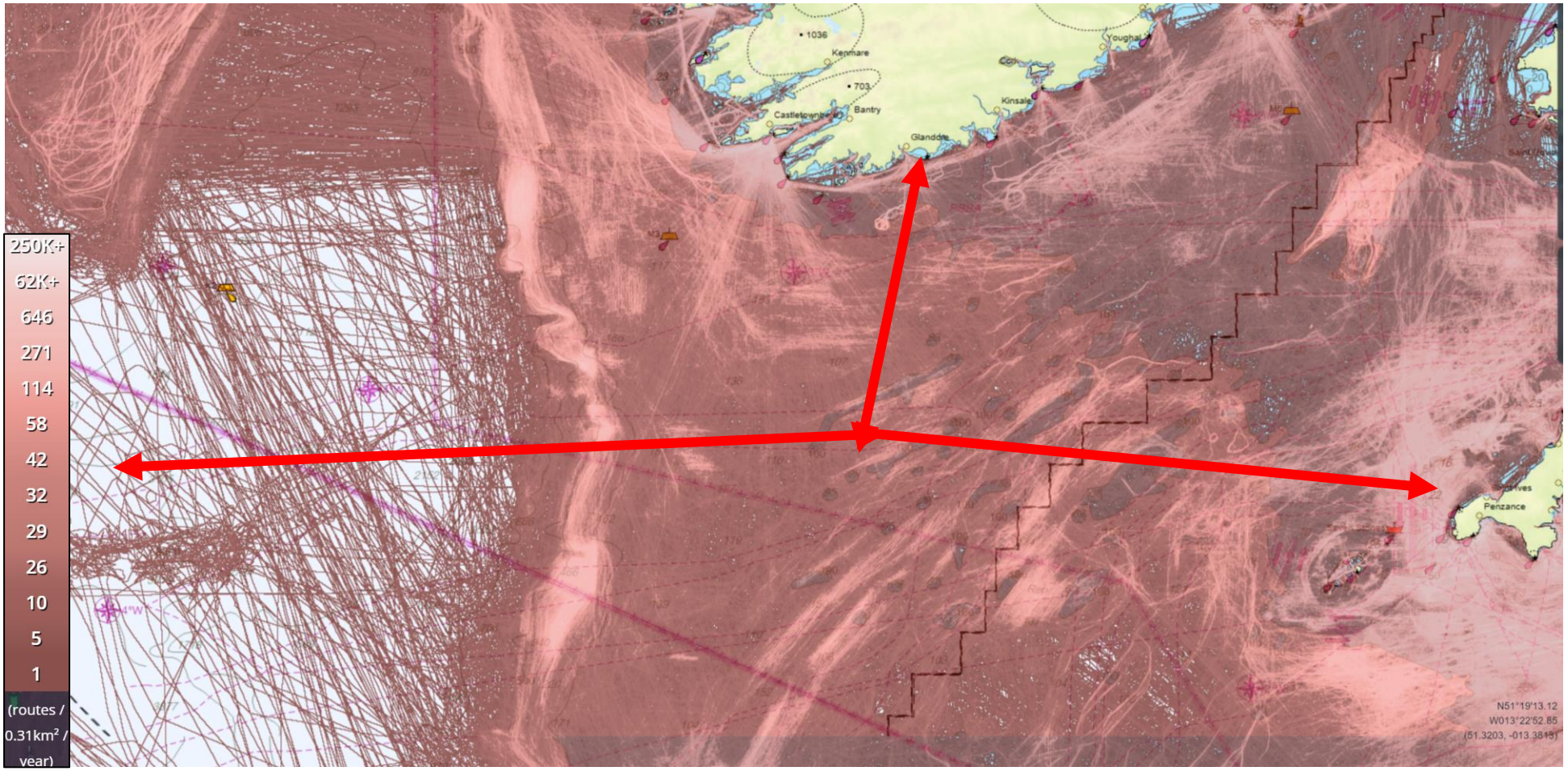


Figure 20. Offshore Fishing Vessel Traffic (AIS, 2021).

Fisheries

Spawning Grounds

7.55 As outlined by Ellis et al. (2011) "There are numerous modes of reproduction in fishes, and broadcast spawning, which involves shedding the eggs and sperm into the water column, is one of the more frequent strategies (Balon, 1984). Such species may have more extensive spawning grounds than those species which deposit eggs on the sea floor or on biogenic structures. The presence of eggs and larvae of broadcast spawners can be indicative of spawning grounds, although it should be noted that later larval stages may have been advected away from the spawning site. Mature fish with running eggs or sperm can also be indicative of spawning grounds, although these data were not used in the current project, as not all areas have surveys at the right time of year in order to assess the spawning state."

Nursery Grounds

7.56 As outlined by Ellis et al. (2011) "The grounds where juveniles are found are termed nursery grounds. It has been suggested that nursery grounds are those sites where juveniles occur at higher densities, have reduced rates of predation and have faster growth rates than in other habitats, which should result in nursery grounds providing a greater relative contribution to adult recruitment in comparison to non-nursery ground habitats (see Beck et al., 2003; Heupel et al., 2007). Whilst field data are available to highlight areas where juveniles occur at higher densities, comparable data to confirm that they avoid predation more successfully, have enhanced growth rates and provide greater relative contributions to recruitment are generally lacking."

Conclusions on Fisheries impact from ECiA Report

7.57 The proposed survey route passes through known cod nursery grounds. These nursery grounds span for the majority of the Irish coastline and therefore the grounds in which the survey works will take place are not of specific importance to this species. The survey route also overlaps with known haddock spawning grounds, however, similarly to the cod nursery these grounds are also quite large and therefore, do not hold significant importance to this species. This is also the case of the black-bellied monkfish nursery, hake nursery, horse mackerel nursery and spawning grounds, megrim nursery, the range of Atlantic salmon, white monkfish nursery and blue whiting nursery and spawning grounds. The proposed survey route passes through a small region of known nephrops

grounds also. Further details on the fish nursery and spawning areas is included in the ECIA Report Appendix II

7.58 There is no significant overlap with fishing activities in the region with exception to the pot fishery of lobster, crab and shrimp, however these fishing grounds are quite large and due to the short term survey works, there should be no impact on the interests of this fishery. The proposed survey works should not result in the direct mortality of any fish species due to the slow-moving nature of the survey vessel or have any long lasting effects on any habitats of significant importance to any of the aforementioned fish species. No significant impacts on fish nursery areas are predicted. Consultation with fisheries representatives and engagement with EU fleets should be carried out prior to site investigations and sampling to avoid disruption to fisheries and prevent a direct overlap with fishing activity that may cause interruptions to survey and sampling associated with the proposed survey route corridor. Further information on fisheries is included in the EcIA Report.

Aquaculture

7.59 There are no licensed aquaculture sites within the survey area. There is an area licenced for Pacific Oyster approximately 1.6km west of the survey area at Castle Bay and a further area licensed for Pacific Oyster, 2km northwest of the survey area at Rosscarbery Bay (Figure 21). The marine survey activities will not impact on aquaculture operations.

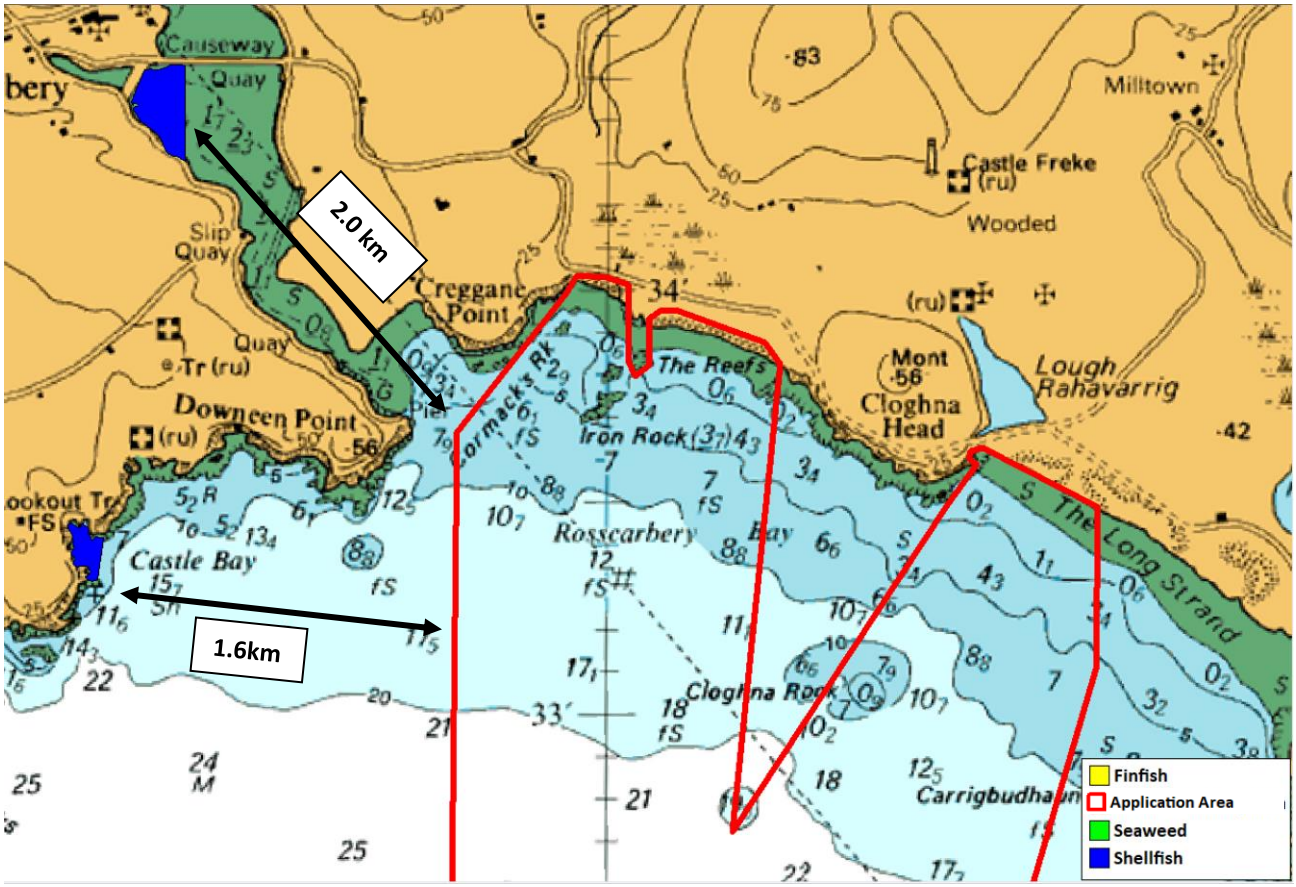


Figure 21. Licensed Aquaculture Areas.

Recreation

7.60 West Cork and the area around Glandore Bay is a popular tourist destination for recreational marine based activities. Glandore Harbour Yacht Club is based 6km west of the survey area in Glandore Harbour. Most of the sailing activity at Glandore takes place between May and September and is concentrated in the immediate vicinity of the Harbour, outside the survey area. There are also sailing clubs/marinas/moorings at Schull, Baltimore, Kinsale and Courtmacsherry with recreational boating traffic along the coast in the summer months and a limited number of offshore sailing races (South Coast Offshore Racing Association - SCORA) taking place every year.

7.61 Other recreational activities in the area include sea angling, diving, kayaking, canoeing, surfing, sea swimming, board sports such as surfing, stand-up paddleboarding, windsurfing & kite surfing and general beach users. Ownahincha beach is designated as a Blue Flag beach for bathing water quality with toilets facilities and there is a lifeguard on duty during the bathing season. Ownahincha is also frequented by surfers. Swimming is not recommended at Long Strand but surfing is very popular at this location as well as walkers strolling on the long sandy beach year round. Public access will be maintained at all times during the landfall survey and site investigations.

7.62 The nearest RNLI Station is in Union Hall, which was founded in 2014 with a B class Atlantic 85 inshore lifeboat in operation.

7.63 During the marine survey operations, survey vessels will display lights, shapes and internationally recognised identification or warning signals. Other vessels and marine users will be requested to maintain a safe distance from survey vessels due to their restricted manoeuvrability.

7.64 Mitigation measures will be in place to ensure compliance with the International Regulations for Preventing Collisions at Sea and standards, including the issuing of a formal marine notice. As the surveys will be temporary and of limited duration, the effect on recreation activities is expected to be minor.

Material Assets

7.65 There are no existing pipelines, oil and gas production facilities or licence blocks, marine aggregate extraction operations or marine outfalls within the survey area.

7.66 Outside of the 12nm territorial limits, the submarine fibre optic cables cross the survey route offshore are shown on Figure 22 below and listed in Table 4.

7.67 The as-found position of these cables across the survey route will be confirmed by the marine geophysical survey (marine magnetometer). Any sampling or intrusive site investigations will be positioned a minimum of 500m from the as-found position of these existing cables or 500m from the as-laid position if the position is not confirmed during the geophysical survey. Third party asset owners will be informed prior to survey works commencing.

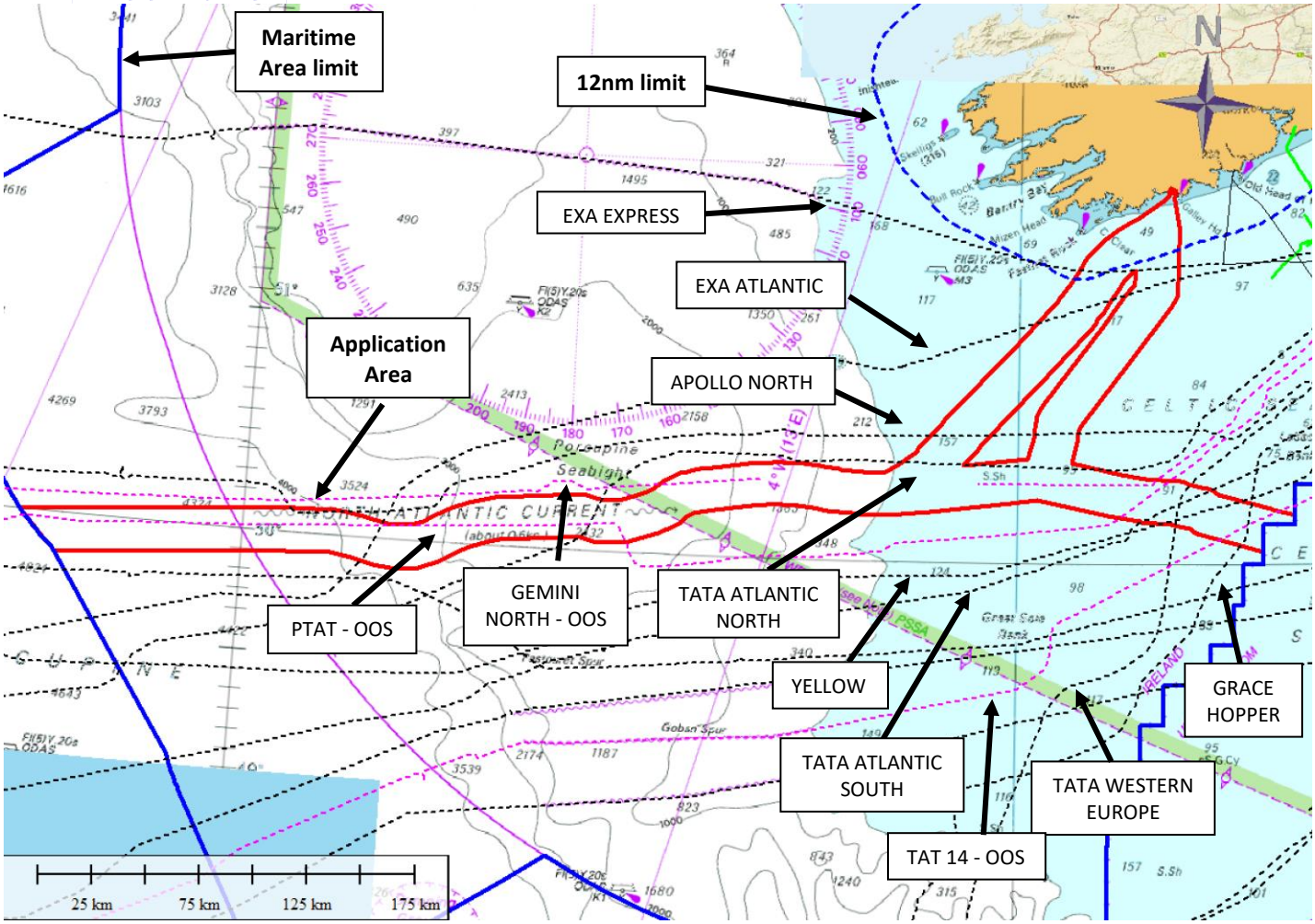


Figure 22. *Existing Subsea Assets.*

SYSTEM NAME	TYPE
EXA EXPRESS	IN-SERVICE
EXA ATLANTIC	IN-SERVICE
APOLLO NORTH	IN-SERVICE
TATA ATLANTIC NORTH	IN-SERVICE
YELLOW	IN-SERVICE
TATA ATLANTIC SOUTH	IN-SERVICE
TATA WESTERN EUROPE	IN-SERVICE
GRACE HOPPER	IN-SERVICE
TAT-14	OUT OF SERVICE
GEMINI NORTH	OUT OF SERVICE
P-TAT	OUT OF SERVICE

Table 4 Fibre Optic Cables.

Accidents and Disasters

7.68 Given the nature of the survey operations which will be small scale, temporary and conducted over a short timeframe, they will not influence natural disasters, such as earthquakes, subsidence, landslides, erosion or flooding. Coastal fog or adverse stormy weather and related sea states can occur in the survey area and wider coastal / offshore marine zones.

7.69 The potential for a major accident to arise as a result of the marine survey operations is low and will be further minimised through mitigation measures. With particular relevance to safety of shipping and navigation, mitigation will include publication of a formal Marine Notice, display of lights, shapes and other internationally recognised identification or warning signals on survey vessels and compliance with all requirements of the International Regulations for Preventing Collisions at Sea.

Other developments / Cumulative Impacts

7.70 The proposed landfall survey site at Long Strand is in a rural area with exception to the 'Fish Basket Café'. It is a location with a regular stream of dog walkers and pedestrians on the shore. The cable survey would not be seen to have an impact on water quality of the area including impacting the water quality status. The intertidal section of this project will involve trial pits (in SAC site) and machinery that will enter the upper shore (within the conservation sites).

7.71 Cork County Council planning permissions, Foreshore Applications, MARA Licence Applications, and EIA portal were examined, and the potential for in-combination effects due to development in the area assessed.

7.72 A review of the DHLGH Foreshore Licence Applications and Determinations search tool (Department of Housing, Local Government and Heritage (DHLGH)), was undertaken for foreshore licence applications for projects in 'County Cork' for 2019, 2020, 2021, 2022 and 2023. This is considered a conservative approach, taking into account the very temporary and localised nature of the survey and site investigation activities proposed under this application.

7.73 Details of these projects, their interaction with the site investigation activities proposed under this Licence Application and the potential for likely in-combination effects is set out in Tables 5 - 7.

7.74 This report pertains to the survey for a marine fibre optic cable in subtidal and intertidal habitats. As can be seen from using the Best Available Techniques and mitigation measures during survey, considerable effort has gone into minimising the potential environmental impact of the project. "Generally all mitigation measures applied for individual cables also contribute to reduction of cumulative impacts" (OSPAR, 2012). From a review of the above and Tables 5 - 7, it is concluded that no projects in the vicinity of the proposed project would be seen to have a significant in combination effect on Natura 2000 sites.

Ref. No.	Address	Proposal
23642	Creganne, Rosscarbery, Co. Cork	Alterations and extensions to side and rear of existing dwellinghouse and all associated site works
23205	Little-Island, Owenhincha, Rosscarbery, Co. Cork	Permission for demolition of 1 no. house, 1 no. cabin style dwelling and 1 no. domestic shed and for construction of a dwellinghouse and garage and all associated site works
2282	Castlefreke-Warren, Rathbarry, Co. Cork	Construction of a new Coast Guard Station
20723	Creganne, Rosscarbery, Co. Cork	Permission for alterations to elevations, ground and first floor extensions with first floor terrace area all to existing dwelling with associated site works (change of plan from that permitted under 20/0150 located at the existing site)
2079	Little-Island (Townland), Owenhincha, Rosscarbery, Co. Cork	Permission for the demolition of the former hotel and the construction of 9 no. dwellings, realignment and widening of the Coast Road (R598) and all associated landscaping, car parking and site development works

Table 5. Cork County Council Planning Permissions

Applicant	FSL Application No.	Date	Status	Activity	Distance from Survey Area	Potential for In-Combination Effects	Screening In/Out
Irving Oil Whitegate Refinery Ltd	FS007111	21/02/2022	Applied	Construction of Catchment Basin on shoreline	approx 66 km	No spatial overlap and given the nature of activities proposed under each application, there would be no in-combination effects between them even if they were to occur at the same time.	OUT
Port of Cork	FS007126	23/02/2022	Applied	Maintenance Dredging	approx 64 km to disposal area	No spatial overlap and given the nature of activities proposed under each application, there would be no in-combination effects between them even if they were to occur at the same time.	OUT
Kinsale Offshore Wind Ltd	FS007354	10/01/2022	Applied	Site Investigations (Geophysical, Geotechnical, Environmental and Metocean) for the proposed Kinsale Project offshore wind farm array	approx 31 km	No spatial overlap and given the nature of activities proposed under each application, there would be no in-combination effects between them even if they were to occur at the same time.	OUT
Uisce Eireann	FS007376	30/09/2022	Applied	Strategic modelling study of water currents within Cork Harbour & environs.	Approx. 53km	No spatial overlap and given the nature of activities proposed under each application, there would be no in-combination effects between them even if they were to occur at the same time.	OUT
Tulca Offshore Array Limited	FS007431	14/02/2022	Applied	Site Investigations - Geophysical, Geotechnical, Environmental and Metocean for wind farm	181 km^2 overlap with Survey Area	As outlined in the Foreshore Licence Application ORE for this project: '*The results of the Stage 1 Screening found significant effects on Annex II qualifying interests could not be ruled out for all potential impacts, therefore a Stage 2 Appropriate Assessment will be necessary. As a result of this we have prepared the accompanying Natura Impact Statement (NIS). The NIS concludes that, in view of best scientific evidence and methods, there will be no adverse effects from the proposed survey on the integrity of a Natura 2000 site, alone or in combination with other local projects. Further details on this conclusion can be found in the NIS report.*	OUT

Applicant	FSL Application No.	Date	Status	Activity	Distance from Survey Area	Potential for In-Combination Effects	Screening In/Out
						As outlined in the Risk Assessment for Annex IV Species Report, the employment of best practice measures will ensure that no marine mammals (non-qualifying interests) whose range overlap the survey area will be impacted by the proposed marine surveys. *It has, therefore, been objectively concluded following examination, analysis, and evaluation of the relevant information, including, in particular, the nature of the predicted impacts from the proposed marine surveys, that the proposed marine surveys will not have a significant negative effect on any Natura 2000* *sites and will not adversely affect the integrity of a Natura 2000 site, having regard to the qualifying interests of the relevant Natura 2000 sites, either alone or in combination with other plans or projects, and there is no reasonable scientific doubt in relation to this conclusion.'* In relation to the timing of the proposed project, this report outlines the following: '*it is expected that survey works will be carried out on a phased basis between April and October of each year and over five years.'* Therefore, given the nature of activities proposed under this application, there would be no in-combination effects between them even if they were to occur at the same time.	
Floating Cork Offshore Wind Limited	FS007471	22/09/2022	Applied	Benthic Ecology Surveys for proposed Offshore Wind Farm export cable route	170 km^2 overlap with Survey Area	As outlined in the Foreshore Licence Application ORE for this project: '*Stage 1 Screening concluded that the proposed benthic ecology survey will not have a likely significant effect either alone or in combination with other plans or projects of any European sites*.' In terms of the nature of the proposed works, this report details the following: '*In the nearshore area, the proposed benthic ecology surveys will comprise a walkover survey of the landfall locations, which will involve 2-3 people walking on the foreshore and manually taking sediment samples with a hand corer. In the offshore area, the benthic survey will consist of 1-2 vessels slowly transiting the area and extracting sediment material from the seabed using a grab sampler at set sampling location*s.' In relation to the duration of the proposed survey works, this report outlines the following: '*The typical time period for a*	OUT

Applicant	FSL Application No.	Date	Status	Activity	Distance from Survey Area	Potential for In-Combination Effects	Screening In/Out
						subtidal benthic survey campaign takes up to 3 hours in any one location; the total duration of the proposed benthic ecology surveys within the application area is expected to be 5 to 6 weeks'. Therefore, given the nature of activities proposed under this application, there would be no in-combination effects between them even if they were to occur at the same time.	
Department of Defense	FS007482	13/07/2023	Applied	• Maintenance dredging of the Naval Basin and Approach Channel. • Capital dredging of the Graving Dock.	Approx.. 55 km	No spatial overlap and given the nature of activities proposed under each application, there would be no in-combination effects between them even if they were to occur at the same time.	OUT
Seabed Sanctuary Collective	FS007497	04/04/2023	Applied	Seabed Sanctuary Collective Sub-marine Sculpture Garden	Approx. 38 km	No spatial overlap and given the nature of activities proposed under each application, there would be no in-combination effects between them even if they were to occur at the same time.	OUT
John Renos	FS007503	11/03/2022	Applied	Benthic Surveys in Horse Island Channel for electrical cable installation	approx 16 km	No spatial overlap and given the nature of activities proposed under each application, there would be no in-combination effects between them even if they were to occur at the same time.	OUT
RNLI Ireland	FS007552	28/02/2023	Applied	Site Investigation works to inform the design of a new RNLI jetty and berth and to inform disposal options for dredged sediment material.	Approx. 20km	No spatial overlap and given the nature of activities proposed under each application, there would be no in-combination effects between them even if they were to occur at the same time.	OUT

Applicant	FSL Application No.	Date	Status	Activity	Distance from Survey Area	Potential for In-Combination Effects	Screening In/Out
Kinsale Offshore Wind Limited	FS007575	26/08/2022	Applied	Site Investigations (Geophysical, Geotechnical, Environmental and Metocean) for the proposed Kinsale Project export cable	approx 35 km	No spatial overlap and given the nature of activities proposed under each application, there would be no in-combination effects between them even if they were to occur at the same time.	OUT
Cork County Council	FS007620	02/05/2023	Applied	Installation of a pedestrian and cycle bridge across the Owenabue River in Carrigaline, County Cork	Approx.. 50km	No spatial overlap and given the nature of activities proposed under each application, there would be no in-combination effects between them even if they were to occur at the same time.	OUT
Monica Gonzalez	FS007282	01/03/2021	Consultation	Seaweed Harvesting at Croslea and Lickowen, Castlehaven, Co. Cork	approx 5 km	No spatial overlap and given the nature of activities proposed under each application, there would be no in-combination effects between them even if they were to occur at the same time.	OUT
Irish Water	FS007027	17/02/2021	Consultation	Construct Marine Outfall and Wastewater Collection System - Aghada & Whitegate	approx 56 km	No spatial overlap and given the nature of activities proposed under each application, there would be no in-combination effects between them even if they were to occur at the same time.	OUT
Cork County Council	FS007037	25/05/2021	Consultation	Ballycotton Harbour Dredging	approx 64 km to disposal area	No spatial overlap and given the nature of activities proposed under each application, there would be no in-combination effects between them even if they were to occur at the same time.	OUT
UCD	FS007207	15/01/2021	Consultation	Soil and Vegetation Sampling - Fota Island	approx 60 km	No spatial overlap and given the nature of activities proposed under each application, there would be no in-combination effects between them even if they were to occur at the same time.	OUT

Applicant	FSL Application No.	Date	Status	Activity	Distance from Survey Area	Potential for In-Combination Effects	Screening In/Out
UCD	FS007202	15/01/2021	Applied	Soil and Vegetation Sampling - Ballymacoda salt marsh	approx 80 km	No spatial overlap and given the nature of activities proposed under each application, there would be no in-combination effects between them even if they were to occur at the same time.	OUT
EirGrid	FS006916	08/07/2021	Determination	Installation of Celtic Interconnector HVDC Electricity Cable - Claycastle Beach	approx 85 km	No spatial overlap and given the nature of activities proposed under each application, there would be no in-combination effects between them even if they were to occur at the same time.	OUT
Inis Ealga Marine Energy Park (IEMEP)	FS007404	30/07/2021	Consultation	Inis Ealga Marine Energy Park (IEMEP) Site Investigations - Geophysical, Geotechnical, Environmental and Metocean - for the export cable route from wind farm	approx 75 km	No spatial overlap and given the nature of activities proposed under each application, there would be no in-combination effects between them even if they were to occur at the same time.	OUT
ORCA Ireland	FS007459	29/11/2021	Determination	Deployment of 1 Static Acoustic Monitoring (SAM) SmartBuoy off Toe Head to listen to cetaceans in real-time.	approx 0.5 km	No spatial overlap and given the nature of activities proposed under each application, there would be no in-combination effects between them even if they were to occur at the same time.	OUT
Emerald Offshore Wind Limited	FS007139	22/05/2020	Consultation	Site Investigations - Geophysical, Geotechnical, Environmental and Metocean for possible Floating	approx 37 km	No spatial overlap and given the nature of activities proposed under each application, there would be no in-combination effects between them even if they were to occur at the same time.	OUT

Applicant	FSL Application No.	Date	Status	Activity	Distance from Survey Area	Potential for In-Combination Effects	Screening In/Out
				Offshore Wind project off Kinsale			
Irish Water	FS007022	02/04/2020	Consultation	Temporary Wall and Working Area at Ballycotton Pier	approx 72 km	No spatial overlap and given the nature of activities proposed under each application, there would be no in-combination effects between them even if they were to occur at the same time.	OUT
Irish Water	FS007258	01/04/2020	Determination	Construction of Marine outfall for Castletownshend wastewater treatment system	approx 7 km	No spatial overlap and given the nature of activities proposed under each application, there would be no in-combination effects between them even if they were to occur at the same time.	OUT
DP Energy	FS006859	21/10/2019	Consultation	Site Investigations - Geophysical, Geotechnical, Environmental and Metocean at Inis Ealga wind farm project	approx 50 km	No spatial overlap and given the nature of activities proposed under each application, there would be no in-combination effects between them even if they were to occur at the same time.	OUT
Cork County Council	FS006970	14/10/2019	Consultation	Dredging at Glengarriff Pier, Cork and disposal on land	Approx. 40km	No spatial overlap and given the nature of activities proposed under each application, there would be no in-combination effects between them even if they were to occur at the same time.	OUT
Cork County Council	FS006969	14/10/2019	Determination	Dredging at Courtmacsherry Pier, Cork and disposal on land	approx 20 km	No spatial overlap and given the nature of activities proposed under each application, there would be no in-combination effects between them even if they were to occur at the same time.	OUT
Cork County Council	FS006971	14/10/2019	Determination	Dredging at Reen Pier, Cork	approx 10 km	No spatial overlap and given the nature of activities proposed under each application, there would be no in-combination effects between them even if they were to occur at the same time.	OUT

Applicant	FSL Application No.	Date	Status	Activity	Distance from Survey Area	Potential for In-Combination Effects	Screening In/Out
Dursey Island Cable Car	FS007068	11/10/2019	Applied	Construction of new cabel car system to Dursey Island	approx 55 km	No spatial overlap and given the nature of activities proposed under each application, there would be no in-combination effects between them even if they were to occur at the same time.	OUT
Irish Water	FS006985	01/08/2019	Determination	Storm Outfall Pipe at Gibbon's Quay, Kinsale	approx 35 km	No spatial overlap and given the nature of activities proposed under each application, there would be no in-combination effects between them even if they were to occur at the same time.	OUT
Greenlink Interconnector Ltd.	FS007050	03/09/2021	Determination	Subsea and underground electricity interconnector cable between Irish and UK electricity grids	Approx. 160km	No spatial overlap and given the nature of activities proposed under each application, there would be no in-combination effects between them even if they were to occur at the same time.	OUT
Irish Water	FS007046	01/08/2019	Determination	Site Investigation for Storm Water Outfall Extension, Kinsale	approx 50 km	No spatial overlap and given the nature of activities proposed under each application, there would be no in-combination effects between them even if they were to occur at the same time.	OUT
Skibbereen Rowing Club	FS005806	14/04/2019	Applied	Construction of concrete wall, floating pontoon and three gangways	approx 13 km	No spatial overlap and given the nature of activities proposed under each application, there would be no in-combination effects between them even if they were to occur at the same time.	OUT

Table 6. Foreshore Licence Applications

Applicant	MARA Application No.	Activity	Distance from Survey Area	Potential for In-Combination Effects	Screening In/Out
Doyle Shipping Group	LIC230019	Site Investigation in the maritime area including reclaimed dockland and surrounding nearshore to aid the design of increased port facilities in support of the ORE industry	Approx. 55km	No spatial overlap and given the nature of activities proposed under each application, there would be no in-combination effects between them even if they were to occur at the same time.	OUT
Microsoft Ireland Operations Ltd.	LIC230017	Geophysical survey and site investigations for a proposed subsea fibre optic cable having a landfall in Kilmore Quay, County Wexford and to evaluate options for the route traversing Ballyteige Bay, across the Celtic Sea and St Georges Channel to Pembrokeshire, Wales	Approx. 170km	No spatial overlap and given the nature of activities proposed under each application, there would be no in-combination effects between them even if they were to occur at the same time.	OUT
Apollo Submarine Cable System Limited	LIC230033	Proposed installation and operation of the 2Africa Submarine Cable System within the Irish Exclusive Economic Zone (EEZ).	Passes through portion of Survey Route Corridor (0.386 km^2)	As outlined in the Natura Impact Statement (NIS) prepared for this project: '*This report presents a Natura Impact Statement for the proposed laying of a marine fibre optic cable. It outlines the information required for the competent authority to screen for appropriate assessment and to determine whether or not the proposed development, either alone or in combination with other plans or projects, in view of best scientific knowledge and in view of the sites conservation objectives, will adversely affect the integrity of the European site. On the basis of the content of this report, the competent authority is enabled to conduct an Appropriate Assessment and consider whether, either alone or in combination with other plans or projects, in view of best scientific knowledge and in view of the sites conservation objectives, will adversely affect the integrity of the European site*.' Therefore, given the nature of activities proposed under this application, there would be no in-combination effects between them even if they were to occur at the same time.	OUT

Applicant	MARA Application No.	Activity	Distance from Survey Area	Potential for In-Combination Effects	Screening In/Out
Port of Waterford Company	LIC230025	Maintenance dredging of accumulated sediments to maintain the port's navigational trade areas	Approx. 150km	No spatial overlap and given the nature of activities proposed under each application, there would be no in-combination effects between them even if they were to occur at the same time.	OUT
Department of the Environment, Climate & Communications	LIC240006	Deployment of the Marine Institute's R.V. to undertake a geophysical survey in the South Coast DMAP to inform future offshore renewable energy development	Approx. 40km	No spatial overlap and given the nature of activities proposed under each application, there would be no in-combination effects between them even if they were to occur at the same time.	OUT

Table 7. MARA licence applications

Equipment Type	Purpose	Frequency Range	Duration	*Maximum* Source Pressure Level (re 1µPa at 1 m)	Reference
Multibeam Echo Sounder (MBES)	Measure detailed bathymetry by transmitting sound pulses (active sonar).	200 kHz to 500 kHz	0.05 - 10 ms	210 - 245 dB.	Danson 2005, Hopkins 2007, DECC 2011, Lurton and DeReutier 2011, Lurton 2016, BEIS 2020, Crocker & Fratantonio 2016
Side Scan Sonar (SSS)	Determine surficial nature of the seabed and detect objects by transmitting sound pulse.	200 kHz to 700 kHz	0.4 - 1.0 ms	200 - 240 dB.	BOEM 2016, BEIS 2020, DAHG 2014, Crocker & Fratantonio 2016
Sub-bottom Profiler (SBP) - Pinger	Identify different geological layers encountered in the shallow sediments and sediment thicknesses beneath the seabed.	2 kHz to 15 kHz	0.5 - 30 ms	214 dB.	Hartley Anderson 2020
Sub-bottom Profiler (SBP) - Chirper	Identify different geological layers encountered in the shallow sediments and sediment thicknesses beneath the seabed.	2 kHz to 13 kHz	5 - 40 ms	185 - 215 dB.	Crocker & Fratantonio 2016, Hartley Anderson 2020
Sub-bottom Profiler (SBP) - Boomer	Identify different geological layers encountered in the shallow sediments and sediment thicknesses beneath the seabed.	500 Hz to 15 kHz	0.5 - 1.0 ms	205 - 215 dB.	Crocker & Fratantonio 2016
Sub-bottom Profiler (SBP) - Parametric	Identify different geological layers encountered in the shallow sediments and sediment thicknesses beneath the seabed.	4 to 15 kHz, 85 to 115 kHz	0.2 - 30 ms	238 - 247 dB. 200 - 206 dB.	Hartley Anderson 2020
Ultra-Short Base Line (USBL)	Subsea positioning.	20 kHz to 50 kHz	5 - 10 ms	194 - 207 dB.	Kongsberg
Magnetometer	Identify ferrous anomalies for metal obstructions, shipwrecks, etc. on and under the seabed.	Passive	N/A	Passive	N/A
Survey Vessels	Carry out the survey and deploy the equipment.	50 Hz to 300 Hz	N/A	160 - 190 dB.	DECC 2011

Table 8. Marine Survey Activities.

Equipment Type	Purpose	Number of locations within Application Area (up to)	Frequency Range	*Maximum* Source Pressure Level (re 1µPa at 1 m)	Reference
Cone Penetration Test (CPT)	Determine geotechnical engineering properties of seabed sediments.	96	28 Hz	118 - 145 dB.	BOEM 2012, EIRGRID 2014
Gravity Corer	Retrieve a seabed sediment sample by penetrating seabed with a steel core barrel under self-weight	48	N/A	N/A	N/A
Vibrocorer	Retrieve a seabed sediment sample by penetrating seabed with a vibrating steel core barrel	48	30 Hz	187.4 dB.	LGL 2010
Grab Samples	Collect small sediment samples from seabed surface with clamshell mechanism	26	N/A	N/A	N/A

Table 9. Marine Site Investigation Activities.

8.0 MITIGATION MEASURES & MONITORING

8.1 Specific controls that will be incorporated into the proposed survey operations to minimise the potential negative impacts on the ecology within the Zone of Influence (ZoI) within / proximate to the subject site are outlined in below. The mitigation proposed for the survey works satisfactorily addresses the mitigation of potential impacts on the sensitive receptors through the application of standard controls. The overall impact on the ecology of the proposed development will result in a short term minor adverse not significant residual effect on the ecology of the area and locality overall.

Route Planning within the landfall area.

8.2 A strict route selection process was carried out to assess the optimal route and landing sites, Owenhincha and Long Strand, which is within the Kilkeran Lake and Castlefreke Dunes SAC, taking into account the lowest environmental impact, highest resource efficiency and wave exposure on the basis of sound and comparable data. This included addressing engineering issues as well as environmental concerns and assessing existing infrastructure.

8.3 The potential landfall location is within two sites of conservation significance (Kilkeran Lake and Castlefreke Dunes SAC & pNHA). The conservation significance of the habitats, fauna and flora on both shores and within this SAC was assessed. The proposed survey route was deemed to be the optimal route of satisfying conservation significance based on the assessment of NPWS ratings data, the optimal from an engineering perspective and for the stability and longevity of the cable. All sand dune habitats were avoided as part of the route selection process.

8.4 If a geophysical survey/remote sensing survey is proposed for the foreshore area, the results of this should be made available to the archaeologist to review in advance of the foreshore/intertidal archaeological survey being undertaken to inform that survey. It is recommended that all groundworks in the foreshore be archaeologically monitored by a suitably qualified underwater archaeologist licenced under the National Monuments Acts.

Intertidal Works

8.5 As was seen during the fieldwork, the beach at which the intertidal works are proposed is to be carried out on is moderately exposed with coarse sand. Even though the survey was on a blustery day in mid-December there was significant human activity on the beach. It would be expected that there is increased human activity on the beach during summer months and the main access to the beach is via the proposed access route. This route is well used. As a result, mitigation of impacts in the intertidal should concentrate on minimising the following:

Disturbance

- The proposed survey route is within a popular beach which will have increased activity during summer months. As a result, the presence of additional personnel on the shore during summer would not be thought to cause a significant additional disturbance. However, there is potential for disturbance of the dune habitat and as a result the following mitigation measures would be carried out:
- An ecologist would be onsite during the surveys in order to minimise disturbance and ensure site integrity is maintained.
- A track will be marked out by the ecologist prior to machinery accessing the beach. This will be marked out to avoid features of interest of the SAC/dune habitats and the outlet from the lagoon in the upper shore.
- Drift lines and vegetation on the shore in close proximity to the proposed route would contain the highest proportion of potential food source for bird species. If present, these should be avoided by machinery and personnel.
- The surveys should commence on a receding tide. This is to ensure all operations are done within one tide. Operations must be completed before an incoming tide when many of the birds return to feed. This should result in the site investigations being imperceptible following a single or several tidal cycles.
- Any temporary access arrangements or structures that are put in place to allow machinery access to the beach area should be prepared in consultation with an ecologist and the site should be fully reinstated post works.

Reinstatement

- Reinstatement of the terrestrial and intertidal habitat should be carried out to pre-construction conditions. Any concerns in relation to the survey process or resulting reinstatement of the habitat to pre survey conditions will be raised with NPWS by the project ecologist prior to the removal of personnel from the site.

Subtidal

- Mitigation impacts are primarily concerned with the survey and the following mitigation measures would be enforced.

- Mitigation measures will include the presence of an MMO/ecologist onboard the survey vessel. The purpose of the MMO/ecologist is to ensure that there is no disturbance of seal /cetacean populations.

- The NPWS Guidance to manage the risk to marine mammals from man-made sound sources in Irish waters' (NPWS, 2014) should be followed throughout the survey.

- The MMO/ecologist should ensure that mitigation measures are carried out. Sufficient resources should be made immediately available on the survey vessel to deal with accidental oil spills including hydraulic hoses bursting etc. and reported to the on board MMO/ecologist.

- A Desktop Marine Archaeology Assessment shall be undertaken for the final 500m marine survey corridor before survey works are undertaken which will identify the known wrecks or artefacts of cultural heritage within that area and consider the works in combination with historical and cultural sensitivity of the area.

- The results of the marine geophysical survey should be archaeologically assessed and interpreted by a suitably qualified archaeo-geophysicist or should be made available to the contracting archaeologist who is experienced in the interpretation of such raw data. The results should be assessed in regard to the known recorded shipwreck sites

and all identified anomalies should be georeferenced and plotted within the proposed survey line. The results should inform the locations of the SI works to ensure all identifiable negative impacts on known or potential underwater cultural heritage are minimalised and mitigated.

- If feasible, an archaeologist may be on board the SI works vessel when the grab samples, etc. are being taken to monitor and assess them in real time for any cultural heritage content and to ensure, if there is, that no further impact to the archaeology occurs. Alternatively, the results of all samples should be provided to the shore based archaeologist to inspect and ensure the identification of any archaeology that may be present and to inform the resultant archaeological report.

9.0 CONCLUSION

9.1 This report has been undertaken based on the information in the Schedule of Works, Works Methodology, Supporting Information Report to inform AA Screening, Applicant NIS, Ecological Impact Assessment (EcIA) and Archaeological Desktop Study and the implementation of mitigation measure proposed. The nature, scale and location of the proposed survey is such that there are no foreseeable significant effects on the environment arising from the survey operations. It is the conclusion of the AIMU Report and screening exercise that an EIA is not required.

Common Abbreviations

AA	Appropriate Assessment
AIS	Automatic Identification System
BIM	Bord Iascaigh Mhara
CO	Conservation Objective
CPT	Cone Penetration Test
DAFM	Department of Agriculture, Food and the Marine
DAHG	Department of Culture, Heritage and the Gaeltacht
DHLGH	Department of Housing, Local Government and Heritage
EC	European Commission
EcIA	Ecological Impact Assessment
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
EPA	Environment Protection Agency
EPS	European Protected Species
EU	European Union
FLO	Fisheries Liaison Officer
HABs	Harmful Algal Blooms
ICES	International Council for the Exploration of the Sea
IMO	International Maritime Organization
ISO	International Organization for Standardization
ITM	Irish Transverse Mercator
JNCC	Joint Nature Conservation Committee
LSE	Likely Significant Effects
MAP	Marine Area Planning Bill
MARA	Maritime Area Regulatory Authority
MARPOL	The International Convention for the Prevention of Pollution from Ships
MBES	Multibeam echosounder
MI	Marine Institute
MMO	Marine Mammal Observer
NIS	Natura Impact Statement
NM	Nautical Mile
NPWS	National Parks and Wildlife Service
NSER	Non-Statutory Environmental Report
PTS	Permanent Threshold Shift
SCI	Special Conservation Interest
SISAA	Supporting Information for Screening for Appropriate Assessment
SPL	Sound Pressure Level
SSS	Side Scan Sonar
SWD	Shellfish Waters Directive
TTS	Temporary Threshold Shift
UTM	Universal Transverse Mercator
VC	Vibrocore

VMS	Vessel Electronic Monitoring System
WGS	World Geodetic System

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