SOBR2 - Ireland to Wales Subsea Fibre Optic Cable

APPLICATION FOR MARITIME USAGE LICENCE

FOR MARINE SURVEY & SITE INVESTIGATION WORKS AT PORTMARNOCK / MALAHIDE, DUBLIN & IRISH SEA

REF: LIC230018

Assessment of Impacts of the Maritime Usage (AIMU) Report

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DOCUMENT CONTROL SHEET

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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 the Irish Sea, from a landfall at Portmarnock / Malahide County Dublin.

1.2 The applicant plans to investigate the feasibility of constructing a new subsea telecoms cable system, SOBR2, linking Ireland to the United Kingdom, from a landfall at Portmarnock to a landfall at Abergele on the North coast of Wales as shown in Figure 1 below.

1.3 This Works Methodology is produced in support of an application for a marine survey and site investigations licence under the Maritime Area Planning Act 2021, and should not be used for any other purpose apart from that expressly stated in this document.

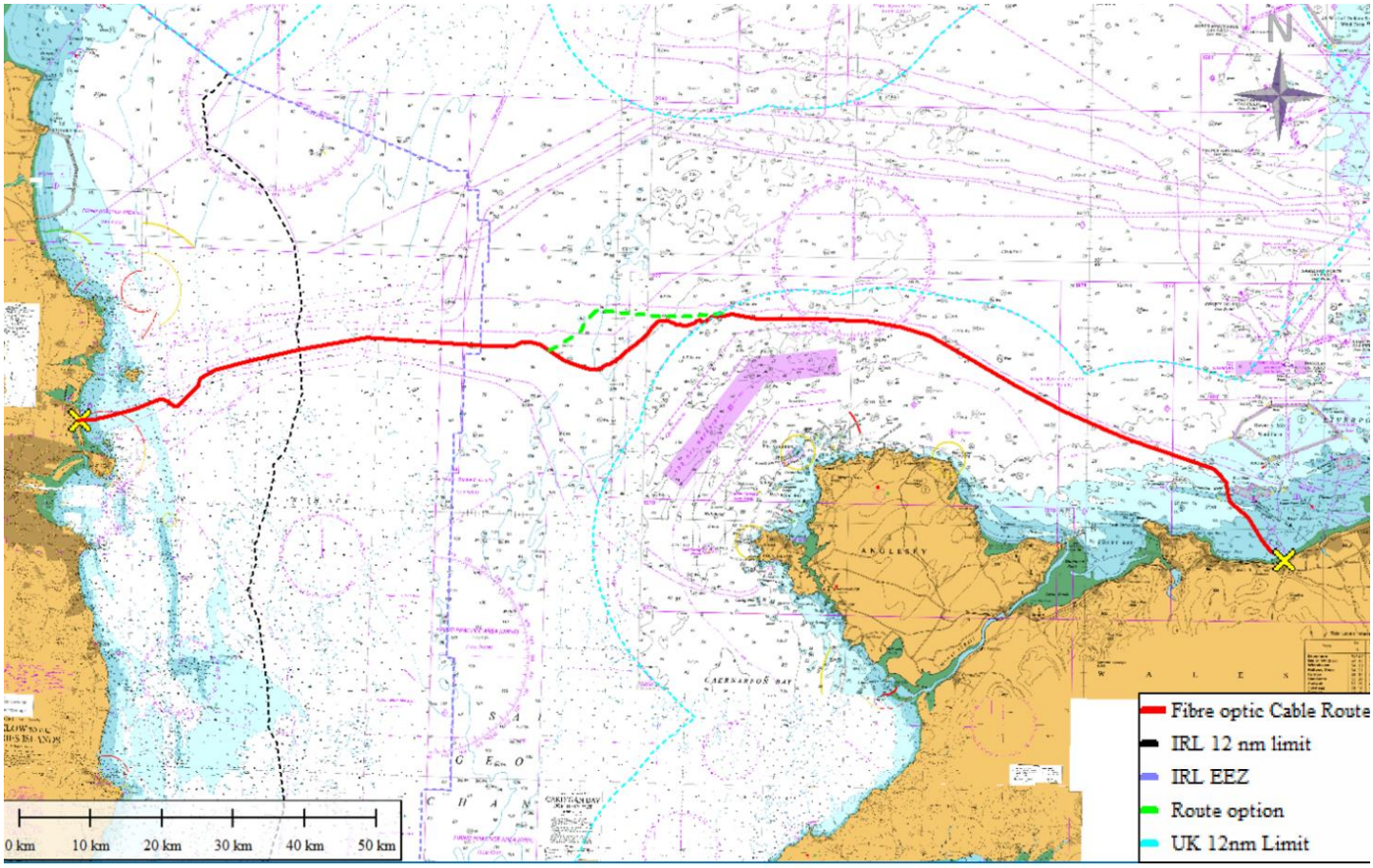

Figure 1. Proposed Telecoms Cable System (final configuration subject to change)

2.0 PROJECT DESCRIPTION

2.1 The License Application Area is situated off the coast of North Dublin (Figure 2). The licensed survey corridor has length of approx. 64.5 km and a total area of 3211 hectares within EEZ limits. A cable route corridor of approx. 500m width will be surveyed within the licence application area.

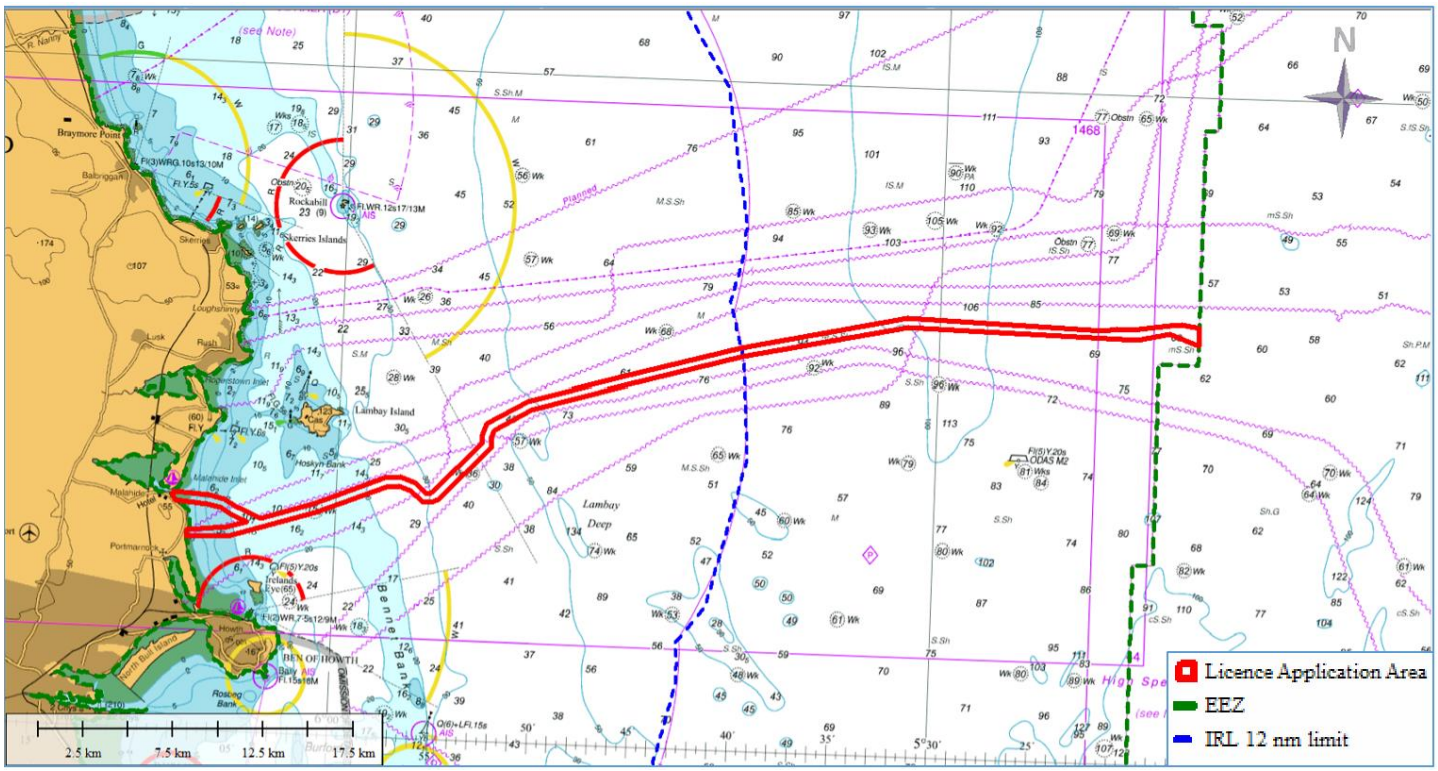

Figure 2. Proposed Survey Licence Application Area.

2.2 The licence application area covers the proposed landfall options at Portmarnock and Malahide, with a survey corridor traversing the Irish Sea to the East. The general location is shown in Figure 3.. A more detailed overview of the route and landfalls is provided in the Application Schedule of Works report.

Figure 3. Landfall Locations.

2.3 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.

2.4 The objectives of the marine geophysical survey shall be:

- To collect up to date high-resolution bathymetry along a 400 – 500m wide cable corridor within the 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.

2.5 The works will be carried out predominantly by remote sensing 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 Licence for installation works.

2.6 The survey works will be carried out in accordance with the European Union (EU) Environmental Impact Assessment (EIA) Directive, Water Framework Directive (WFD), Marine Strategy Framework Directive (MSFD) and Ireland's National Marine Planning Framework (NMPF). This AIMU report details the project's cognizance of these Directives.

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

2.7 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.

2.8 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.

2.9 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.

2.10 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

2.11 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.

2.12 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.

2.13 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.

2.14 Due to the temporary nature of the survey works, there will be no permanent or lasting change or development to the Licence Area, thus eliminating the need for a discussion of the construction, operations, maintenance, and decommissioning phases, as they will not be occurring during the survey works.

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 The survey works will adhere to the MSFD by remaining within the bounds of each of the 11 Descriptors in the Directive.

3.3 Table 1 below summarises the requirements and activities for the cable route survey. Further details are provided in the Licence Application 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.
Offshore Marine Survey	Site Investigations including: Cone Penetration Tests - up to 15 No. along the route corridor to a target depth of 2m.
Offshore Marine Survey	Site Investigations including: Grab Samples - up to 11 No. along the route corridor, Gravity Cores / Vibrocores - up to 12 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 seven to nine survey lines, based upon the water depth, will be run to obtain the required data coverage as indicated in Table 2.

Survey Area	Depth Range	Survey Corridor Width	Min. # of Lines	Min. Overlap	Typical Survey Speed
Inshore	3m to 15m	400 - 500m	9	SSS: 100% MBES Bathy: 20%	4 knots
Offshore	> 15m	400 - 500m	7	SSS: 100% MBES Bathy: 20%	4 knots

Table 2 Inshore 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 EEZ limits will comprise of the following techniques:

- Up to 15 CPTs (2m to 3m)
- Up to 12 Gravity Cores / Vibrocores (3m)
- Up to 11 Grab Samples

4.8 Indicative locations for the relevant site investigation activities (Gravity or Vibrocore and CPT's) are shown in Figure 4. 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.

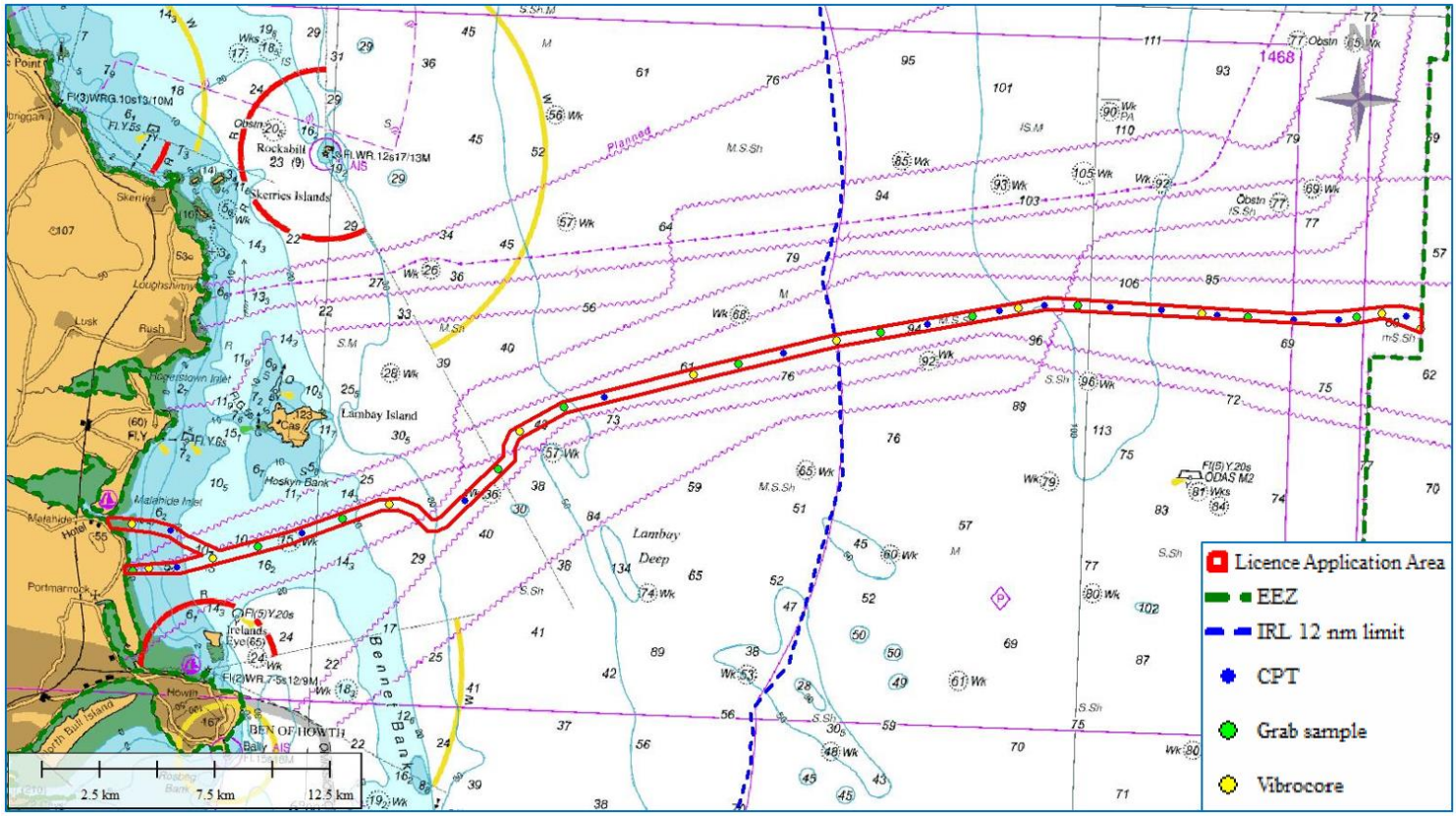

Figure 4. Indicative CPT and GC Locations.

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 licence application area will take less than 6 weeks in total and will be completed over a 6 month period.

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)	400 - 500 m cable route corridor (500m nominal)	3 to 4 days (weather and sea state dependent)
Offshore Geophysical Survey	8 to 10 days (weather and sea state dependent)	500 m cable route corridor	8 to 10 days (weather and sea state dependent)
CPT	30 minutes - 2 hours in any one location	15	30 hours within total 6 days of Site Investigations campaign (weather and sea state dependent, excluding transit between locations)
Gravity Corer	30 minutes - 2 hours in any one location	12	24 hours within total 6 days of Site Investigations campaign (weather and sea state dependent, excluding transit between locations)
Vibro Corer	30 minutes - 2 hours in any one location	12	24 hours within total 3 days of Site Investigations campaign (weather and sea state dependent, excluding transit between locations)
Grab Samples	20 minutes - 45 minutes in any one location	11	9 hours within total 6 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 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 Portmarnock / Malahide, County Dublin		
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 Organisation (IMO) Guidelines for the control and management of ships' ballast water, to minimise the transfer of harmful aquatic

Questions to be Considered	Yes / No /? Briefly describe	Is this likely to result in a significant impact? Yes/No/? – Why?
		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 East Coast and Irish Sea. 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 cable survey corridor is located within five designated conservation sites (Malahide Estuary SAC, Malahide Estuary SPA, & Malahide Estuary pNHA, Rockabill to Dalkey Island SAC, and North-West Irish Sea SPA). There is one designated Natural Heritage Areas (NHAs) within 15km of the proposed survey works (Skerries Islands NHA)	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 licence application area is described as Coastal and Estuary and designated an exceptional value landscape in the Fingal County Development Plan 2023 to 2029The 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?	No	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 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 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 Coastal and Estuary and designated an exceptional value landscape in the Fingal County Development Plan 2023 to 2029.	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.
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 are close to Malahide and Portmarnock. 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.

Questions to be Considered	Yes / No /? Briefly describe	Is this likely to result in a significant impact? Yes/No/? – Why?
		The majority of the vessel traffic traversing the offshore marine survey corridor is made up of fishing vessels transiting to the harbour at Howth, which is approx. 5km south 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 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 no shipwrecks in the licence area with 8 shipwrecks in proximity to it.	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. A Marine Archaeology Assessment has been prepared which considers the works in combination with historical and cultural sensitivity of the area. With the implementation of specified mitigations measures, no likely significant effects on cultural heritage or archaeology is foreseen No likely significant impact.
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.

Questions to be Considered	Yes / No /? Briefly describe	Is this likely to result in a significant impact? Yes/No/? – Why?
23. Are there areas within or around the location which are densely populated or built-up, that could be affected by the Project?	Yes	The area around the proposed landfalls is close to built up areas but the survey operations are temporary and of short duration. 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 survey route intersects with known cod nursery grounds and haddock and whiting spawning grounds. It also passes through the range of Atlantic salmon and a small region of known nephrops grounds.	The cod nursery grounds span for most 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 spawning grounds, the range of Atlantic salmon, and nephrops 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 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	Velvet Strand has achieved an Excellent Water Quality rating for the four consecutive years 2019 to 2022 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 Underwater Archaeological Impact Assessment (UAIA) has been prepared by Mizen Archaeology on behalf of the applicant to assess the potential impacts of the survey on archaeology and cultural heritage. The UAIA covers the Licence Area within Irish territorial waters and focuses on the proposed site investigation works.

7.2 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. An Underwater Archaeological Impact Assessment (UAIA) has been prepared by Mizen Archaeology on behalf of the applicant to assess the potential impacts of the survey on archaeology and cultural heritage. The UAIA covers the Licence Area within Irish territorial waters and the landfall in Dublin Bay.

7.3 The Licence Area does not contain any recorded sites or monuments within the foreshore. However, within a 1km radius of the landfall there are several sites from the 18th and 19th Centuries.

7.4 Figure 5 shows the distribution of the wrecks as recorded in the Wreck Inventory of Ireland Database, with both known and unknown identities. Previously recorded shipwrecks held by the National Monuments Service are numerous in the wider vicinity of the proposed works; there are 263 potential wrecks in the area. One of these wrecks (W18555) is located within the survey corridor and seven (W00856, W00861, W02213, W02215, W09459, W09908, W11141) are found within 100m of the proposed corridor boundaries. Given that the remaining 255 potential wrecks in the area have no known locational coordinates, there is a high possibility that more are closer to the route than currently known. Some of these unknown wrecks may be buried by marine sediments and may not be revealed unless further investigations take place. Further details of these wrecks are included in the Underwater Archaeological Impact Assessment.

7.5 No invasive SI works are proposed over the wreck within the survey corridor (W18555). One proposed cone penetration test (CPT 2) is located c. 645m east of this wreck and one proposed grab sample (2) is located 1.4km west of the wreck. The non-invasive

geophysical survey shall have a positive impact on the underwater cultural heritage of Dublin Bay and the Irish Sea as it shall provide further information on potential cultural heritage sites.

7.6 The non-invasive geophysical survey shall have a positive impact on the underwater cultural heritage of Dublin Bay and the Irish Sea as it shall provide further information on potential cultural heritage sites.

7.7 As a shipwreck (W18555) is recorded within the route corridor the geophysical survey should be licensed by the National Monuments Service. The geophysical survey data sets shall be assessed by an underwater archaeologist with experience in interpreting geophysical surveys in advance of the geotechnical works taking place. The assessment of the geophysical data may lead to further mitigation measures if potential archaeological features are noted in the geophysical data.

7.8 A walkover survey comprising a visual and metal detection survey shall be undertaken on the inter-tidal and upper foreshore within the cable route corridor at Malahide and Portmarnock. The survey shall be carried out by underwater archaeologists under licence from the National Monuments Service.

7.9 No geotechnical works shall be undertaken in advance of agreement with the National Monuments Service regarding the assessment of the geophysical data and site inspection.

7.10 Following the completion of the geotechnical works the data logs relating to the core and grab samples shall be assessed by an underwater archaeologist. At the completion of the geophysical and geotechnical works the AIA report shall be updated to consider potential impacts associated with the main installation works. The report shall assess the results of the geophysical and geotechnical works shall include proposals for mitigation of potential impacts on archaeology, such as avoidance, dive surveys, monitoring, or test excavations.

7.11 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.

7.12 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.

7.13 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.

7.14 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.

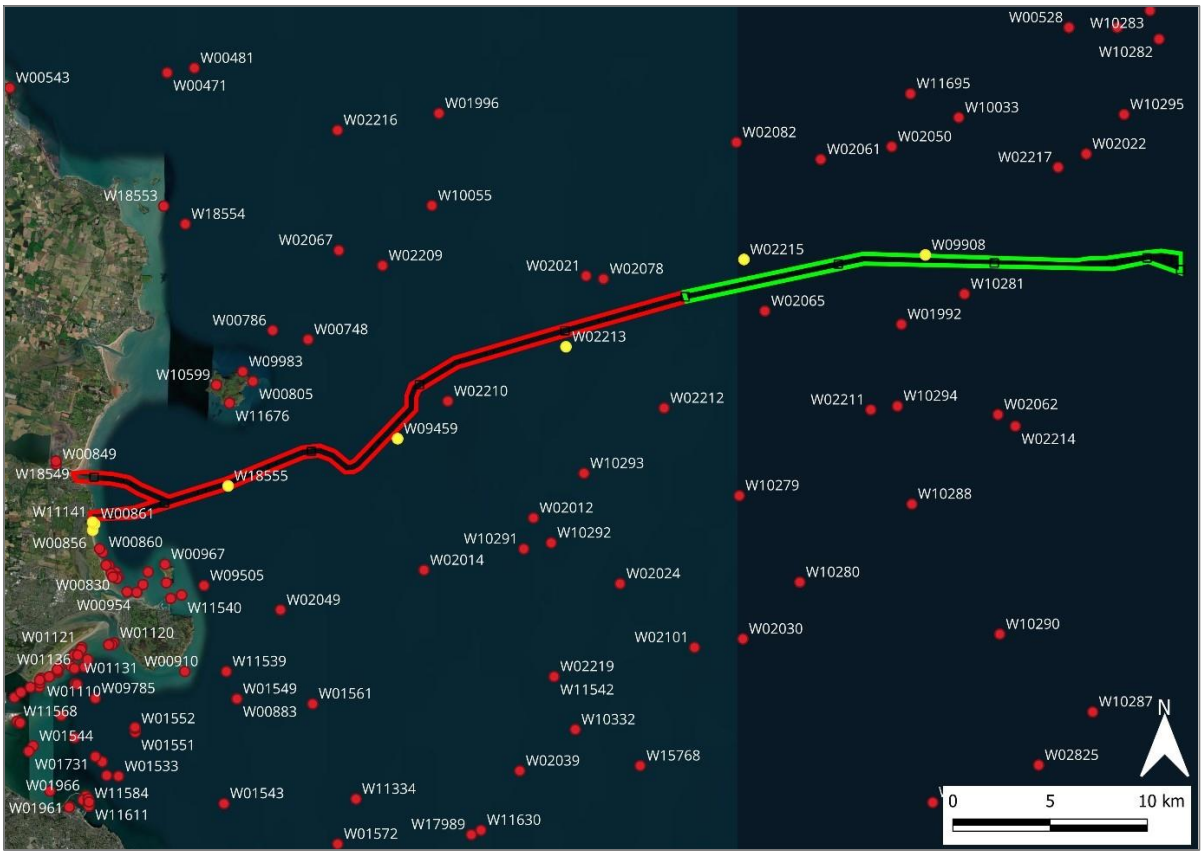

Figure 5. Proposed survey routes with surrounding shipwrecks with known locations in the WIID. Wrecks within the corridor and within c. 100m are highlighted in yellow.

People and Human Health

7.15 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 Malahide Village (1km west, population of approx. 18,608) and Portmarnock (1.2km southwest, population of approx. 10,750) as shown in Figure 6. The landfall survey locations of Malahide South Beach and Velvet Strand comprise amenity areas with a hotel, golf course and residential neighbourhoods nearby.

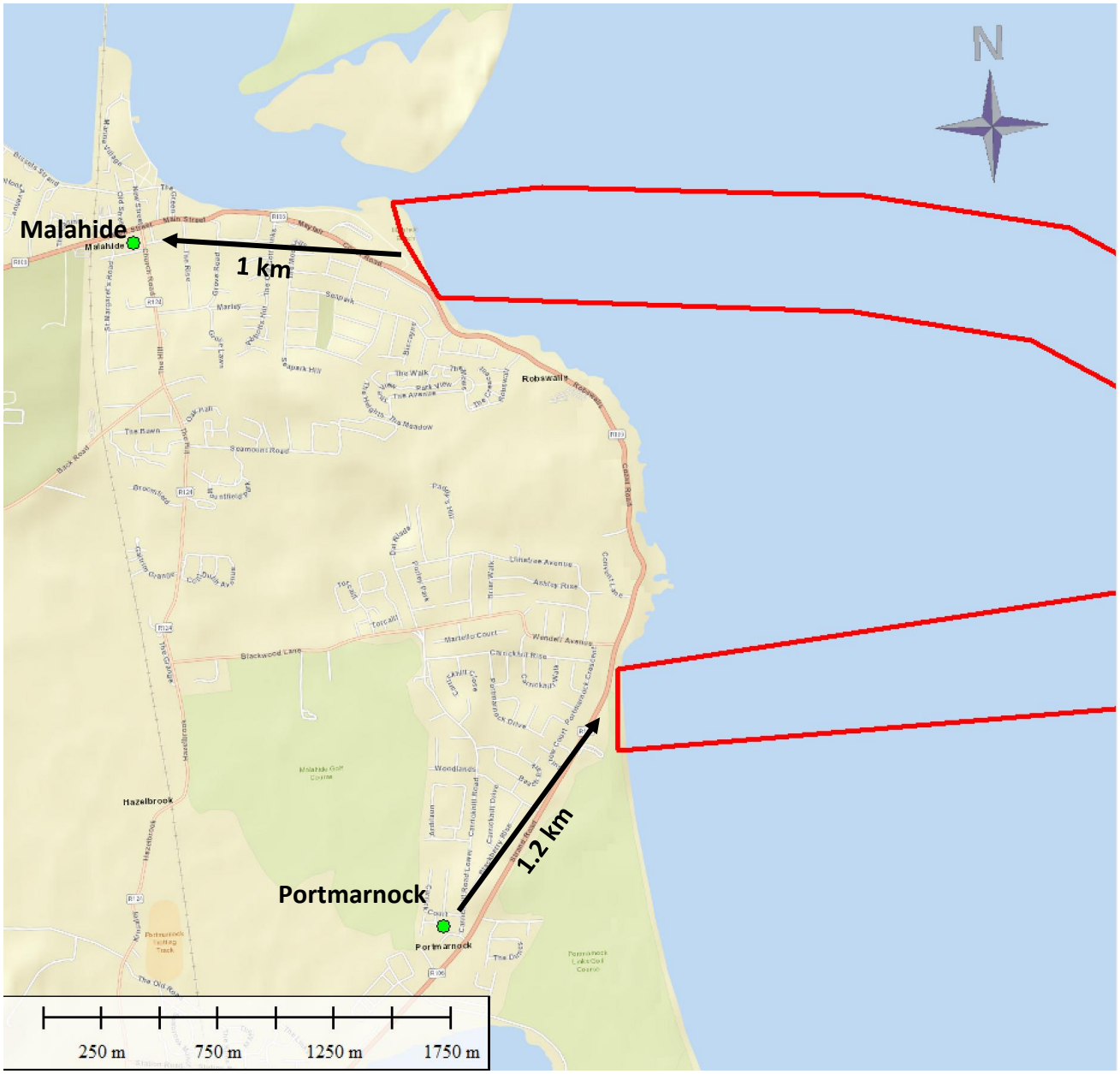

Figure 6. Settlements close to survey area.

7.16 At Portmarnock the landfall location is adjacent to the R106 Strand Road and north of the Portmarnock Hotel. The landfall location at Malahide is adjacent to the public car park at Malahide South Beach. Any requirement for beach access for vehicles or equipment at the landfalls will be via the existing established slipways from the R106.No vehicles or equipment will traverse the sand dune systems at Portmarnock. 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.

7.17 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

Biodiversity, Flora and Fauna

7.18 Site visits to the landfall areas were carried out on the 18th of September 2023 (0.7m). Observations on species were made at Low Water. The proposed terrestrial landfall and intertidal landfall areas were walked and photographed (Malahide- Plates 1-4 & Portmarnock Plates 5-8).

Malahide Landfall

7.19 As seen in Plates 1-4, no formal access is present from the car park area at Malahide to the intertidal zone. All beach users of the must cross the dune habitat to get to the intertidal zone. As a result, numerous informal paths are present. This includes an informal vehicular track (plates 3 & 4) which crosses the dune habitat. It should be noted that this area of Embryonic Dune is not included in the area calculation for the conservation objectives of the Malahide Estuary SAC. Nonetheless it is an Annex Habitat and feature of interest of the SAC. The proposed project involves the movement of a minidigger across the dune habitat on a single return journey on a single tide. The proposed route consists primarily of marram grass (Ammophila arenaria) heavily impacted by repeated trampling. Other species in the vicinity included common bird's-foot-trefoil (Lotus corniculatus), lady's bedstraw (Galium verum), sea spurge (Euphorbia paralias), dandelion (Taraxacum sp.), cat's-ear (Hypochaeris radicata), common mallow (Malva sylvestris), devil's-Bit Scabious (Succisa pratensis) and clovers (Trifolium sp.). Within the intertidal small lugworm (Arenicola marina) casts were noted on the lower shore. No drift line was present on the shore. Pedestrian and canine activity was present on the beach with dogs present both on and off lead.

Portmarnock Landfall

7.20 At Portmarnock a concrete access ramp provides formal vehicular access directly to the upper intertidal which consisted of gently sloping uniform sandflat to the lower shore. Pedestrian and canine activity was also present on the beach. Few species of note were present on the shore except for small lugworm (Arenicola marina) casts on the lower shore. No drift line was present on the shore.

Plates 1-4. Malahide Landfall. (Clockwise from top left) Sandflats (TL), Car Park (TR), Path in Dune (BL) & Grassland and dune habitat (BR)

Figure 7. Plates 1-4. Malahide Landfall

Plates 5-8. Portmarnock Landfall. (Clockwise from top left) Access (TL), Slip (TR), Sandflat (BL) & Lower shore (small *Arenicola marina* casts) (BR)

Figure 8. Plates 5-8. Portmarnock Landfall.

Species: Birds

7.21 The intertidal elements of the survey works are on popular beaches with a car park, restaurants and existing human and dog walking activity. These habitats are highly disturbed. The site was visited during the overwintering bird season. No birds were roosting on the shores during the site visit. The intertidal survey works are located within the Malahide Estuary SPA and the North West Irish Sea SPA.

Species: Amphibians

7.22 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 amphibians of conservation importance are recorded on NPWS data.

Species: Mammals

7.23 No badger setts, otter holts or evidence of terrestrial mammals of conservation importance were seen in the vicinity of the landfall areas. Grey Seal (Halichoerus grypus)

and Common Seal (Phoca vitulina) have also been noted in the vicinity of the landfall area and along the cable route.

Cetacean Species

7.24 Figure 9 shows all cetacean species and Figure 10 shows cetacean activity within proximity of Rockabill to Dalkey SAC. 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 primarily harbour porpoise (Phocoena phocoena). It would be expected that both grey and common seals could be present in the vicinity of the proposed cable route, given that Lambay Island SAC has been designated with both species as features of interest.

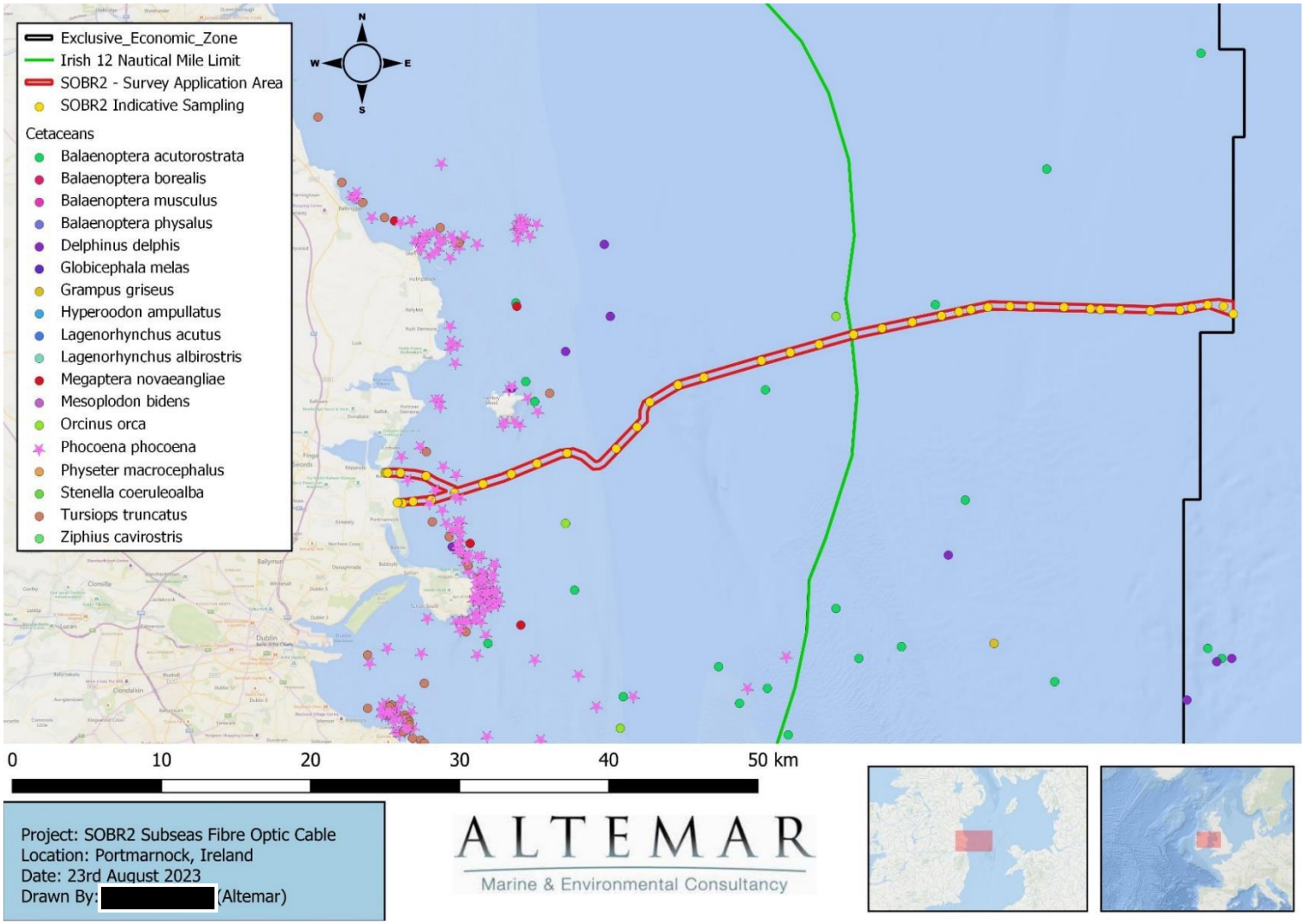

Figure 9. Cetacean Sightings (IWDG).

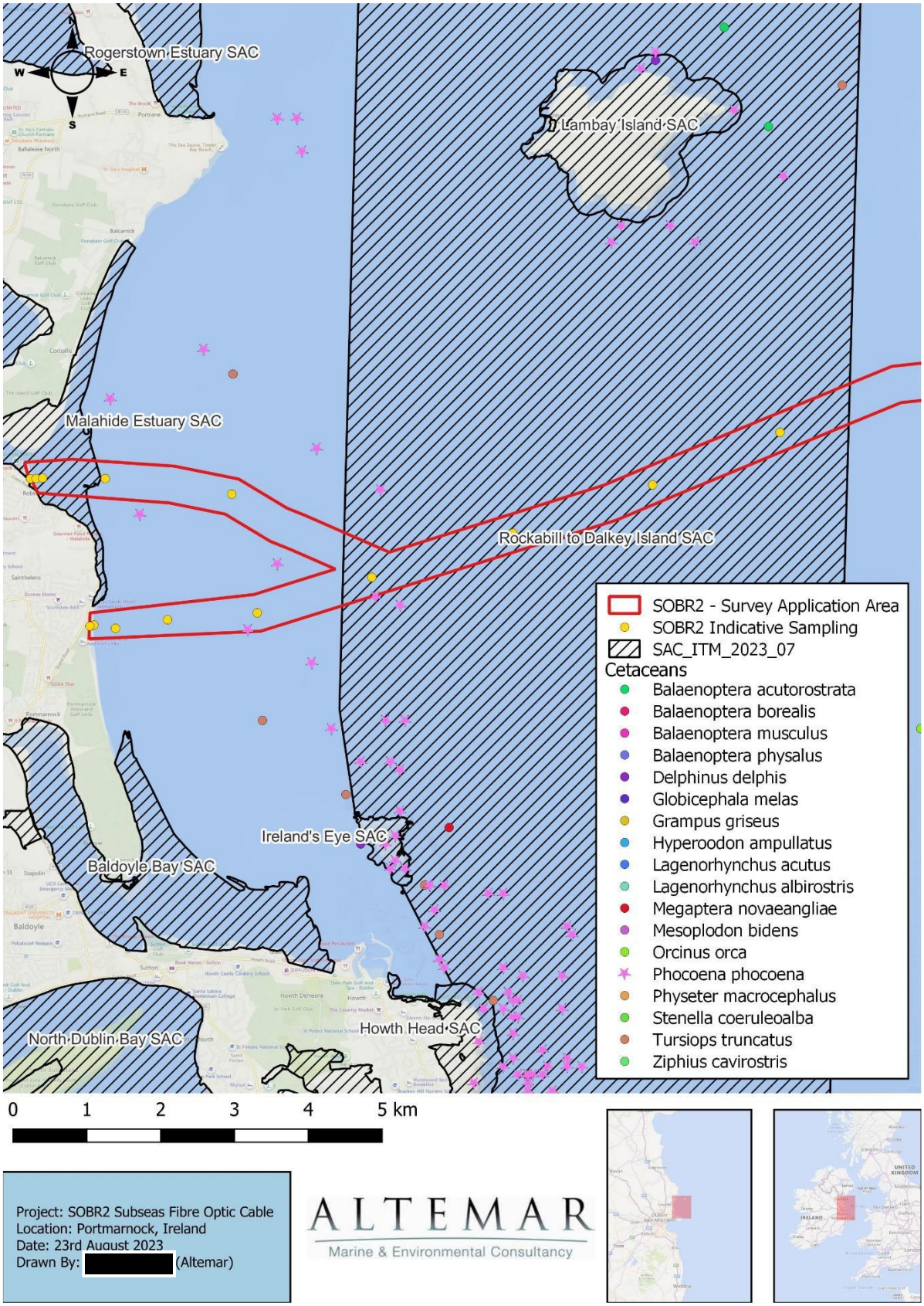

Figure 10. Recorded Cetacean species sightings (Source NBDC sightings data) proximate to Lambay Island SAC & Rockabill to Dalkey Island SAC.

Historic Records of Biodiversity

7.25 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

7.26 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 marine 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.

7.27 The terrestrial activities will involve the movement of personnel and machinery on existing wide worn paths, 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 to the intertidal. Intertidal works involve excavation of trial pits and bar probed during a single falling tide on each beach. One single return journey for machinery will be carried out on each beach. Temporary compaction would occur in localised areas at Malahide, but these areas are on existing paths that have undergone compaction. The presence of machinery and personnel in the intertidal may temporally disturb wildlife. However, it should be noted that these areas are high amenity areas with existing car parks and pedestrian/canine activity. Disturbance of the sediments in the intertidal will occur due to site investigation works. Pollution generated from machinery/construction activities could potentially impact the intertidal and terrestrial habitats. Potential impacts on habitats and species and the extent of these impacts that could potentially be encountered during the project are seen in Table 5a (habitats) and 5b (species) of the EcIA submitted with the application.

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,

geotechnical sampling will also generate localised noise but also localised disturbance of sediment. However, as the vessel will be stationary during geotechnical 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 Velvet Strand is a long and uninterrupted stretch of sand, backed along most of its length by a belt of grassy coastal sand dunes which have been developed for amenity as Links Golf Course. The proposed cable landfall is at the northern end of Velvet Strand close to where Strand Road meets the sea and the area between Strand Road and the beach has been developed for hotel, amenity and public car parks for beach goers. Malahide South Beach is at the mouth of the Broadmeadow Estuary to the north and with the rocky coastline of the Malahide Coast Geological Heritage Site to the south of the survey area. The R106 (Coast Rd) runs parallel to the beach, separated by a belt of coastal grassland on the western side.

7.30 The site is underlain by Lower Carboniferous limestones of Dinantian age. There are a number of limestone formations within the area, representing different depositional environments at different times within the Lower Carboniferous period. The underlying bedrock strata in this area is defined as the Malahide Limestone Formation and the Tober Colleen Formation. (Figure 11). Rocks belonging to the Malahide Formation are described as muddy limestone and shales. The Tober Colleen Formation consists of calcareous shale limestone conglomerate.

7.31 The Malahide Coast Geological Heritage site, located adjacent to the proposed landfalls and outside the survey area, comprises exposed sections of Carboniferous Limestone rocks showing a diverse range of fossils fauna. There are 3 faults in this section, but this is the only near-continuous section of fossiliferous Lower Carboniferous Limestone age rocks near Dublin and the large quantity and variety of fossils make this a very interesting location of regional and national importance. There are also outcrops on the beach containing prominent calcite veins (Figure 12). Veins form later than the rocks themselves, when tectonic squeezing produces cracks in the rocks. Hot liquids containing

dissolved calcite then flow up through the cracks, and the calcite crystallises out of the fluid onto the walls of the crack gradually filling up all the available space. The survey operations will not impact on the Geological Heritage Site.

7.32 The seabed substrate along the proposed survey area consists of mainly sand across the intertidal and nearshore zones. Sands and muddy sands are indicated within the survey corridor offshore, progressing to further areas of sands close to the IRL EEZ limits. (Figure 13)

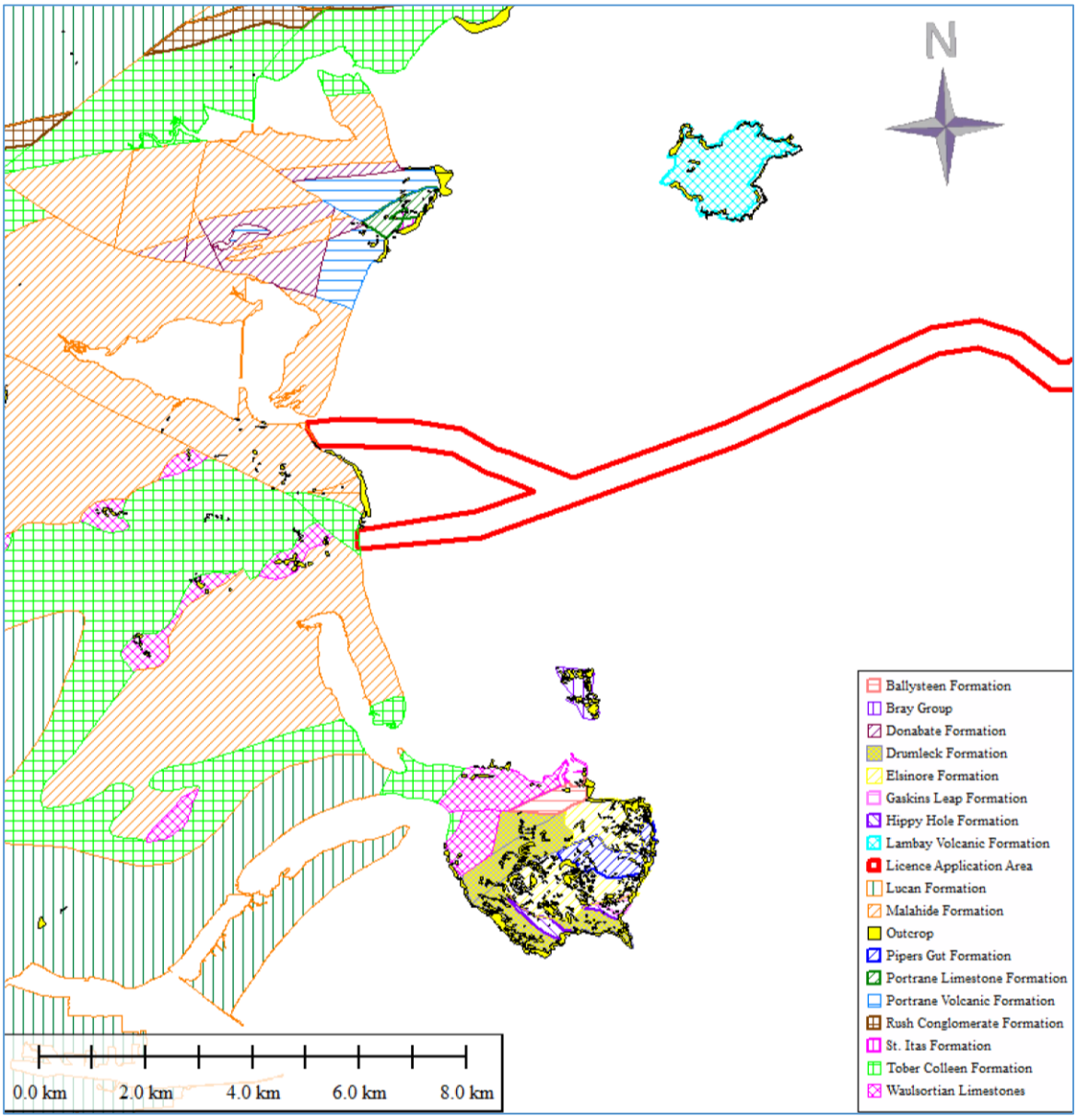

Figure 11. Geology of Landfall.

Figure 12. Bedrock outcrop (with calcite veins) at Velvet Strand.

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 13. Indicative Seabed Sediments within Survey Area.

Landscape & Seascape

7.34 The survey area consists of landfall survey locations at Malahide South Beach & Velvet Strand which are bounded by the R106 regional road to the West. The majority of the survey area comprises a marine corridor in a general North East direction across the Irish Sea.

7.35 In the Fingal County Development Plan (2023 – 2029), the Coastal Landscape in proximity to the survey area is characterised as 'Coastal' and ' Estuary' with 'Exceptional' Landscape Value and 'High' Sensitivity.

7.36 The Marine Institute Regional Seascape Character Assessment for Ireland published in 2020 defined the Seascape Character Area in the survey area as North Eastern Irish Sea Islands and Beaches and classified the seascape as comprising low lying estuarine coastal plain with long narrow sandy beaches, broad estuarine bays and complex low plateau and cliff coastline and shallow offshore waters.

7.37 The location of the survey corridor (landfall and offshore marine) is visible from some areas of Malahide and Portmarnock. 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 the Irish Sea.

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 Conservation sites and Waterbodies proximate to the Cable Route and Survey Route Corridor are demonstrated in the EcIA, along with the survey route corridor, and works (to Irish 12 Nautical Mile Limit and Irish EEZ).

7.40 The inshore coastal waterbodies through which the survey route corridor traverses are classed as unpolluted under the Water Framework Directive (WFD) (Figure 14).

7.41 Refuelling of equipment, machinery or plant will not take place on the foreshore. 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 to protect the water quality status of Dublin Bay and the Irish Sea in compliance with the Water Framework Directive.

Air and Climate

7.42 The survey area (at the landfalls) is designated as Zone A of the EPA Air Quality Zones which comprises the Dublin conurbation. During the survey, there will be no releases of emissions to air, other than routine vessels exhausts. Air Quality standards will not be exceeded.

7.43 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.

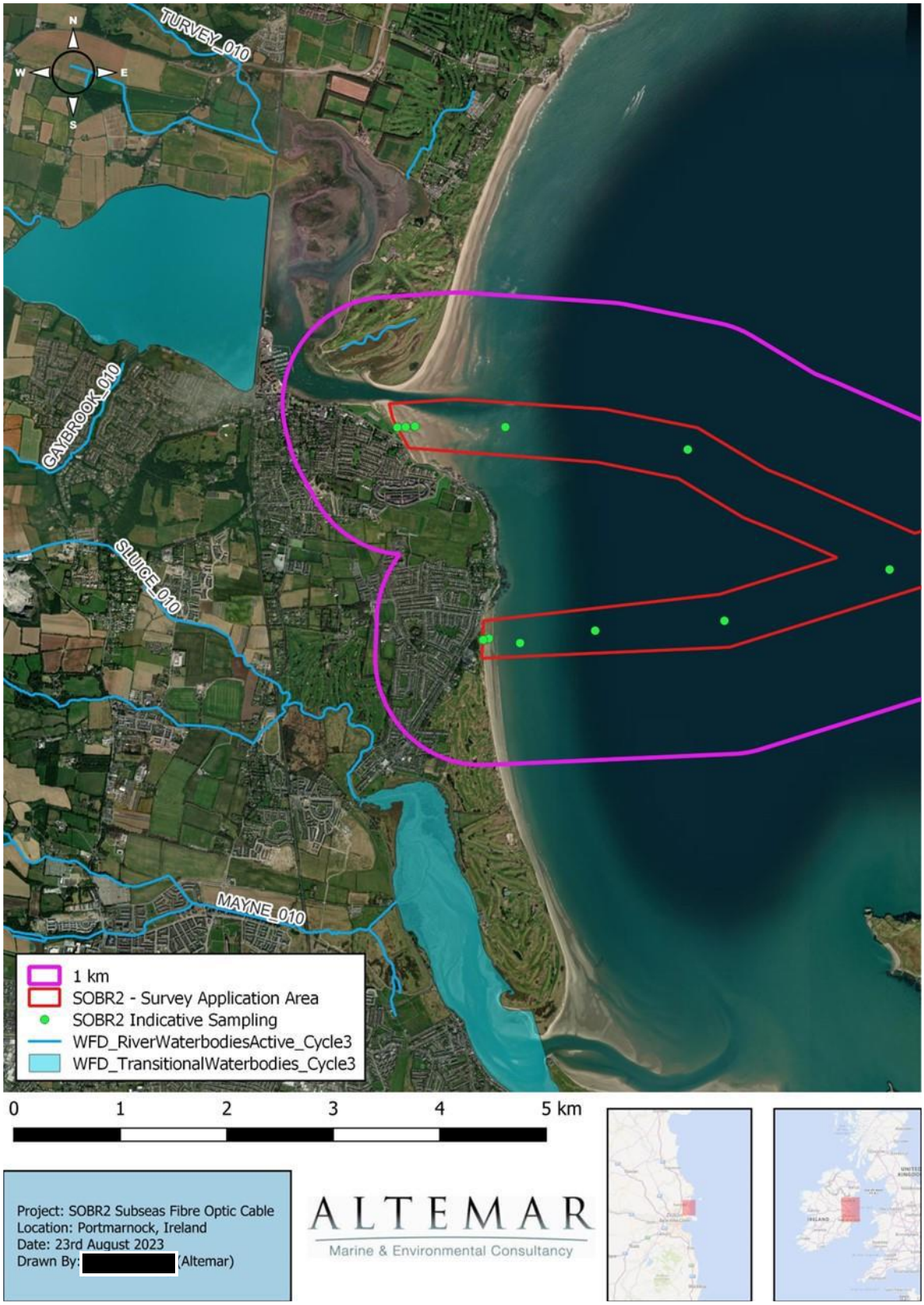

Figure 14. Coastal Waterbodies.

Noise and Vibration

7.44 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 15 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.

7.45 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.

7.46 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.

7.47 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

7.48 There are no designated shipping lanes, Traffic Separation Zones, Vessel Traffic Services (VTS) or anchorages within the survey application area. The North and South Burford Traffic Separation Schemes are located approximately 11km South of the survey area (Figure 15). 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.

7.49 Dublin Port is the largest commercial port in Ireland and is located c.12km to the south west of the survey area. Figure 15 shows AIS data for 2022 representing the vessel traffic in the area, excluding fishing vessels.

7.50 Close to the landfalls, the majority of vessel movements are related to fishing vessels transiting to the fisheries harbour at Howth, 5km South of the survey area (Figure 16). In summer, pleasure craft and sailing vessels traverse the survey area as they navigate along the coast between Howth, Malahide and Balbriggan.

7.51 Further offshore, commercial shipping traffic crosses the survey area as it routes through the Irish Sea. This shipping activity transits to and from the commercial ports on the east coast of Ireland, (Dublin Port, Drogheda, Warrenpoint, Greenore), the west coast of the United Kingdom (Liverpool, Holyhead, Fleetwood), the Isle of Man and Northern Ireland and also shipping routes through the Irish Sea to access the Atlantic or the English Channel.

7.52 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.

7.53 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.

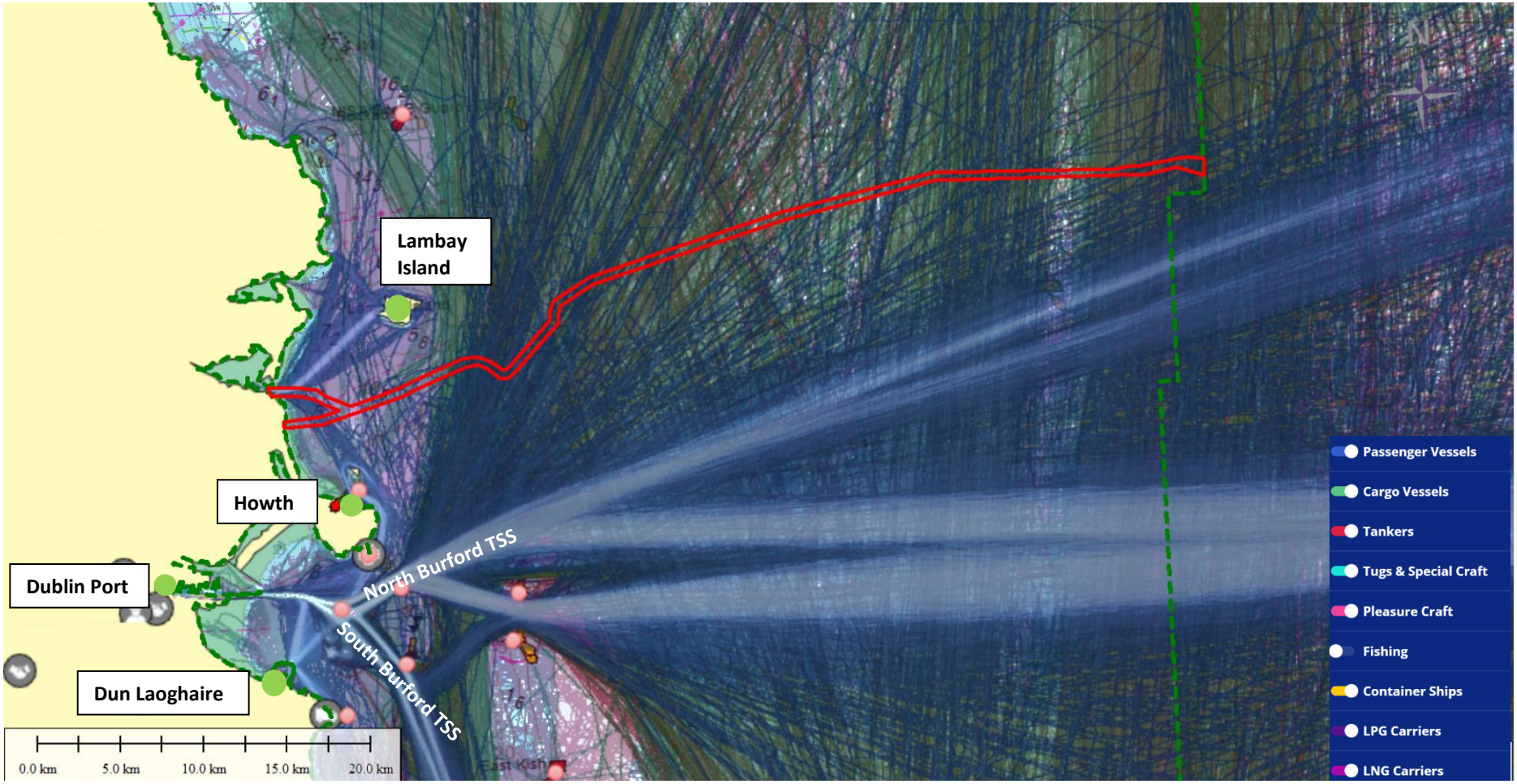

Figure 15. Shipping Traffic (AIS 2022)

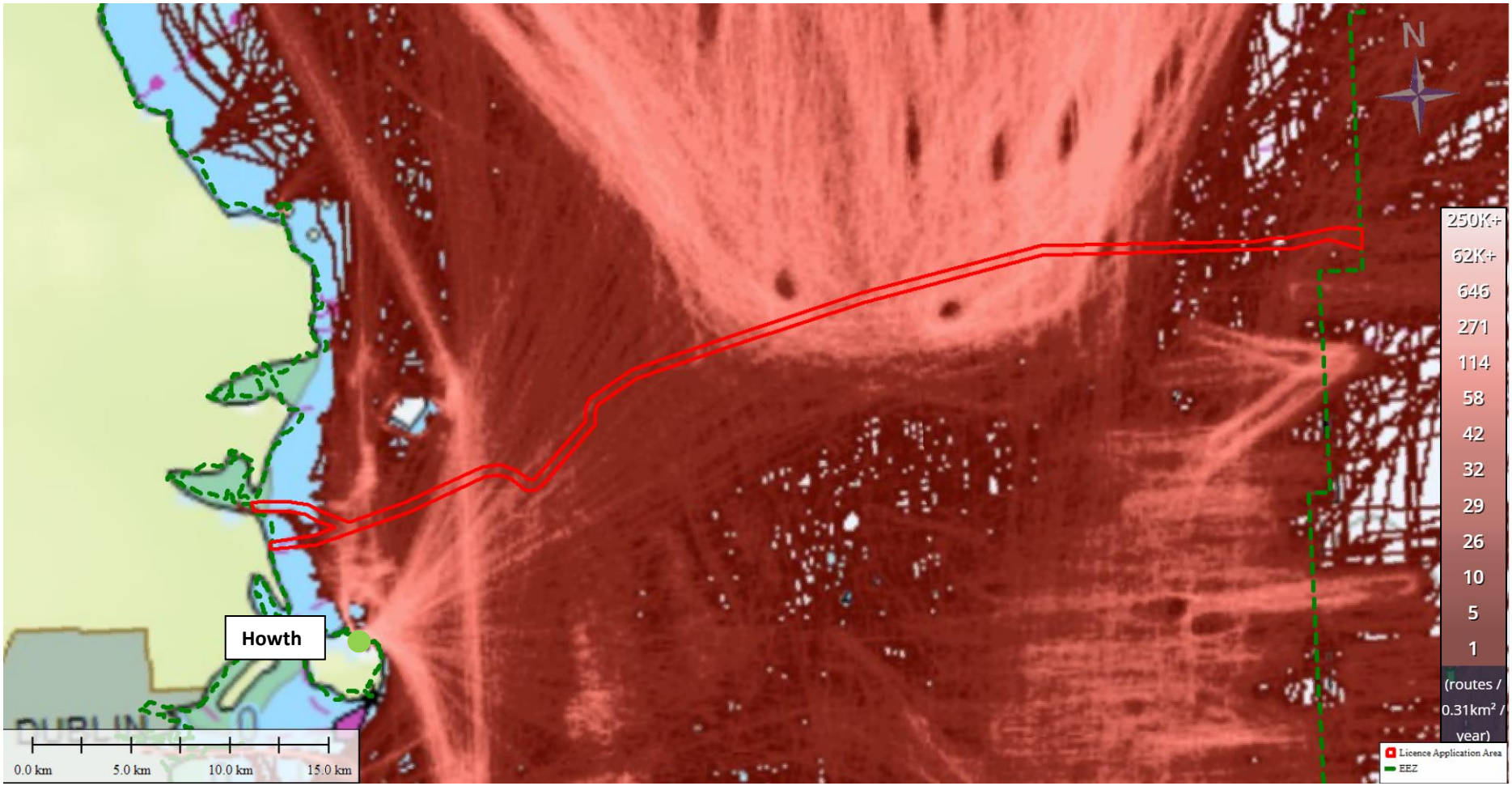

Figure 16. Fishing Vessel Traffic (AIS 2021)

Fisheries

Spawning Grounds

7.54 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

7.55 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

7.56 The proposed survey route passes through known cod and haddock nursery and spawning grounds. These nursery grounds span for much 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 spawning period for cod ranges from January through April, while the spawning period for haddock ranges from February through May, and so any surveying activities undertaken outside of this timeframe will avoid any possible disturbances. The route passes through known horse mackerel and whiting nursery grounds. Horse mackerel nursery grounds span a large proportion of Irish waters,

including the entirety of the Irish Sea, while whiting grounds span a large proportion of the north Irish Sea, and so the grounds in which the survey works will take place are therefore not of specific importance to this species.

7.57 The proposed survey route passes through known Nephrops norvegicus (Dublin Bay Prawn) grounds (FU15 Western Irish Sea). The proposed survey route passes just within the southern fringe of these nephrops grounds, and so the grounds in which the survey works will take place are therefore not of specific importance to this species. Disturbance to these grounds will be minor and not significant.

7.58 The route overlaps with the range of wild Atlantic salmon. Due to the extent of the range of Atlantic salmon, it is unlikely that the proposed works will have any significant impact on Atlantic Salmon.

7.59 There is minor overlap with fishing activities in the region. These include Pot Fishing (Whelk and Lobster & Crab), Nets Fishing (Mixed Demersal), and Dredge Fishing (Razor Clam). 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 fish species. The risk of short-term disturbance to known fish breeding areas through which the proposed routes pass is highest between January and September. There would be no significant impact on the interests of local fisheries. Further information on fisheries is included in the EcIA Report.

Aquaculture

7.60 There are no licensed aquaculture sites within or in proximity to the survey area. There is an area licenced for Blue Mussels approximately 60 km north of the survey area at Carlingford Lough and a further area licensed for Blue Mussels, 80 km south of the survey area at Clogga Bay, Arklow (Figure 17). The marine survey activities will not impact on aquaculture operations.

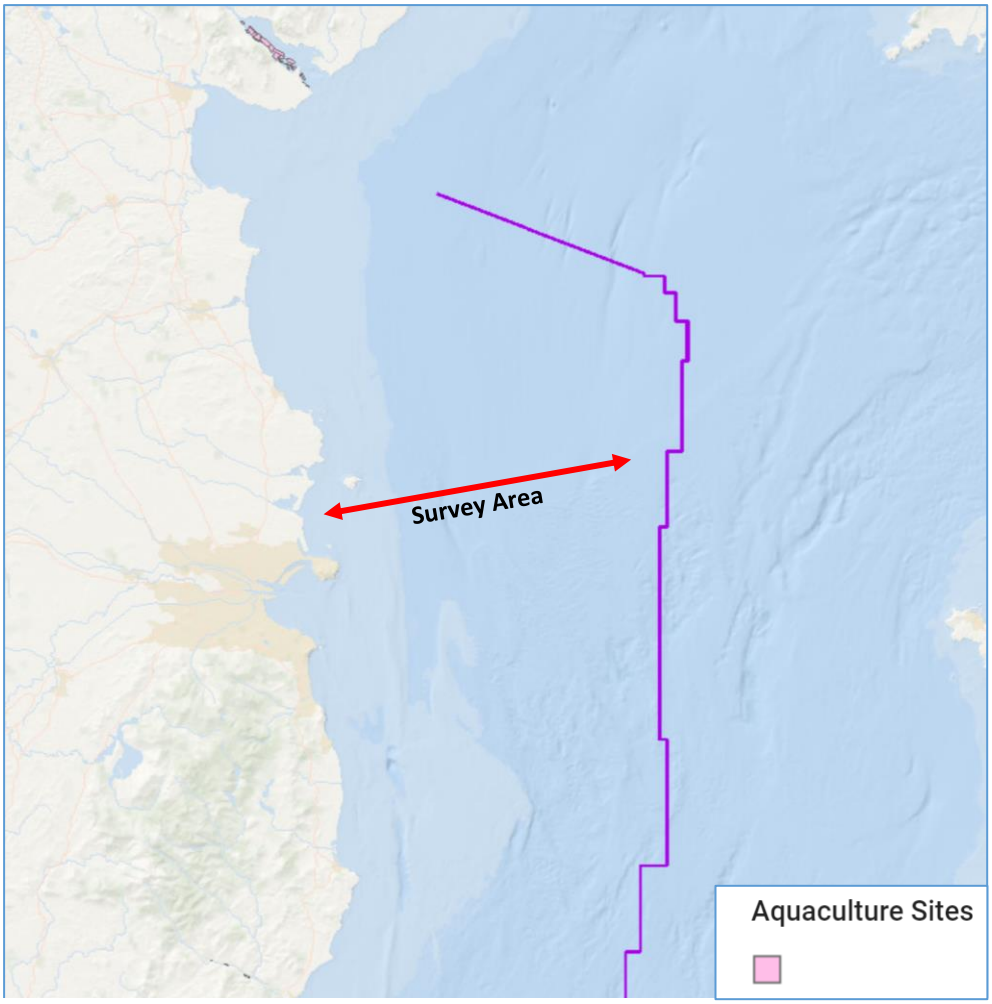

Figure 17. Licensed Aquaculture Areas.

Recreation

7.61 North Dublin and the area around Portmarnock and Malahide is a popular destination for recreational marine based activities. Howth Yacht Club is based 5km south of the survey area in Howth Harbour. Most of the sailing activity in the area 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 Dun Laoghaire, Malahide, Poolbeg, Sutton and Skerries with recreational boating traffic along the coast in the summer months and a number of offshore sailing races taking place every year.

7.62 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. Velvet Strand 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. Velvet Strand is also frequented by kite surfers. Swimming 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.

7.63 The nearest RNLI Station is in Howth, which was founded prior to 1825 with a Trent class lifeboat and an inshore D class lifeboat in operation.

7.64 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.

7.65 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

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

7.67 The Sirius South, Emerald Bridge Fibre, ESAT 2, BT-TE1 and Hibernia Atlantic submarine fibre optic cables cross the survey route in Irish waters (Figure 18).

7.68 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 100m from the as-found position of these existing cables or 250m 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.

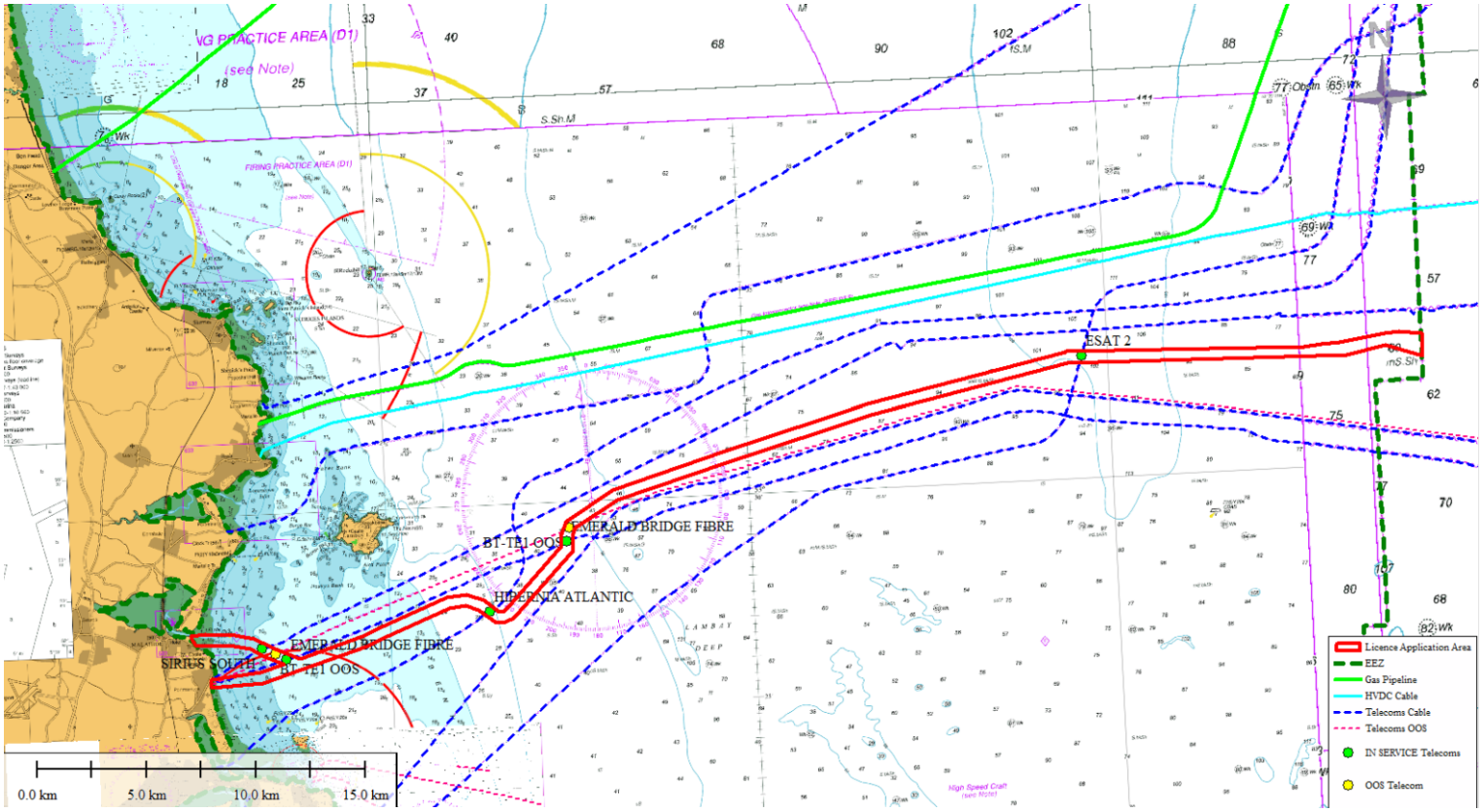

Figure 18. *Existing Subsea Assets.*

System Name	Type	Location	Status	Owner
Hibernia Atlantic	Telecom	IRL 12nm	In-Service	EXA
Emerald Bridge (EBFL)	Telecom	IRL 12nm	In-Service	ZAYO
BT-TE1	Telegraph	IRL 12nm	Out of Service	BT
ESAT 2	Telecom	IRL EEZ	In-Service	BT
Sirius South	Telecom	IRL 12nm	In-Service	Virgin Media

Table 4. Subsea Cable Crossings

Accidents and Disasters

7.69 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.

7.70 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

7.71 As outlined by (OSPAR, 2012) "Cumulative effects, the combined effect of more than one activity, may reinforce the impacts of a single activity due to temporal and/or spatial overlaps". The proposed survey area is located within Malahide Beach, Portmarnock Beach, and the Irish Sea, areas that currently experience significant disturbance and vessel activity. Malahide Beach and Portmarnock Beach are also popular areas for dogwalkers, and therefore these areas experience high levels of canine activity. 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 Malahide Estuary SAC, SPA, & pNHA) and machinery that will enter the upper shore (within the conservation sites).

7.72 Fingal County Council planning permissions, Foreshore Applications and EIA portal were examined, and the potential for in-combination effects due to development in the area.

7.73 A review of the DHLGH Foreshore Licence Applications and Determinations search tool (Department of Housing, Local Government and Heritage (DHLGH), November 2023), was undertaken for foreshore licence applications for projects in 'County Dublin' and 'County Meath' for 2019, 2020, 2021, 2022 and up to 17th July 2023, when the Maritime Area Regulatory Authority (MARA) became operational. The NMPF Activities Map was also consulted for relevant licence applications (MarinePlan.ie, 2023). No further relevant licence applications were identified. This is considered a conservative approach, considering the very temporary and localised nature of the survey and site investigation activities detailed in this application.

7.74 Dublin County Council planning permission applications were examined for potential cumulative impacts due to development in the area. There were no planning applications near the survey corridor.

7.75 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 Table 5.

7.76 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 Table 5, 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.

Reference	Title	Year	Location	Activity	Status
FS007635	MaresConnect Electricity Interconnector Site Investigation	2023	FLAA is from Portmarknock, Co. Dublin to Skerries, Co. Dublin	Marine investigative survey works for the MaresConnect Ltd (MCL) Interconnector. The proposed works includes surveys 50m landward of the high-water mark to overlap with the terrestrial survey works.	Applied
FS007180	Tech Works Marine Ltd. Data Buoy Deployment	2022	Scotsman's Bay, Dun Laoghaire, Co. Dublin	Deployment of a small Data Buoy with multiple environmental (non-acoustic) sensors to test communications technology for data acquisition	Applied
FS006984	Rush Sailing Club Landing Pontoon	2022	Rush Sailing Club, Rogerstown, Rush, Co. Dublin	Construction of a new disability access landing pontoon to include new floating pontoon, access gangway, landing area, and alterations to existing boundary sea wall, boundary wall, and footpath to accommodate same, and associated site works	Applied
FS007605	Irish Water Benthic Survey	2022	Survey area commences at the R106 Coast Road (at Maynetown), north of Baldoyle and terminates 1km north-east of Ireland's Eye	Benthic survey of the proposed outfall pipeline (marine section) area and its environs associated with the Greater Dublin Drainage Project.	Consultation
FS007472	Mac Lir Offshore Wind Limited Site Investigations for proposed Offshore Wind Farm	2022	Off Counties Wicklow, Wexford, and Dublin	Benthic ecology surveys within a potential offshore export cable corridor area. The proposed surveys will be conducted on the shoreline and in the marine area and are routine in establishing the baseline benthic ecology conditions for areas for several purposes including conservation, environmental status and in this particular case to support the Environmental Impact Assessment Report for the proposed Mac Lir Offshore Wind Farm.	Applied
FS007363	Greystones (OWL) Windfarm Ltd.	2022	Off Counties Wicklow and Dublin	Greystones OWL Windfarm Limited is proposing to develop an offshore wind farm at a site off the Wicklow/Dublin coast. Greystones OWL Windfarm Limited is seeking to undertake a variety of marine surveys at the proposed site to inform the specific location, design and layout of the proposed offshore wind farm and export cable route to shore.	Applied
FS007546	Site Investigations for proposed Offshore Wind Farm, off counties Wicklow and Dublin	2022	Off counties Wicklow and Dublin	The main aims and objectives of the proposed activities are to: • Provide up to date detailed bathymetric mapping of the seabed. • Provide further information on the soil stability and morphology of the seabed. • Provide detailed information on ground conditions and geology. • Obtain up to date wind resource and metocean data for the site; and • To generate environmental and ecological data to inform the EIA and AA for the Codling Wind Park project.	Determination
FS007330	Site Investigations off the coasts of Wicklow and Dublin	2021	Off Counties Wicklow and Dublin	Site investigation works to determine the suitability for cable routeing, and positioning of turbines and other electrical infrastructure associated with the development of an OWF. The results of these surveys will also provide baseline data for Environmental Impact Assessment (EIA) and a subsequent Environmental Impact Assessment Report (EIAR) should the development be taken forward to the planning/consenting stage.	Applied
FS007392	Site Investigations for the proposed Lir Offshore Array	2021	Off Counties Louth, Meath, and Dublin	Surveys and Site Investigations (SI) to inform development and project design for the proposed site. The surveys will be geophysical, geotechnical, environmental and metocean.	Applied

Reference	Title	Year	Location	Activity	Status
FS007151	Site Investigations for the proposed Sunrise Offshore Wind Farm	2021	Off Counties Dublin and Wicklow	Site investigation activities to undertake a variety of marine surveys at the proposed site to inform the specific location, design and layout of the proposed offshore wind farm and export cable route to shore. The surveys will include geophysical, geotechnical, environmental and metocean campaigns.	Consultation
FS006909	Broadmeadow Way Greenway	2021	Malahide Demesne to Newbridge Demesne	A new greenway (shared footpath and cycleway) between Malahide Demesne and Newbridge Demesne via the railway causeway across the Malahide Estuary. The proposed greenway would be c. 6km in length. Much of the proposed greenway follows existing pathways and roads.	Consultation
FS007373	Site Investigations off Co. Dublin	2021	Off the coast of Dublin	Site Investigations to inform feasibility assessments and design in relation to the proposed development of an offshore wind farm array to the east of County Dublin.	Consultation
FS007358	Site Investigations for Export Cable Route	2021	Off the coast of Co. Louth, Meath, and Dublin	Site investigation surveys necessary to determine the seabed and sub-sea conditions to establish the optimum location for and design of the export cable(s) to shore, and to establish the most appropriate route corridor and landfall location for the export cable(s) from the proposed North Irish Sea Array (NISA) offshore wind farm. The application includes for geophysical surveys (mutli-beam echo sounder, sub bottom profiling, side-scan sonar and magnetometer), geotechnical surveys (cone penetration tests and vibrocores along the potential routes and boreholes at the landfalls) and ecological surveys (fisheries surveys, benthic grab samples, intertidal benthic sampling).	Determination
FS007188	Site Investigations for the proposed Dublin Array Offshore Wind Farm	2021	Off the coast of County Dublin and Wicklow	Geotechnical and geophysical site investigations and ecological, wind, wave, and current monitoring to provide further data to refine wind farm design, cable routing, landfall design and associated installation methodologies for the proposed Dublin Array offshore wind farm.	Determination
FS007164	Dublin Port Capital Dredging Project	2021	Dublin Port	Capital Dredging at various locations around Dublin Port	Consultation
FS007132	Dublin Port Maintenance Dredging	2021	Dublin Port	Maintenance dredging at various locations in Dublin Port for the years 2022 to 2029.	Determination

Table 5. Foreshore Licences in the vicinity of the Licence Area.

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 6. 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.	15	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	12	N/A	N/A	N/A
Vibrocorer	Retrieve a seabed sediment sample by penetrating seabed with a vibrating steel core barrel	12	30 Hz	187.4 dB.	LGL 2010
Grab Samples	Collect small sediment samples from seabed surface with clamshell mechanism	11	N/A	N/A	N/A

Table 7. 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.

8.2 Minor short-term impacts may result because of the survey phase of the project, but these are believed not to be at the scale to impact on designated conservation sites, species, or the site-specific conservation objectives. However, following the precautionary principle, mitigation measures have been developed to minimise the ecological impacts of the project, in relation to Natura 2000 Annex habitats and species. This is primarily because of noise disturbance and the potential for pollution within the marine environment.

Route Planning within the landfall area.

8.3 A strict route selection process was carried out to assess the optimal route and landfall site, considering the lowest environmental impact, highest resource efficiency and wave exposure using sound and comparable data. This included addressing engineering issues as well as environmental concerns and assessing existing infrastructure.

8.4 The potential landfall location is located within/proximate to three sites of conservation significance (Malahide Estuary SAC, SPA, & pNHA). The conservation significance of the habitats, fauna and flora within Malahide Beach, Portmarnock Beach, and these conservation sites were 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.

Intertidal Works

8.5 As was seen during the fieldwork, the beaches at which the intertidal works are proposed is to be carried out on are moderately exposed with coarse sand, proximate to public car park areas. Human activity and canine (off-leash) activity was noted at both sites. Both sites are popular coastal walking sites. It would be expected that there is increased human activity on the beach and the main access to the beach is via the proposed access route for a single tidal cycle would not significantly impact on bird populations due to the high levels of existing activity on site. However, there is potential to impact on

habitats in the absence of mitigation. As a result, mitigation of impacts in the intertidal should concentrate on minimising the following:

Disturbance

- The proposed survey routes are within popular beaches with existing high levels of canine and human activity and vehicular access. As a result, the presence of additional personnel/machinery on the shore would not be thought to cause a significant additional disturbance. However, there is potential for disturbance of the dune and sandflat habitat and as a result the following mitigation measures would be carried out:
- An ecologist would be onsite during the surveys to minimise disturbance and ensure site integrity is maintained. Prior to the commencement of the works (min 1 weeks' notice) the NPWS will be informed of the proposed works.
- A track will be marked out by the ecologist prior to machinery accessing the dune area and beaches. This will be marked out prior to access of personnel and machinery to the shore to avoid features of interest of the SAC.
- Within the dune habitat in Malahide protective matting will be placed under the machinery tracks when accessing the dune habitat. The ecologist will supervise the access across the dune habitat to ensure matting is in place and the machinery does not stray from the existing informal vehicular track.
- Drift lines and vegetation on the shore near 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.
- Roosting birds, if present in the vicinity of the works, will not be disturbed. The ecologist will ensure that roosting birds are not impacted by the 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.

9.0 CONCLUSION

9.1 This report has been undertaken based on the information in the Schedule of Works, Supporting Information Report to inform AA Screening, Applicant NIS, Ecological Impact Assessment (EcIA) and Underwater Archaeological Impact Assessment Report 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
AIMU	Assessment of Impact of the Maritime Usage
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
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
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
NMPF	National Marine Planning Framework
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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