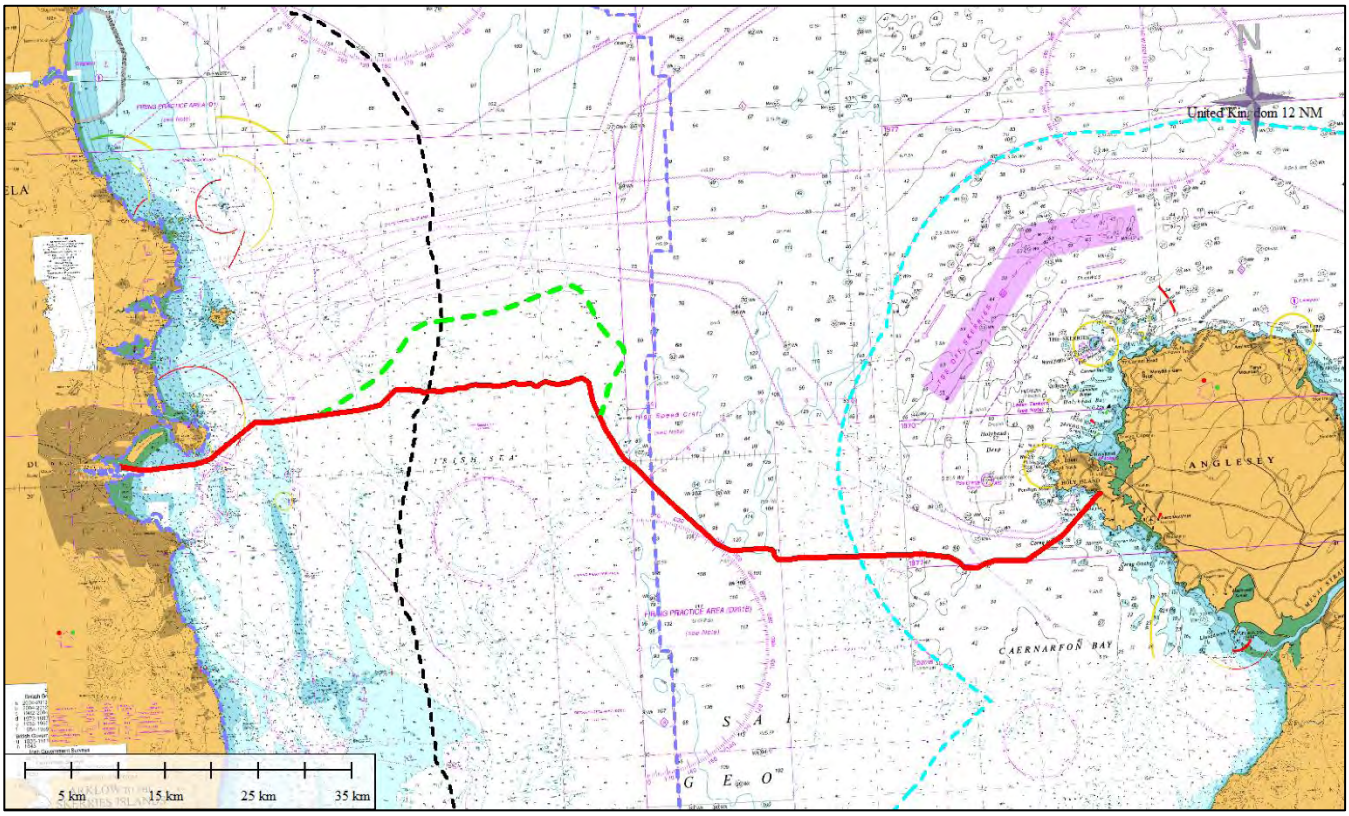
ALTEMAR

Marine & Environmental Consultancy

Supporting Information for Screening for Appropriate Assessment Report for marine survey and site investigation works for a fibre optic cable at Dublin Bay.



08th February 2024

Prepared by: [redacted] (MCIEEM) of Altemar Ltd.
On behalf of: McMahon Design and Management Ltd.

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Document Control Sheet			
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1. Introduction

An Appropriate Assessment is an assessment of the potential effects of a proposed project or plan, on its own, or in combination with other plans or projects, on one or more Natura 2000 sites. Natura 2000 sites are those sites designated as Special Areas of Conservation (SAC) or Special Protection Areas (SPA).

The AA Screening stage examines the likely significant effects of a plan or project, either on its own, or in combination with other plans and projects, upon a Natura 2000 site and considers whether, on the basis of objective scientific evidence, it can be concluded that there are not likely to be significant effects on any European site, in view of best scientific knowledge and the conservation objectives of the relevant European sites.

The following Supporting Information for Screening for Appropriate Assessment Report (SISAA) has been prepared by **Altemar Ltd.** at the request of **McMahon Design and Management Ltd,** as part of this Maritime Area Usage Licence (MAUL). The MAUL application relates to the proposed marine survey and site investigation works for an Ireland/UK marine fibre optic cable within the Irish Exclusive Economic Zone (EEZ).

1.1 Altemar Ltd.

Since its inception in 2001, Altemar has been delivering ecological and environmental services to a broad range of clients. Operational areas include: residential; infrastructural; renewable; oil & gas; private industry; Local Authorities; EC projects; and, State/semi-State Departments. [redacted] the managing director of Altemar, is an Environmental Scientist and Marine Biologist with 28 years' experience working in Irish terrestrial and aquatic environments, providing services to the State, Semi-State and industry. He is currently contracted to Inland Fisheries Ireland as the sole "External Expert" to environmentally assess internal and external projects. He is also chair of an internal IFI working group on environmental assessment. [redacted] (MCIEEM) holds a MSc in Environmental Science, BSc (Hons.) in Applied Marine Biology, NCEA National Diploma in Applied Aquatic Science and a NCEA National Certificate in Science (Aquaculture). [redacted] carried out all elements of this SISAA. [redacted] has been involved in eleven international sub marine fibre optic cable projects, many of which involved Horizontal Directional Drills within designated sites and all works required ecological supervision.

2. Background to the Appropriate Assessment

The Habitats Directive 92/43/EEC (together with the Birds Directive (2009/1477/EC)) forms the cornerstone of Europe's nature conservation policy. The Directive protects over 1000 animals and plant species and over 200 "habitat types" which are of European importance. In the Habitats Directive, Articles 3 to 9 provide the legislative means to protect habitats and species of European Community interest through the establishment and conservation of an EU-wide network of conservation sites (NATURA, 2000). These are Special Areas of Conservation (SACs) designated under the Habitats Directive and Special Protection Areas (SPAs) designated under the Birds Directive), Article 6(3) and 6(4) of the Habitats Directive set out the decision-making tests for plans and projects likely to affect European sites (Annex 1.1). Under the terms of the Habitats Directive, Ireland is required to transmit details of candidate SACs (cSAC) to the European Commission for adoption as sites of Community importance. Transmitted sites are examined by representatives of other member states, independent scientists and representatives of Non-Governmental Organisations (NGOs). These sites are not yet formally designated but do have protection under the Habitats Directive. Article 6(3) establishes the requirement for Appropriate Assessment:

"Any plan or project not directly connected with or necessary to the management of the [NATURA 2000] site but likely to have a significant effect thereon, either individually or in combination with other plans and projects, shall be subjected to appropriate assessment of its implications for the site in view of the site's conservation objectives. In light of the conclusions of the assessment of the implication for the site and subject to the provisions of paragraph 4, the component national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public."

As outlined in "Managing European sites, The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC" (European Commission, 21 November 2018) *"The purpose of the appropriate assessment is to assess the implications of the plan or project in respect of the site's conservation objectives, either individually or in combination with other plans or projects. The conclusions should enable the competent authorities to ascertain whether the plan or project will adversely affect the integrity of the site concerned. The focus of the appropriate assessment is therefore specifically on the species and/or the habitats for which the European site is designated."*

As outlined in the EC guidance document on Article 6(4) (January 2007)[1]:

"Appropriate assessments of the implications of the plan or project for the site concerned must precede its approval and take into account the cumulative effects which result from the combination of that plan or project with other plans or projects in view of the site's conservation objectives. This implies that all aspects of the plan or project which can, either individually or in combination with other plans or projects, affect those objectives must be identified in the light of the best scientific knowledge in the field.

Assessment procedures of plans or projects likely to affect European sites should guarantee full consideration of all elements contributing to the site integrity and to the overall coherence of the network, both in the definition of the baseline conditions and in the stages leading to identification of potential impacts, mitigation measures and residual impacts. These determine what has to be compensated, both in quality and quantity. Regardless of whether the provisions of Article 6(3) are delivered following existing environmental impact assessment procedures or other specific methods, it must be ensured that:

- *Article 6(3) assessment results allow full traceability of the decisions eventually made, including the selection of alternatives and any imperative reasons of overriding public interest.*
- *The assessment should include all elements contributing to the site's integrity and to the overall coherence of the network as defined in the site's conservation objectives and Standard Data Form, and be based on best available scientific knowledge in the field. The information required should be updated and could include the following issues:*
  - *Structure and function, and the respective role of the site's ecological assets;*
  - *Area, representativity and conservation status of the priority and nonpriority habitats in the site;*
  - *Population size, degree of isolation, ecotype, genetic pool, age class structure, and conservation status of species under Annex II of the Habitats Directive or Annex I of the Birds Directive present in the site;*
    - *Role of the site within the biographical region and in the coherence of the European network; and,*
    - *Any other ecological assets and functions identified in the site.*
- *It should include a comprehensive identification of all the potential impacts of the plan or project likely to be significant on the site, taking into account cumulative impacts and other impacts likely to arise as a result of the combined action of the plan or project under assessment and other plans or projects.*
- *The assessment under Article 6(3) applies the best available techniques and methods, to estimate the extent of the effects of the plan or project on the biological integrity of the site(s) likely to be damaged.*
- *The assessment provides for the incorporation of the most effective mitigation measures into the plan or project concerned, in order to avoid, reduce or even cancel the negative impacts on the site.*
- *The characterisation of the biological integrity and the impact assessment should be based on the best possible indicators specific to the European assets which must also be useful to monitor the plan or project implementation."*

[1]European Commission. (2007).Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC – Clarification of the concepts of: alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence, opinion of the commission;

3. Stages of the Appropriate Assessment

This SISAA was undertaken in accordance with the European Commission Methodological Guidance on the provision of Article 6(3) and 6(4) of the 'Habitats' Directive 92/43/EEC (EC, 2001), Part XAB of the Planning and Development Act 2000, as amended, in addition to the December 2009 publication from the Department of Environment, Heritage and Local Government; 'Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities' and the European Communities (Birds and Natural Habitats) Regulations 2011. In order to comply with the above Guidelines and legislation, the Appropriate Assessment process must be structured as follows:

1) Screening stage:
   - Description of plan or project, and local site or plan area characteristics;
   - Identification of relevant European sites, and compilation of information on their qualifying interests and conservation objectives
   - Identification and description of individual in combination effects likely to result from the proposed project;
   - Assessment of the likely significance of the effects identified above. Exclusion of sites where it can be objectively concluded that there will be no likely significant effects; and,
     Conclusions
2) Appropriate Assessment (Natura Impact Statement):
   - Description of the European sites that will be considered further;
   - Identification and description of potential adverse impacts on the conservation objectives of these sites likely to occur from the project or plan; and,
   - Mitigation Measures that will be implemented to avoid, reduce or remedy any such potential adverse impacts
   - Assessment as to whether, following the implementation of the proposed mitigation measures, it can be concluded, beyond all reasonable scientific doubt, that there will be no adverse impact on the integrity of the relevant European Site in light of its conservation objectives"
   - Conclusions.

If it can be demonstrated during the AA screening phase (Stage 1), that the proposed project will not have a significant effect, whether alone or in combination with other plans or projects, on the conservation objectives of a Natura 2000 site, then no further AA (Stage 2) will be required. It is important to note that there is a requirement to apply a precautionary approach to AA screening. Therefore, where effects are possible, certain or unknown at the screening stage, AA will be required.

In addition, it should be noted that Article 6(3) of the Habitats Directive must be interpreted as meaning that, in order to determine whether it is necessary to carry out, subsequently, an AA of the implications, for a site concerned, of a plan or project, it is not appropriate, at the screening stage, to take account of the measures intended to avoid or reduce the harmful effects of the plan or project on that site.

4. Stage 1 Screening Assessment

4.1 Management of the Site

The plan or project is not directly connected with, or necessary to the management of NATURA 2000 sites.

4.2 Description of the Proposed Project

4.2.1 Project Overview

The applicant plans to investigate the feasibility of constructing a new subsea telecoms cable system, SOBR1, linking Ireland to the United Kingdom, from a landfall on Dublin Bay to a landfall at Anglesey on the North West coast of Wales as shown in Figure 1 below. 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. The applicant intends to undertake the survey campaign at the proposed Licence Application Area within the IRL Exclusive Economic Zone (EEZ) in order to inform the location and design of the proposed cable route and landfall.

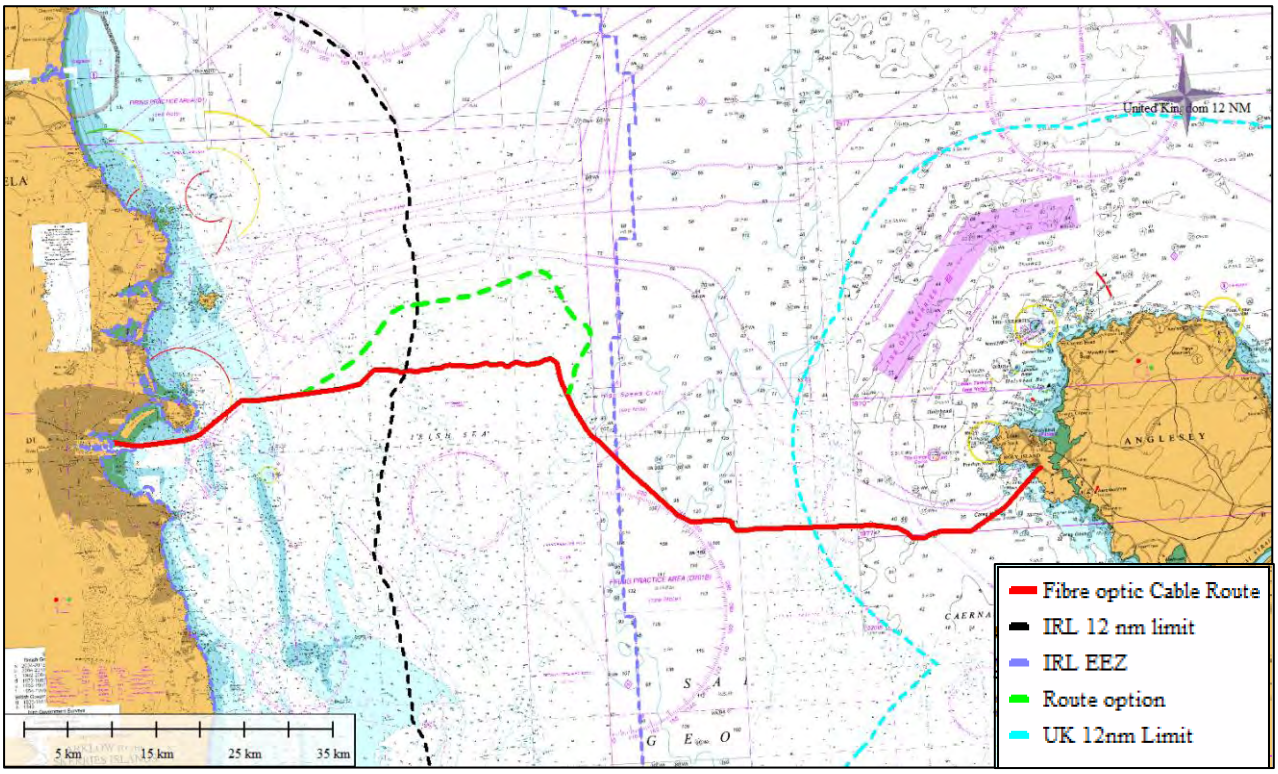

Figure 1. Proposed SOBR1 Telecoms Cable System

This Works Methodology has been prepared by McMahon Design and Management Ltd on behalf of the applicant and forms part of an application for a Licence for Marine Survey and Site Investigations for route and landfall options traversing Dublin Bay and the Irish Sea. 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 Maritime Area Consent and Planning consent for the installation works.

4.2.2 Proposed Survey Route and Survey Licence Application Area in Irish Territorial Waters

Licence Application Area

The License Application Area is situated off the coast of Dublin (Figure 2). The licensed survey corridor has length of approximately 115.7 km and a total area of 8034 hectares within the EEZ. A cable route corridor of approx. 500m to 1500m width will be surveyed within the licence application area.

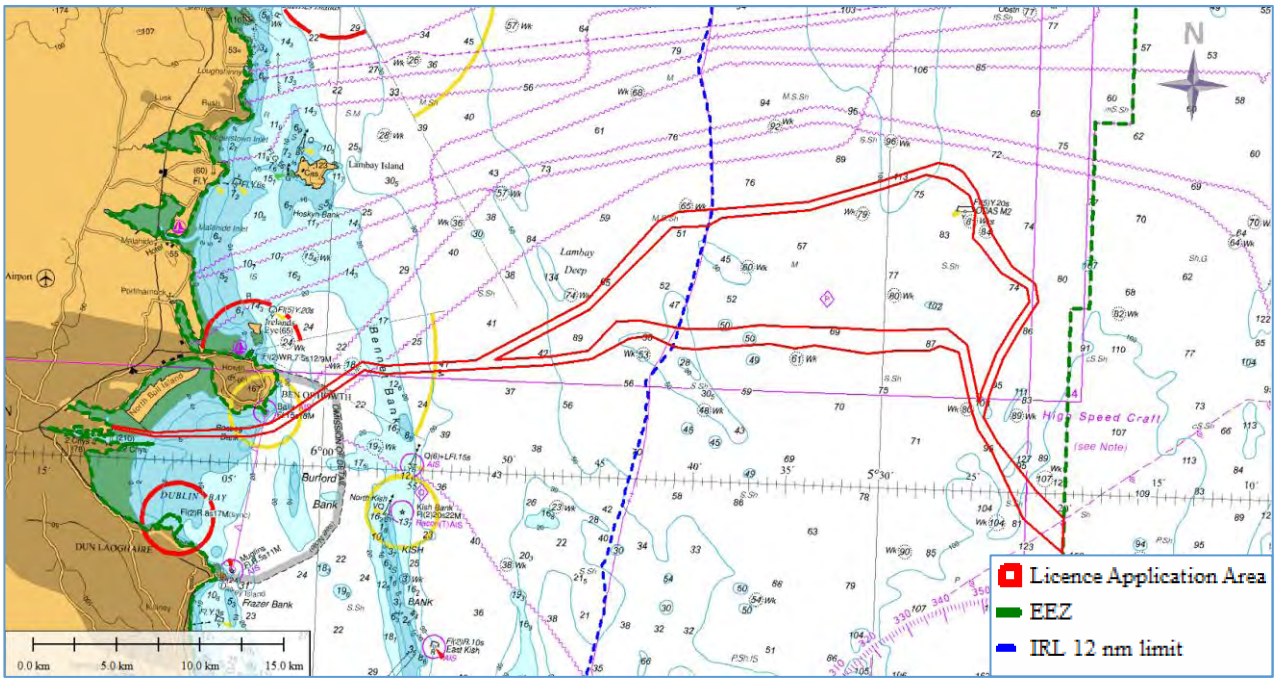

Figure 2. Proposed Survey Licence Application Area.

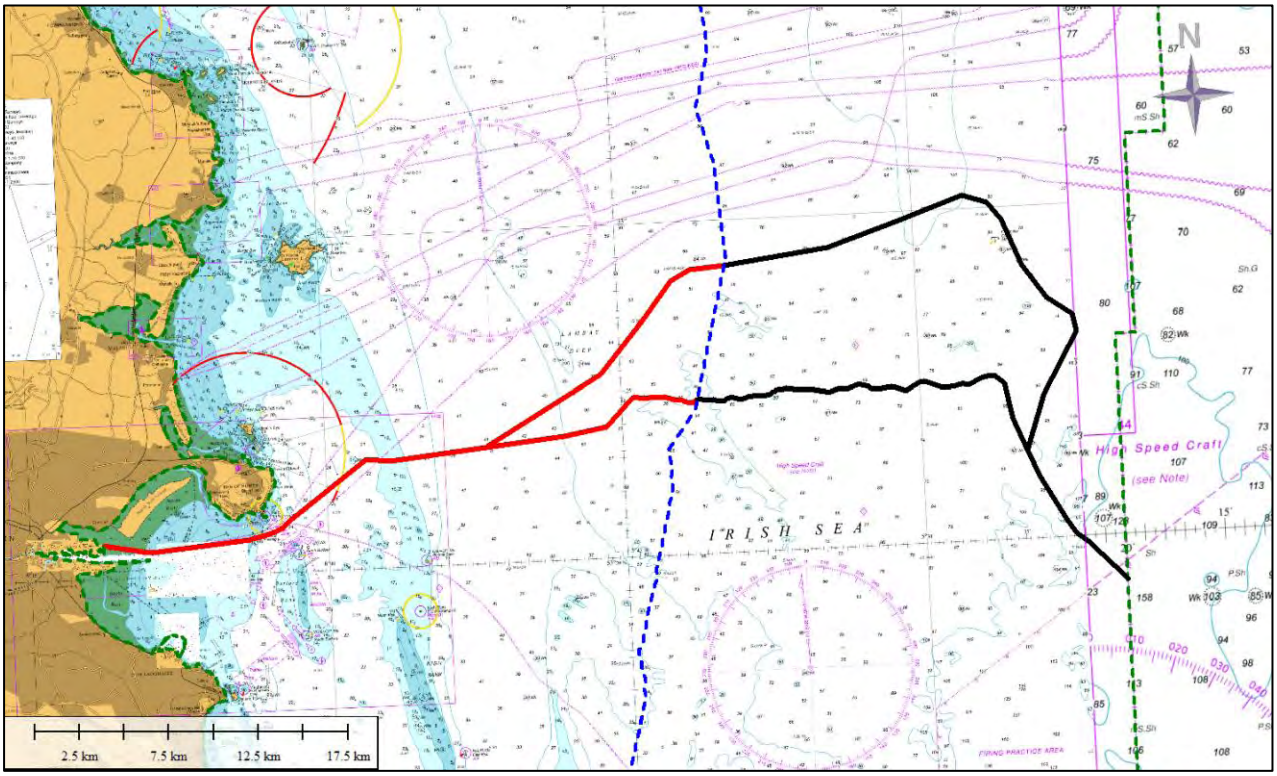

Figure 3. Offshore Survey Route.

Route Position List	Latitude	Longitude	Idx	Latitude	Longitude
1	53° 20' 02.3838" N	5° 21' 27.4138" W	34	53° 21' 00.0908" N	6° 11' 19.6875" W
2	53° 21' 37.7168" N	5° 23' 44.7377" W	35	53° 20' 57.1590" N	6° 11' 20.1502" W
3	53° 22' 22.9578" N	5° 24' 28.8794" W	36	53° 20' 44.3197" N	6° 09' 04.7864" W
4	53° 23' 08.4907" N	5° 24' 13.0710" W	37	53° 20' 52.4174" N	6° 03' 55.9758" W
5	53° 24' 17.9557" N	5° 23' 32.8179" W	38	53° 21' 05.2301" N	6° 02' 39.0289" W
6	53° 25' 18.3769" N	5° 22' 39.1370" W	39	53° 21' 29.4000" N	6° 01' 39.0615" W
7	53° 26' 09.7401" N	5° 21' 46.2697" W	40	53° 23' 09.3545" N	5° 57' 55.6320" W
8	53° 26' 45.4429" N	5° 21' 58.0892" W	41	53° 23' 04.4012" N	5° 56' 45.6840" W
9	53° 27' 17.0949" N	5° 23' 14.7463" W	42	53° 23' 35.0582" N	5° 47' 55.8364" W
10	53° 28' 16.8458" N	5° 24' 21.0871" W	43	53° 23' 49.4643" N	5° 45' 43.0737" W
11	53° 29' 40.0648" N	5° 25' 17.0137" W	44	53° 24' 31.0031" N	5° 43' 43.7931" W
12	53° 30' 15.8909" N	5° 26' 02.7022" W	45	53° 24' 38.5283" N	5° 42' 39.4360" W
13	53° 30' 27.8409" N	5° 26' 36.1706" W	46	53° 24' 19.5930" N	5° 41' 21.6008" W
14	53° 30' 32.3346" N	5° 27' 24.6739" W	47	53° 24' 16.0684" N	5° 40' 50.8882" W
15	53° 29' 52.6230" N	5° 30' 33.9614" W	48	53° 24' 16.4506" N	5° 39' 58.5855" W
16	53° 29' 08.1706" N	5° 34' 21.5966" W	49	53° 24' 19.4699" N	5° 39' 12.0166" W
17	53° 28' 46.0524" N	5° 39' 30.9625" W	50	53° 24' 24.3560" N	5° 38' 02.0088" W
18	53° 28' 39.5522" N	5° 41' 22.5631" W	51	53° 24' 30.8518" N	5° 36' 07.8165" W
19	53° 28' 19.5456" N	5° 42' 26.8873" W	52	53° 24' 24.1787" N	5° 34' 45.3308" W
20	53° 25' 38.5097" N	5° 46' 08.0235" W	53	53° 24' 30.9214" N	5° 33' 43.1846" W
21	53° 23' 37.7738" N	5° 51' 59.4475" W	54	53° 24' 18.3825" N	5° 30' 53.0816" W
22	53° 23' 20.6682" N	5° 56' 45.4049" W	55	53° 24' 26.4967" N	5° 29' 19.0278" W
23	53° 23' 26.1744" N	5° 58' 03.1781" W	56	53° 24' 28.6316" N	5° 27' 31.1852" W
24	53° 21' 42.0009" N	6° 01' 56.0375" W	57	53° 24' 37.8971" N	5° 26' 57.2048" W
25	53° 21' 20.3847" N	6° 02' 48.6846" W	58	53° 24' 27.8075" N	5° 25' 57.2559" W
26	53° 21' 08.4176" N	6° 04' 00.5093" W	59	53° 22' 35.6209" N	5° 25' 08.8741" W
27	53° 20' 52.5179" N	6° 09' 04.2852" W	60	53° 21' 58.2738" N	5° 24' 44.7667" W
28	53° 21' 01.7412" N	6° 11' 19.8821" W	61	53° 21' 21.9441" N	5° 24' 03.0769" W
29	53° 21' 01.6373" N	6° 11' 19.7465" W	62	53° 19' 10.8356" N	5° 22' 11.2274" W
30	53° 21' 01.4990" N	6° 11' 19.6143" W	63	53° 18' 07.8702" N	5° 19' 59.9747" W
31	53° 21' 01.1474" N	6° 11' 19.5112" W	64	53° 18' 38.1156" N	5° 19' 59.9748" W
32	53° 21' 00.8550" N	6° 11' 19.5016" W	65	53° 18' 49.1945" N	5° 19' 59.7997" W
33	53° 21' 00.5887" N	6° 11' 19.5844" W	66	53° 19' 14.6418" N	5° 19' 59.8757" W

Table 1. Survey Area RPL

Landfalls & Inshore Survey Corridors.

The survey area covers the proposed landfall at Dublin Port, with a survey corridor through Dublin Bay to potential route options traversing the Irish Sea to the East. The general location is shown in Figure 4.

Figure 4. Landfall Locations.

Dublin Port

The survey area covers a potential landfall at Dublin Port, on the eastern boundary of the port lands. The landfall location is adjacent to the Alexandra Road Extension and north of the Unified Ferry Terminal area (T5). There will be no requirement for vehicles to access the foreshore at the landfall as part of the survey works. All surveys and site investigations will be undertaken from a suitable shallow draft vessel.

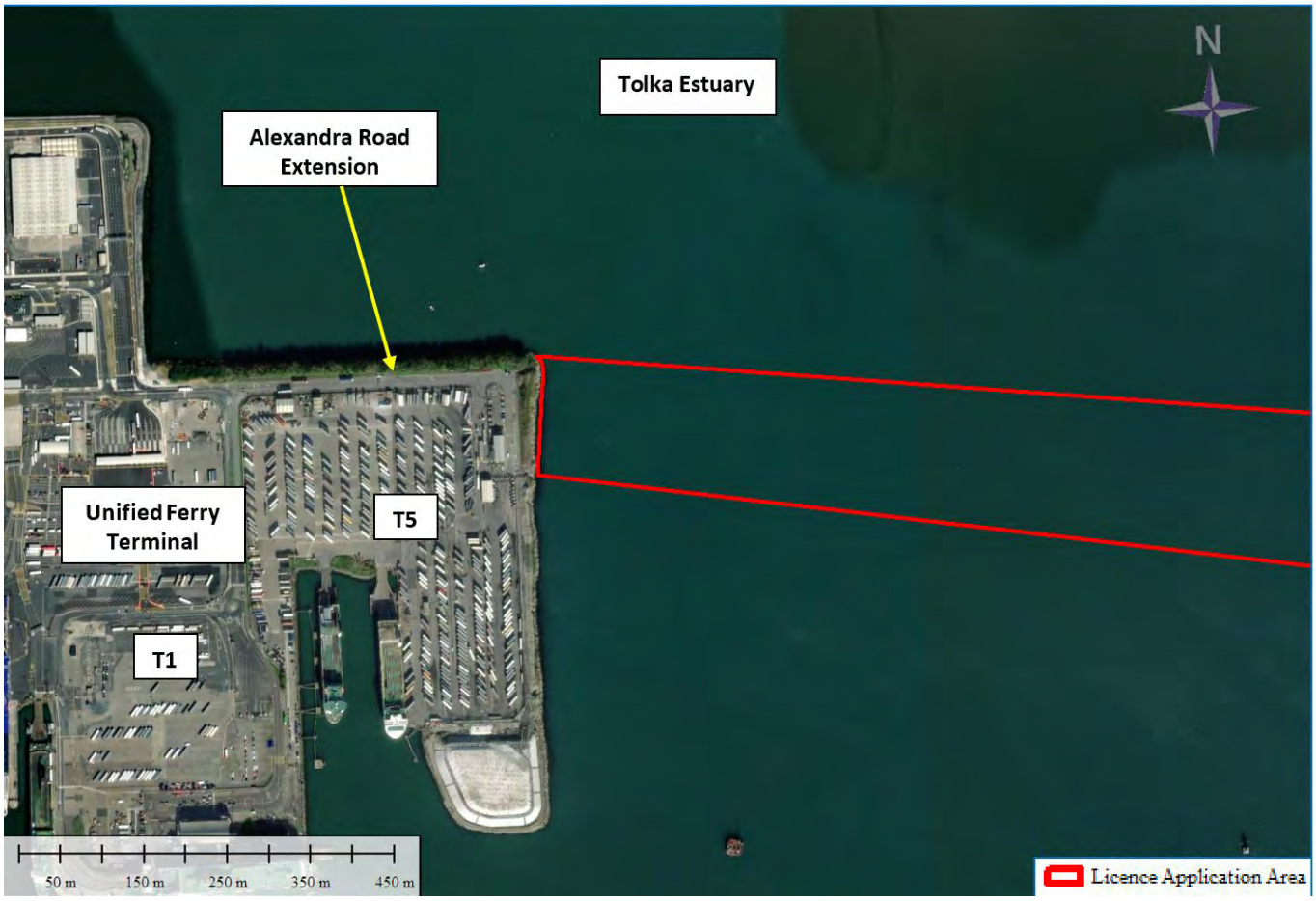

Figure 5. Landfall at Dublin Port

Figure 6. Landfall Access at T5

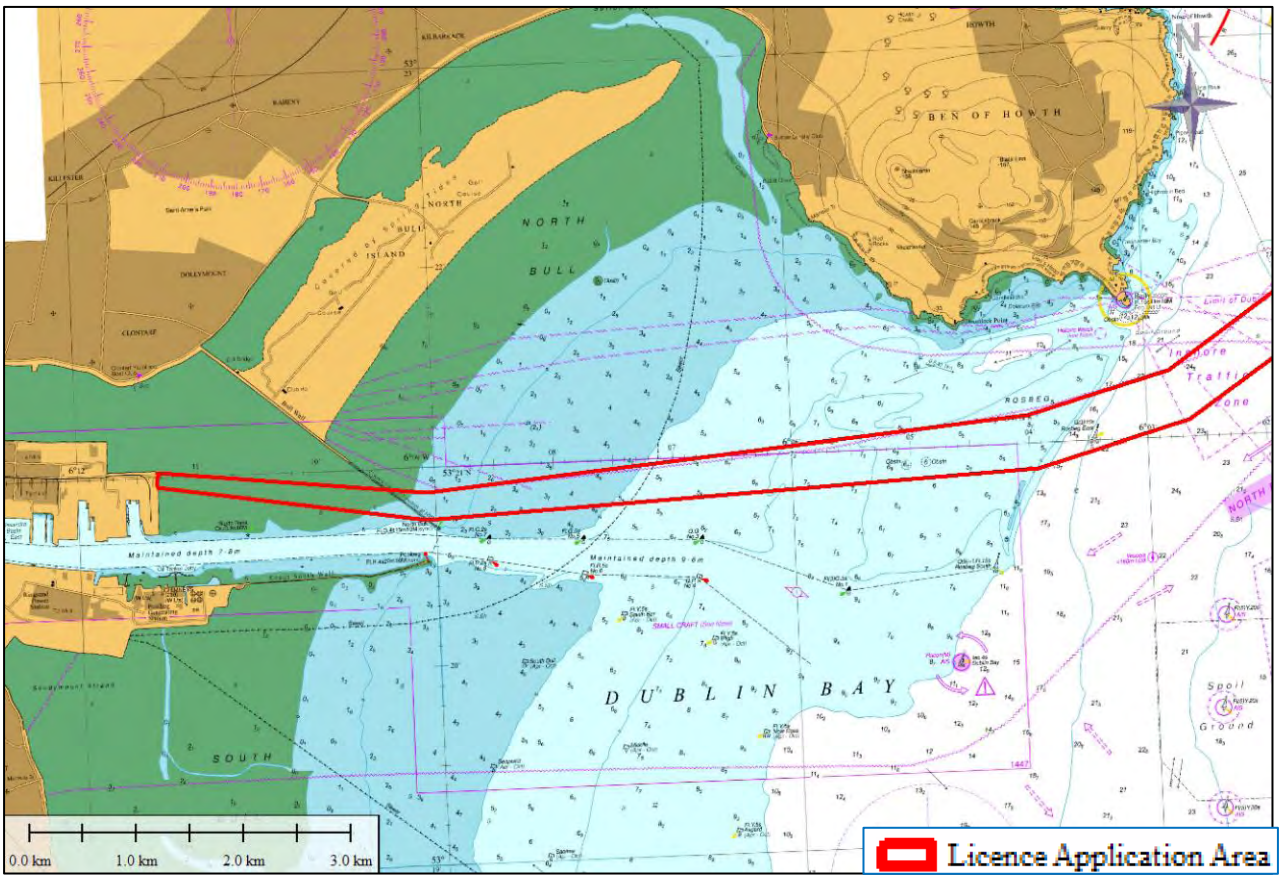

Figure 7. Inshore Survey Sections and Landfall.

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.

The objectives of the marine geophysical survey shall be:

- To collect up to date high-resolution bathymetry along a 400 – 1500m 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 magnetic anomalies;
- Identify sensitive marine habitats which will need to be avoided during site investigations and sampling.

The survey operations will be broken down into separate but overlapping areas, with boundaries defined by water depth as specified in the technical requirements outlined below. These water depth boundaries may be adjusted due to suitability of the survey vessel(s) and survey spread. The survey and survey line spacing will be designed to ensure adequate coverage and overlap of geophysical measurements.

- Landfall Survey – Intertidal Zone
- Inshore Survey – from 3m Chart Datum to 15m Chart Datum
- Offshore Survey – Water depths greater than 15m Chart Datum

In order to ensure data continuity, coverage between the survey areas is required with indicated overlap below;

- Landfall Survey to Inshore Survey – 50m overlap
- Inshore Survey to Offshore Survey – 500m overlap

Landfall Survey & Site Investigations

A non-intrusive topographic survey along the line of the proposed cable route at the landfall is required to the low water mark.

The topographical survey would typically be carried out by GPS Rover, Total Station or UAV Aerial Drone using photogrammetry or LiDAR techniques. Due to the seabed conditions across the intertidal zone at the landfall which is an area of mudflats, remote sensing techniques will be utilised.

Landfall Site Investigations will be undertaken to establish the depth and nature of the sediment. 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 the landfall:

- Bar probes on the intertidal at 50m spacing (approx. 8 to 10).
- Bar probes from the Low Water Line to the 3m water depth contour at 50m spacing. (approx. 8 to 10)

The bar probes on the intertidal are manually driven to a depth of 2 metres simply to prove the depth of upper layers of sand, gravel or soft material. They may be undertaken as part of a diver swim survey or from a small Rigid Inflatable Boat or Workboat.

Inshore Marine Survey

The area extending seaward from the low water mark at the landfall and inshore of the safe working draft limits of the primary survey vessel will be accurately surveyed with a small craft 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 survey lines, based upon the Survey RPL, is required.

Features such as shallow reefs, surge channels, debris fields, archaeological features or anything that could be a hazard to the cable or installation team will be noted. General reconnaissance of the survey corridor beyond the planned survey lines and tie-lines may be necessary to describe the seabed as accurately as possible. A line plan showing number of survey lines as a function of depth will be determined prior to start of survey operations.

Survey Area	Depth Range	Survey Corridor Width	Min. # of Lines	Min. Overlap	Typical Survey Speed
Inshore	3m to 15m	400 - 700m	7	SSS: 100% MBES Bathy: 20%	4 knots

Table 2. Inshore Survey.

Offshore Marine Survey

The area extending seaward from the outer limits of the inshore survey to the 12nm limits will be surveyed by the primary survey vessel using Multibeam Echosounder (MBES), sidescan sonar, marine magnetometer and sub-bottom profiler equipment. A continuous bathymetric swathe along with side scan sonar imagery and sub-bottom traces will be obtained, centred on the preliminary route and along all wing lines needed to complete the route corridor coverage. A minimum of five survey lines, based upon the Survey RPL, is required.

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.

Survey Area	Depth Range	Survey Corridor Width	Min. # of Lines	Min. Overlap	Typical Survey Speed
Offshore	> 15m	500 - 1500m	7	SSS: 100% MBES Bathy: 20%	4 knots

Table 3. Offshore Survey

Marine Site Investigations and Seabed Sampling

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.

The scheduled site investigations and seabed sampling within Irish waters will comprise of the following techniques:

- Up to 37 CPTs (2m to 3m)
- Up to 33 Gravity Cores / Vibrocores (3m)
- Up to 19 Grab Samples

Indicative locations for the relevant site investigation activities (Gravity or Vibrocore and CPT's) are shown in Figure 8. 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. Two or more attempts may be made at each location to acquire a suitable sample. If an acceptable sample is achieved on the first attempt, there is no need to perform a second attempt.

An acceptable sample is defined as;

- Grab Sample – recovery of approximately a full bucket of sediment. Recovery of large size granular material may be taken as indication of a hard seabed.
- Gravity Core / Vibrocore – recovery of < 3m core of soil. If stiff or hard soils are encountered and are clearly indicated in the sample, it sample may be deemed acceptable. Any sample site yielding less than 1m of recovery must be investigated a second or third time unless there is obvious damage to the coring equipment indicating a hard or rocky substrate.
- CPT – Penetration to the 2m target depth or refusal. Any push resulting in less than 2m penetration will warrant a second attempt.

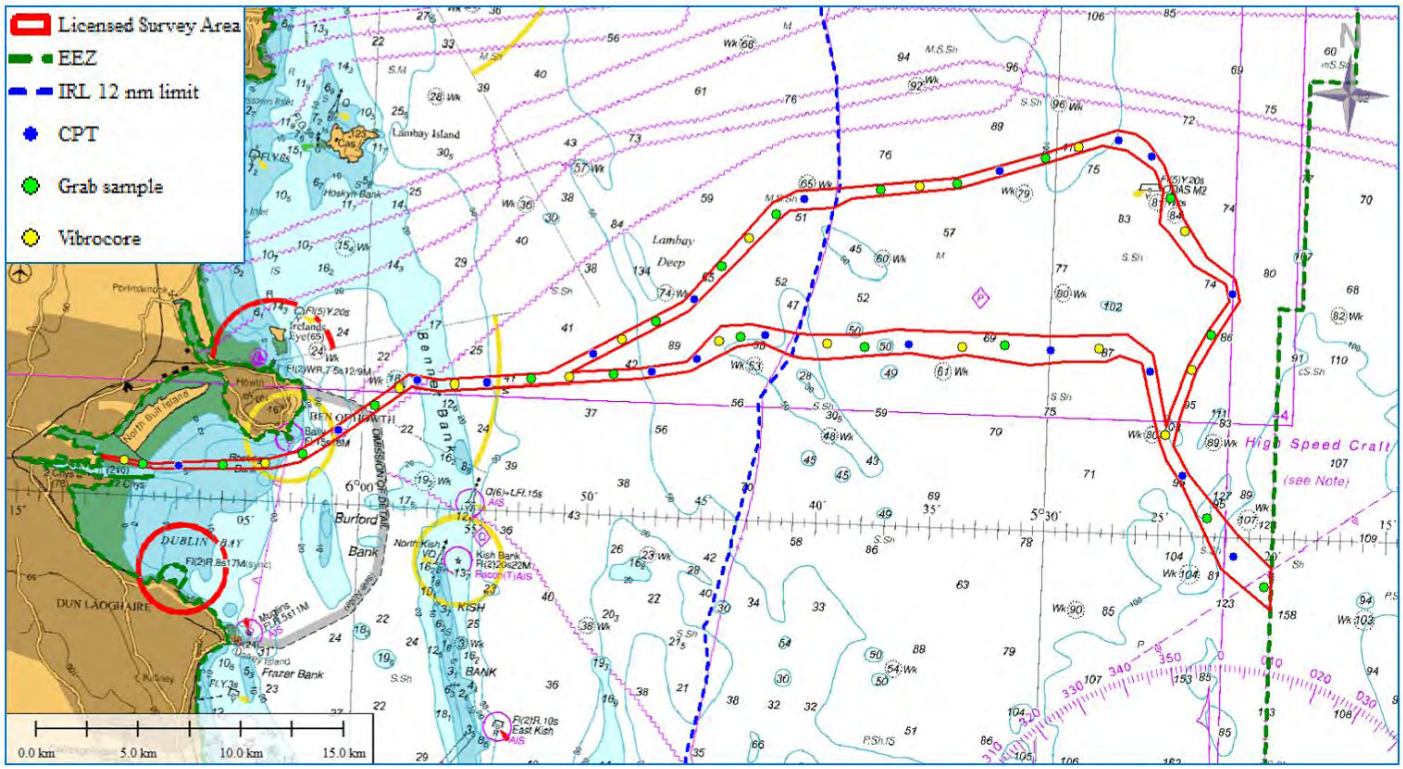

Figure 86. Indicative CPT and Vibrocore Locations.

Seabed Sampling

The total overall scope of the Site Investigations is as follows

- Bar Probes 10 No. on the intertidal
- Bar Probes 10 No. from Low Water to 3m contour.
- Grab Samples 19 No. along the route corridor.
- Gravity Cores / Vibrocores 33 No. along the route corridor.
- Cone Penetration Tests 37 No. along the route corridor.

Underwater video Survey

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.

Archaeological Survey

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.

All archaeological assessments will be carried out under by a suitably qualified and experienced marine archaeologist to determine the location of all known archaeological features in advance of the intrusive site investigations and seabed sampling. The data collected will be used to support the archaeological assessments.

4.2.3 Survey Equipment Parameters

Multibeam Echosounder (MBES)

Echo-sounders are a diverse group of acoustic sources used to collect information on bathymetry, seabed features and objects in the water column (e.g. Multi beam echosounder, scientific echo-sounders/ fish-finders). They measure water depth by emitting rapid pulses of sound towards the seabed and measuring the sound reflected back.

Multibeam Echosounder (MBES) will be used during the marine survey to provide detailed 3 dimensional bathymetric mapping of the cable route corridor using multiple beams elongated in the across-track direction to cover a fan-shaped sector (or swath) (Figure 9). Measurements of the across-track beam from MBES showed 3 dB beam widths of 150-160°; in the along-track orientation beam width is narrow, typically ~1.5-3.0° (Crocker & Fratantonio 2016).

MBES is non-intrusive and does not interact with the seabed. The MBES system will be used will be confirmed following the appointment of a survey contractor but typical systems which can be taken as examples would be the R2 Sonic 2024, Kongsberg EM2040 or Teledyne Seabat T50 which would be hull mounted on the survey vessel.

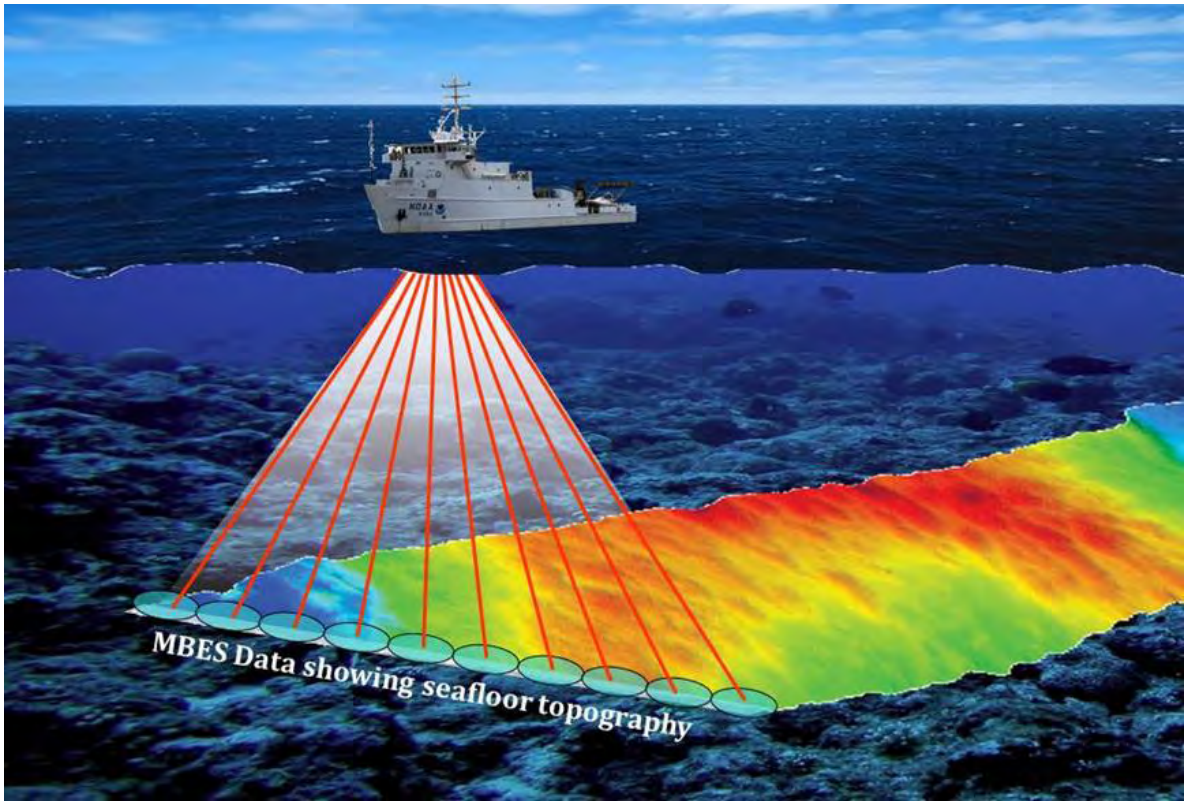

Figure 9 Graphic of MBES survey in operation.

The acoustic signal emitted by MBES systems is short duration, typically of a few milliseconds or less, and can be configured to within the range 0.05-10 ms for certain systems. Repetition rates are highly customisable, varying with signal frequency and water depth. Ping rates of up to 10-20 pings per second may be used in very high frequency systems, whereas there may be several seconds between pings in low-frequency deep-water applications.

For collecting information on the seabed, emitted sound frequencies are typically between 12 – 400 kHz depending on water depth, with surveys in continental shelf applications operating at between 70 to 150 kHz, and in shallower waters of less than 200 m using multi-beam echosounders operating at between 200 and 500 kHz The typical operating frequencies for the cable route survey within the licence application area will be in the range of 200kHz to 500kHz. (Danson 2005, Hopkins 2007, Lurton and DeReutier 2011).

Maximum sound source pressure levels of MBES have been reported as ranging from 210-245 dB re 1µPa at 1m with the highest levels corresponding to the lowest frequency systems (DECC 2011, Lurton and DeReutier 2011, Lurton 2016, BEIS 2020). The highest measured source levels among three MBES systems when operated at maximum power for central operating frequencies of ≥100 kHz was between Lp,pk 225-228 dB re 1µPa at 1m (LE,p 181-197 dB re 1µPa^2 s at 1m (Crocker & Fratantonio 2016).

Side-scan sonar

Side-scan sonar (SSS) is a seabed imaging technique used to provide high-resolution and detailed 2 dimensional imagery of the seabed for a variety of purposes. SSS involves the use of an acoustic beam to obtain an accurate image over a narrow area of seabed to either side of the instrument.

Piezoelectric transducers in the SSS generate high-frequency acoustic pulses which are directed either side of the tow fish. The transducers are oriented such that the acoustic signal covers a wide angle perpendicular to the path of the tow fish through the water, providing information on a strip either side of the device (port and starboard). The intensity of the acoustic reflections from the seafloor is recorded in a series of cross-track images. When stitched together along the direction of motion, these images form a waterfall view of the sea floor within the swath of the beam. The range (swath width) is dependent upon the frequency, power and other source configurations, but is typically between 50-300 m on both sides.

Analysis of SSS data can aid identification of seafloor sediment, surficial bedrock outcrops and geomorphology mapping. Obstacles rising proud of the seafloor, such as shipwrecks, boulders, pipelines, outfalls, exposed cables, fishing gear etc. can cast shadows on the resulting seafloor image where no acoustic signal is returned. The size of the shadow can be used to determine the size of the feature casting it (Figure 10).

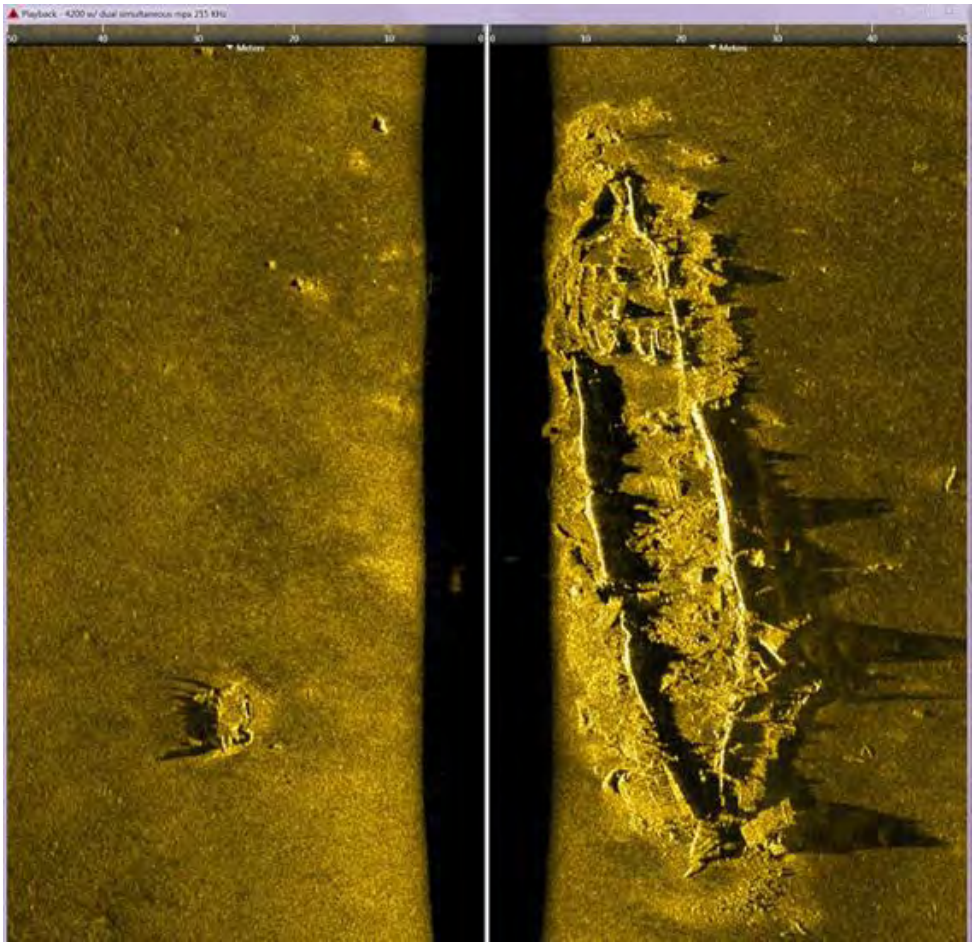

Figure 10. SSS image of shipwreck on seabed and nadir gap.

SSS is non-intrusive and does not interact with the seabed. The SSS system will be used will be confirmed following the appointment of a survey contractor but typical systems which can be taken as examples would be the Klein 3000 or Edgetech 4200 (Figure 11). The SSS may be hull mounted but is typically towed at depth behind the survey vessel on an armoured tow cable.

Figure 11. Deployment of Edgetech 4200 Tow fish

Acoustic signal durations of SSS systems are short (0.4ms – 1.0ms), but vary between models and configurations with longer signal durations are required to survey greater ranges. Repetition rates are highly customisable with ping rates of up to several tens of pings per second (Crocker & Fratantonio 2016).

The frequencies used by side-scan sonar are relatively very high, typically between 100 and 900 kHz. Most SSS systems offer real-time dual frequency operation which allows acquisition of both frequencies across a swath independently and simultaneously. The higher frequency produces higher resolution data and sharper images but with a narrow swath width while the lower frequency results in wider seabed coverage at lower resolutions.

SSS typically offer a selection of two operational frequencies in the range of 100-500 kHz, or may operate both simultaneously. Some models may offer an upper frequency of up to 900 kHz for applications requiring the highest resolution data. Across-track resolutions vary between 1-8 cm with finer resolution at higher operating frequencies. The typical operating frequencies for the cable route survey within the licence application area will be between 200 to 700 kHz.

The line spacing for the survey will be determined after consideration of all factors including water depth and prevailing conditions at time of survey. Generally for SSS, full coverage requires two passes with 100% overlap over a given area of sea-floor, with the two passes each insonifying the sea-floor from opposite directions to ensure targets are adequately imaged. This also ensures that the 'nadir gap' or the centre of the image directly under the path of the towfish is fully covered (Figure 10).

Sound source pressure levels of SSS systems have been reported typically in the range Lp,pk 200-240 dB re 1µPa at 1m. (BOEM 2016, BEIS 2020, DAHG 2014). Maximum calibrated source levels, (sound pressure) measured by Crocker & Fratantonio (2016) were Lp, pk 227 dB re 1µPa at 1m for a 0.1 ms pulse, whereas the highest energy source level of LE, p 205 dB re 1µPa^2 s at 1m corresponded to a longer pulse of 1.1 ms at lower maximum pressure (Lp, pk 210 dB re 1µPa at 1m).

Marine Magnetometer

A marine magnetometer is a passive towed sensor used to measure magnetic field strength and to detect variations in the total magnetic field of the underlying seafloor. The magnetometer does not transmit any signals into the marine environment.

Usually, the increased magnetization is caused by the presence of ferrous (unoxidized) iron on the seafloor or buried below the surface, whether from a shipwrecked vessel made of steel or from natural rock formations containing grains of magnetite. After corrections are made to measurements of the total magnetic field, magnetic data is used to locate existing infrastructure such as buried pipelines, undersea cables and to identify shipwrecks and potential unexploded ordnance.

Marine magnetometers are non-intrusive and do not interact with the seabed. They are towed at depth at least two and a half ship-lengths behind the survey vessel, so that the ship's magnetic field does not interfere with magnetic measurements. The marine magnetometer may be integrated and towed in tandem with the SSS. The marine magnetometer will be of the Caesium Vapour type and capable of recording variations in magnetic field strength during survey to an accuracy of ±0.5nT.

The marine magnetometer system to be used will be confirmed following the appointment of a survey contractor but typical systems which can be taken as examples would be the Geometrics G-882 or Marine Magnetics SeaSpy (Figure 12). The line spacing and coverage will generally match the SSS as they are towed in tandem and the parameters of the survey may be determined by the requirements of the Underwater Archaeology Unit of the National Monuments Service.

Figure 12. Marine Magnetics SeaSpy towfish.

Sub-bottom profiler

Sub-bottom profilers (SBPs) encompass a range of acoustic systems which are designed to collect information on the characteristics of strata below the seabed, establish changes in sediments and detect and image structures buried within the sediments (Figure 13). Shallow Sub-bottom profiling can penetrate the seabed to a range of depths, from a few metres to tens of metres depending on the geological conditions encountered, and with vertical resolutions from a few centimetres to a few metres. Most are towed behind a survey vessel, either at/near the surface or at depth, whereas some smaller devices may

be hull-mounted or lowered over the side of a vessel on a pole mount

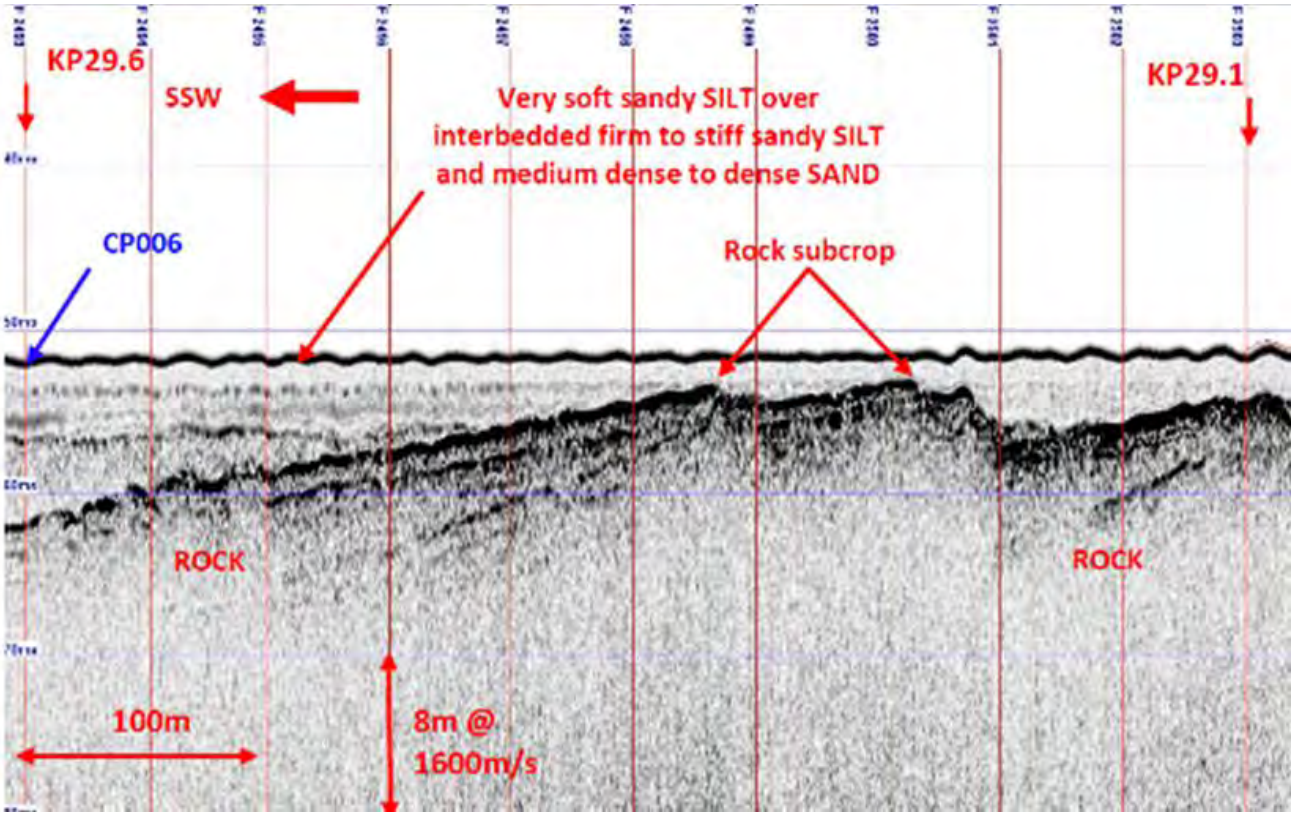

Figure 13. Interpreted SBP seabed profile.

Pulsed waveform SBPs generate an acoustic signal either through the impulsive physical processes of electrostatic discharge, as in sparkers, or electromechanically via accelerated water mass, as in boomers. All periodic waveform SBPs i.e. pingers, chirpers and parametric SBPs are electromechanical sources which employ piezoelectric transducers to generate an acoustic waveform by converting electrical energy into mechanical movement i.e. vibrations. Through the reverse of this process, the transducers can also detect sound. As such, these sources are highly customisable; in many cases, the signal is modulated in frequency and/or amplitude to improve its detectability and performance.

The systems most commonly used for high-resolution surveying are the boomer (such as the Applied Acoustics S-Boom), pinger (such as the Kongsberg GeoPulse), chirp (such as the Edgetech SB-424, Figure 14) and parametric chirp systems (such as the Innomar SES-2000). Whereas the boomer system provides best results for coarser sediments, the pinger and chirp systems deliver detail for finer sediments.

The objective of the SBP cable route survey is to investigate the upper layers of the seabed sediments for cable burial potential and installation risk from seabed obstructions such as subcropping rock formations and is not focussed on deep seabed conditions such as required for investigation of offshore wind farm foundations or deepwater seismic surveys carried out by Oil and Gas Exploration. The SBP system used for the survey will be confirmed following the appointment of a survey contractor and the most appropriate system chosen depending on the seabed, anticipated geological environment and the survey vessel capabilities.

Sound source pressure levels of various SBP systems have been reported typically in the range Lp,pk 185-247 dB re 1µPa at 1m. (Hartley Anderson 2020, Crocker & Fratantonio 2016). A summary of the Maximum Sound Pressure Levels for SBP systems is described in Table 4 below. The SBP survey is non-intrusive therefore does not interact with the seabed.

Figure 14. Edgetech SB-424 tow body.

Equipment Type	Frequency Range	Duration	*Maximum* Source Pressure Level (re 1µPa at 1 m)	Reference
Sub-bottom Profiler (SBP) - Pinger	2 kHz to 15 kHz	0.5 - 30 ms	214 dB.	Hartley Anderson 2020
Sub-bottom Profiler (SBP) - Chirper	2 kHz to 13 kHz	5 - 40 ms	185 - 215 dB.	Crocker & Fratantonio 2016, Hartley Anderson 2020
Sub-bottom Profiler (SBP) - Boomer	500 Hz to 15 kHz	0.5 - 1.0 ms	205 - 215 dB.	Crocker & Fratantonio 2016
Sub-bottom Profiler (SBP) - Parametric	4 to 15 kHz, 85 to 115 kHz	0.2 - 30 ms	238 - 247 dB. 200 - 206 dB.	Hartley Anderson 2020

Table 4. Typical SBP specifications.

Ultra-Short Baseline (USBL) Subsea Positioning

An Ultra-Short Baseline (USBL) is a subsea positioning system widely used by the offshore marine industry and scientific research vessels to accurately track the position of towed equipment and sensors. The USBL system consists of a transceiver mounted to the survey vessel, and transponders on the towed equipment.

To calculate a subsea position, the USBL calculates both a range and an angle from the transceiver to the subsea beacon. Angles are measured by the transceiver, which contains an array of transducers. The transceiver emits an acoustic signal at predetermined periods (often 0.5 seconds) which is returned by the transponder and allows for the bearing and distance to be calculated.

USBL systems are designed for close range transmission and thus typically emit pulses of medium frequency sound (20 to 50 kHz). Manufacturers report SPL values of 194 to 207dB re 1µPa at 1m depending on the model used, taking as an example the higher range of USBL source (Kongsberg HiPAP) with a SPL of 207dB re 1µPa at 1m.

Cone Penetration Test (CPT)

The survey vessel will position itself over the target position to carry out the CPT. The seabed CPT rig (such as a Neptune 3000, Figure 15) is deployed to the seabed from the vessel crane, A-frame or dedicated Launch and Recovery System (LARS). Once on the seabed, in a stable position, a steel rod with a conical tip (typically an apex angle of 60° and a diameter of 35.7 mm) is pushed at a steady rate into the seabed until it reaches target penetration depth of 3 to 6m or refusal. The penetration resistance at the tip and along a section of the shaft (friction sleeve) is measured and recorded for later analysis

Refusal is indicated by peak system thrust, excessive load on the tip or excessive inclination of the cone. If target penetration depth is not met, the CPT rig may be moved to a nearby position on the seabed and the test repeated. The time taken to complete a shallow CPT is typically less than 10 minutes but the total time in the water from deployment to recovery may be 1 to 2 hours at each position, depending on water depth and sea state.

There is very little published information on the sound pressure levels generated from CPT equipment, collected either from field experimentation or from manufactures specifications. Data from a similar device, deep boring, indicates that sound pressure source levels are typically within the range 118 - 145 decibels (dB) (BOEM 2012, EIRGRID 2014).

Figure 15. Neptune 3000 CPT rig.

Gravity Core

Gravity corers (Figure 16) provide a rapid means of obtaining a continuous core sample in water depths from a few metres down to several thousand metres. A gravity corer consists of a steel tube in which is inserted a plastic liner to hold the core sample. Gravity corers are commonly used for cable route investigations.

A set of heavy weights, up to 750 kg, is attached at the top end of the tube above which is a fin arrangement to keep the corer stable and vertical during its fall to the seabed. The sampler penetrates the seabed under its own weight. Normal practice is to lower the device to within 10 m of the seabed before releasing. The penetration depth is between 1 m and 3 m. Penetration in stiffer clays or sands is usually limited

The penetrating end of the tube is fitted with a cutter and a concave spring-steel core-catcher to retain the sample when the corer is retracted from the soil. The suction caused when withdrawing a core barrel from a soft soil such as clay, can pull the sample from the barrel, or in other ways disturb its homogeneity. By fitting a piston above the sample, the partial vacuum caused above the piston, when the barrel is withdrawn, keeps the sample from being pulled out of the tube.

Upon refusal or at target depth of 3m, the sampler is recovered on deck where the sample is split, typically into 1m lengths, logged, sealed and stored for later laboratory analysis. The typical diameter of the liner is in the region of 90mm with a typical maximum diameter of 120mm.

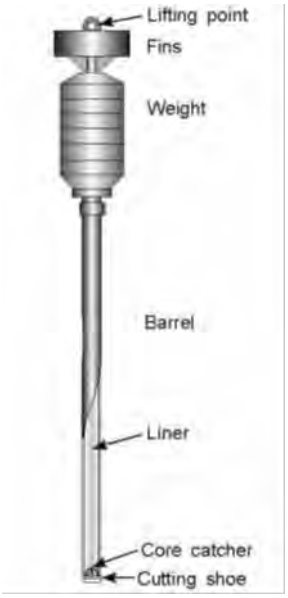

Figure 16. Gravity Corer schematic.

Vibrocorer

Vibrocorers are used wherever soil conditions are unsuited to gravity corers or where greater penetration of the seabed is necessary. Vibrocore is best suited to non-cohesive soils (e.g. gravel or sand) as samples recovered are considered disturbed. Vibrocorers are commonly used for cable route investigations.

To penetrate soils such as dense sands and gravels, or to reach deeper into stiff clays, rather than depending on a gravity free-fall, the corer's barrel is vibrated, thus facilitating its penetration into the soil. This vibration energy allows the core barrel to penetrate the sediments under self-weight. In other respects, the barrel and sample retention systems are similar to gravity corers.

The typical vibrocorer consists of a tall steel frame and tripod support. Within the frame is a standard 102 mm steel coring barrel in which is inserted a PVC liner to contain the sample. The typical diameter of the PVC liner is in the region of 90mm with a typical maximum diameter of 120mm. A spring steel core catcher is fitted to the cutting shoe, as with the gravity corer. Two linear electric motors enclosed in a pressure housing provide the vibratory motion; the core barrel is attached directly to the motor housing. Power is fed to the motors via an electrical control line from the survey vessel.

Once in motion, the heavy motor housing provides the mass to drive the core barrel into the seabed. The penetration depth can be from 2m to 8m depending on seabed conditions. A typical 6 m vibrocorer will weigh nearly two tonnes and requires a crane for A-Frame or deployment and recovery. Vibrocorers come with barrel lengths of 3m, 6m and 8m. A normal coring operation in 100 m water depth will take about one hour.

Once coring is started, the core barrel will penetrate to the target depth. Upon refusal or at target depth of 3m, the vibrocore is recovered on deck where the sample in the liner is removed from the barrel, the sample is split, typically into 1m lengths, logged, sealed and stored for later laboratory analysis.

The sounds produced by the operation of a vibrocorer on the seabed consist of a series of impulses corresponding to the movement and impacts of the mechanics of the vibrating motion from the oscillating motors on the core barrel. Expected sound pressure levels generated by vibrocore equipment would be approximately 187.4 dB re 1µPa at 1m (LGL, 2010),

Figure 17. Deployment of Vibrocorer from Survey Vessel.

Grab samplers

Grab samplers are one of the most common methods of retrieving soil samples from the seabed surface. The grab sampler is a device that simply grabs a sample of the topmost layers of the seabed by bringing two steel clamshells together and cutting a bite from the seabed surface to a depth of 0.1 to 0.5m. The information they provide can be applied in a number of applications such as seabed classification, environmental sampling, chemical and biological analysis and ground truthing for morphological mapping and geophysical survey. Grab samplers can be used to recover samples of most seabed soils, although care is needed in selecting the right size unit for the task.

There are various grab sampler types to include but not limited to Van Veen (single or double, Figure 18), Hamon, Shipek and Day Grab samplers. Generally, some variants may come both as single or double, and in a variety of different sizes. The grab sampler comprises two steel clamshells acting on a single or double pivot. The shells are brought together either by a powerful spring (Shipek type) or powered hydraulic rams operated from the survey vessel.

In operation, the grab is lowered from the survey vessel to the seabed with the clamshells in the open position and which trigger shut when the sampler is in contact with the seafloor. The shells swivel together in a cutting action and retains a sample of seabed. The sampler is then recovered to the survey vessel for visual inspection, processing, logging and transfer to suitable sample containers for storage and later laboratory analysis. Typical performance rates are between three and four samples per hour.

The smaller Shipek type grab sampler is useful for ground truthing geophysical surveys for the surface layer, and samples are taken to about 0.1 m below the seabed. Larger hydraulic grabs are capable of recovering relatively intact samples of consolidated soils to a depth of about 0.5 m. In areas of large cobbles or

boulders, grabs can become jammed open and their contents washed away during recovery to the surface. However, the hydraulic grab is more likely to recover cobbles and small boulders than any other system, and in this respect is invaluable. Various grabs will be available for the survey to ensure adequate sampling equipment for various sediment types.

Figure 18. Single and Double Van Veen Grab.

SURVEY VESSELS

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.

The marine survey works will consist of a dedicated marine spread which will be suitable for the scope of work required, the water depth and the anticipated seabed conditions of the survey area. The exact equipment to be used will be confirmed following a tender process to procure the marine survey contractor.

All survey vessels will be fit for purpose, will possess all relevant classification certificates and capable of safely undertaking the survey work required. 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. Prior to survey works taking place under Licence, both Project Supervisor for Design Process (PSDP) and Project Supervisor for Construction Stage (PSCS) will be appointed under the relevant legislation and project / survey specific HSE plans will be put in place which will form part of the survey project execution plans.

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, etc.) 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.

Survey vessels will generate some subsea noise in the marine environment from engine noise and dynamic positioning thrusters. Shipping noise is typically within the 50-300 Hz frequency band and is the dominant noise source in deeper water (DECC, 2011). Propellers on vessels all have the potential to produce cavitation noise. This sound is caused by vacuum bubbles that were generated by the collapse of bubbles created by the spinning of the propellers.

Acoustic broadband source pressure levels typically increase with increasing vessel size, with smaller vessels (<50 m) having source pressure levels 160-175 dB (re 1µPa at 1m), medium size vessel (50-100 m) 165-180 dB (re 1µPa at 1m) and large vessels (>100 m) 180-190 dB (re 1µPa at 1m) (DECC, 2011). Every vessel has a unique noise signature and for each vessel this can change in response to a number of factors, including; ship speed, operational status, vessel load, the condition of the vessel and even the properties of the water that the vessel is operating in.

4.2.4 Marine Survey and Site Investigations Sound Pressure Level Summary

All survey works that involve the use of acoustic instrumentation will follow the Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Waters, 2014.

The ranges of noise frequency and sound pressure levels associated with all the surveys outlined in previous sections is summarised in Tables 5. and 6 below. It can be noted that as the focus of the cable route surveys within the licence application area is the seabed surface and upper layers of seabed sediments and generally obtaining higher resolution data, the geophysical equipment such as MBES and SSS is generally operated more towards the higher end of the frequency range where possible.

4.2.5 Timeline and Duration of Survey Activities

The intention is to commence the survey as soon as feasible following license award, taking into account survey vessel availability, the overall 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 marine licence is complete. It is anticipated that the marine geophysical survey and site investigations activities within the marine licence area will take less than 6 weeks in total and will be completed over a 6 month period.

The estimated time required to complete the cable route survey campaign activities is described in Table 7 below.

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 5. 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.	37	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	33	N/A	N/A	N/A
Vibrocorer	Retrieve a seabed sediment sample by penetrating seabed with a vibrating steel core barrel	33	30 Hz	187.4 dB.	LGL 2010
Grab Samples	Collect small sediment samples from seabed surface with clamshell mechanism	19	N/A	N/A	N/A

Table 6. Marine Site Investigation Activities.

Activity	Typical Time Period Required for Activity	Total Number of Site Investigation Locations	Total Time for Survey Activity	Seabed Area per Location	Seabed Area per Activity (ha)	Total Area (ha)	Area Directly Affected as % of Licence Application Area
Inshore Geophysical Survey	3 to 4 days (weather and sea state dependent)	400 - 700 m cable route corridor (500m nominal)	3 to 4 days (weather and sea state dependent)	N/A	281 ha	281 ha	3.49764%
Offshore Geophysical Survey	14 to 18 days (weather and sea state dependent)	500 - 1500 m cable route corridor (500m nominal)	14 to 18 days (weather and sea state dependent)	N/A	7753 ha	7753 ha	96.50236%
CPT	30 minutes - 2 hours in any one location	37	74 hours within total 9 days of Site Investigations campaign (weather and sea state dependent, excluding transit between locations)	8m²	0.0008 ha	0.0296 ha	0.00037%
Gravity Corer	30 minutes - 2 hours in any one location	33	66 hours within total 9 days of Site Investigations campaign (weather and sea state dependent, excluding transit between locations)	1m²	0.0001 ha	0.0033 ha	0.00004%
Vibro Corer	30 minutes - 2 hours in any one location	33	66 hours within total 9 days of Site Investigations campaign (weather and sea state dependent, excluding transit between locations)	8m²	0.0008 ha	0.0264 ha	0.00033%
Grab Samples	20 minutes - 45 minutes in any one location	19	12 hours within total 9 days of Site Investigations campaign (weather and sea state dependent, excluding transit between locations)	0.5m²	0.00005 ha	0.00095 ha	0.00001%

Table 7. Estimated Time and Duration of Survey Activities

4.3 Zone of Influence

As outlined in Office of the Planning Regulator (2021) "*The zone of influence of a proposed development is the geographical area over which it could affect the receiving environment in a way that could have significant effects on the Qualifying Interests of a European site. This should be established on a case-by-case basis using the Source-Pathway-Receptor framework and not by arbitrary distances (such as 15 km)*."

IEEM (2006) defined the zone of influence as "*the areas/resources that may be affected by the biophysical changes caused by activities associated with a project*". In order to define the extent of the study area for assessment, all elements of the project were assessed and reviewed in order to identify the spatial scale at which ecological features could be impacted. Due to the limited temporal and geographical scale of the project and the use of Best Available Techniques (BAT), the slow speed of the survey vessel (4kn), it is considered that the potential impacts of the proposed works could only extend beyond 500 m of the subtidal elements of the project due to noise generation and potential disturbance of sediment. However, as outlined in IEEM (2010) "*in the marine environment it is more difficult to define the geographical framework precisely and to accommodate all factors that should influence the definition of value, e.g. size or conservation status of populations or the quality of habitats*." As a result, "*it is very unlikely that the impacts on integrity can be evaluated without considering functions and processes acting outside the site's formal boundary*." It is important to note that unlike other maritime operations, the research vessel speed will be very slow (4 knots). However, the project has the potential to introduce noise into the marine environment particularly through the use of Ultra-Short Baseline (USBL), Multibeam Echosounder (MBES), and Side-scan Sonar (SSS) equipment, which may extend the effects of the project beyond 2km. In the interest of carrying out a thorough assessment in line with both the Habitats Directive, and the precautionary principle, the ZoI was expanded for this assessment to include designated sites within 15km of the proposed development site, and sites beyond 15km that have the potential to be impacted by the proposed survey works based on the Source-Pathway-Receptor model. This was done in the interest of ensuring that any potential impacts, however indirect or remote, were taken into account.

4.3.2 Marine Mammals

4.3.2.1 Seals and Cetaceans

As outlined in NPWS[2] "*Cetaceans account for 48% of all the native species of mammals, both marine and terrestrial, recorded in Ireland and Irish waters are thought to contain important habitats for cetaceans within the northeast Atlantic. To date, 24 species of cetacean, or 28% of species described worldwide, have been recorded in Ireland. Irish cetaceans include six species of baleen whale and eighteen species of toothed whale, including five species of beaked whale. Twenty-two of these have been reported stranded ashore and 20 species observed at sea. Two species (Pygmy sperm whale and Gervais' beaked whale) are only known from stranded individuals and two species (Northern right whale and White whale/beluga) have only been recorded historically, with neither species occurring in the stranding record so far.*

Ireland also has two species of seals, the Common Seal (or Harbour Seal) and the Grey Seal. Whilst both species haul out on land for key stages of their life history, the majority of their time is spent in the marine environment.

In Ireland, the 1992 EC Habitats Directive as transposed by the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011) requires that both seal species and all cetaceans occurring in Ireland are maintained at favourable conservation status. Under Article 12 of the Directive, all cetaceans should receive strict protection within the Exclusive Economic Zone. Under Article 4 of the Directive, Special Areas of Conservation (SACs) must be proposed for the following species:"

- Bottlenose Dolphin
- Harbour Porpoise
- Common Seal
- Grey Seal

[2] https://www.npws.ie/marine/marine-species/cetaceans

The protection afforded to marine mammals in Ireland is summarised below:

- Harbour Porpoise Annex II of EC Habitats Directive Annex IV of EC Habitats Directive/Protected species of Wildlife (Amendment) Act/OSPAR List of Threatened and Declining Species and Habitats
- Bottlenose Dolphin Annex II of EC Habitats Directive/Annex IV of EC Habitats Directive/Protected species of Wildlife (Amendment) Act
- All Cetacea Annex IV of EC Habitats Directive/Protected species of Wildlife (Amendment) Act
- Grey Seal/Harbour Seal Annex II of EC Habitats Directive/Protected species of Wildlife (Amendment) Act

Recent research suggests that the foraging range for grey seals is 448km Carter et al., 2022). Further, the foraging range for harbour seal is estimated at 273 km (Carter et al., 2022). Further, there are a number of SACs designated for cetaceans (harbour porpoise and common dolphin) in Ireland. As these species are a highly mobile species, and are designated as qualifying interests of Natura 2000 sites outside the Irish EEZ, specific Management Units (MU) are utilised to assess the potential impacts of a proposed project on these species, based on the JNCC Review of Management Unit boundaries for cetaceans in UK waters (2023) methodology[3]. The proposed project is located within the Celtic and Irish Seas MU for harbour porpoise, and the Irish Sea MU for bottlenose dolphin (IAMMWG, 2015). The ZoI of the proposed project has been extended to include the potential for significant effects on grey seal, harbour seal, harbour porpoise and common bottlenose dolphin as there is potential for these mobile marine mammals to enter the ZoI from within the Celtic and Irish Seas MU.

4.3.2.2 Otter

Otters are a semi-aquatic species who use the marine environment for foraging and are protected under Annex II and Annex IV of the Habitats Directive. As detailed by Reid et al. (2013), female otters have territories of 7.5 ± 1.5km in length along a riverine environment and 6.5 ± 1.0km in coastal environments, while male otter territory along rivers is approximately 13.2 ± 5.3km in length with a high degree of variability. Out of an abundance of caution, the ZoI of the proposed project has been extended to include the potential for significant effects on otter that may enter the proposed area of works.

4.3.3 Migratory Fish

In relation to Atlantic salmon, it has been found that salmon populations from southeast Ireland appear to migrate towards the shelf edge before crossing the Atlantic towards Greenland for feeding (Rikardson et al., 2021). The recorded areas of salmon migration are demonstrated in Figure A.1 in Appendix I.

Recent studies on Twaite Shad recorded movement of up to 950km from the River Severn with one individual detected in the Blackwater Estuary (Davies et al. 2020). However given the spatial and temporal nature of the proposed works, and the distance to this SAC, the proposed project is considered too distant from Natura 2000 sites where it is a feature of interest, for any significant interaction to occur. Similarly distant SACs designated for lamprey species were considered too distant for any significant interaction to occur.

[3] https://data.jncc.gov.uk/data/b48b8332-349f-4358-b080-b4506384f4f7/jncc-report-734.pdf

4.4 Identification of Relevant Natura 2000 Sites

4.4.1 Management of the Site

The proposed works are not directly connected with, or necessary to, the management of Natura 2000 sites.

4.4.2 Relevant Natura 2000 Sites to the Proposed Project

A key factor in the consideration as to whether or not a particular European site is likely to be affected by the proposed survey works is its distance from the works location. It is generally, but not necessarily, the case that the greater the distance from the plan or project the smaller the likelihood of impacts. In this case, the proposed survey works are located within the North Dublin Bay SAC, Rockabill to Dalkey Island SAC, South Dublin Bay and River Tolka Estuary SPA, North-West Irish Sea SPA and North Bull Island SPA.

Given that the proposed survey route is located within the North Dublin Bay SAC, Rockabill to Dalkey Island SAC, South Dublin Bay and River Tolka Estuary SPA, North-West Irish Sea SPA, and North Bull Island SPA, out of an abundance of caution, in the absence of mitigation, during the survey works there is the potential for significant effects on the qualifying interests of these European Sites through physical impact on habitats and species. Further information is required to assess the potential effects of the proposed works on European Sites.

In relation to marine mammals, given that the proposed survey route is located within Rockabill to Dalkey Island SAC, there is potential for marine mammals from Rockabill to Dalkey Islands SAC (*Phocoena phocoena* (harbour porpoise)) to be in the vicinity of the proposed survey works. Although Lambay Island SAC is located 10.4km from the proposed cable survey corridor, the qualifying interests of this SAC (harbour seal and grey seal) are mobile species and there is the potential for these species to be in the vicinity of the proposed survey works. Further, following an examination of relevant MU's and foraging areas for grey seal and harbour seal, the following Natura 2000 sites have been screened IN due to the potential movements of harbour porpoise, common bottlenose dolphin, harbour seals, and grey seals (qualifying interests of these SAC):

- Slaney River Valley SAC (IE)
- Saltee Islands SAC (IE)
- Roaring Water Bay and Islands SAC (IE)
- Blasket Islands SAC (IE)
- North Anglesey Marine/Gogledd Môn Forol (UK)
- West Wales Marine / Gorllewin Cymru Forol (UK)
- Pen Llyn a'r Sarnau/Lleyn Peninsula and the Sarnau (UK)
- Murlough (UK)
- North Channel (UK)
- Strangford Lough (UK)
- Cardigan Bay / Bae Ceredigion (UK)
- Pembrokeshire Marine / Sir Benfro Forol (UK)
- The Maidens SAC (UK)
- Bristol Channel Approaches/Dynesfeydd Môr Hafren (UK)
- Lundy (UK)
- Isles of Scilly Complex (UK)
- Nord Bretagne DH (FR)
- Récifs et landes de la Hague (FR)
- Anse de Vauville (FR)
- Mers Celtiques – Talus du golfe de Gascogne (FR)
- Banc et récifs de Surtainville (FR)
- Côte de Granit rose-Sept-Iles (FR)
- Trégor – Goëlo (FR)
- Baie de Morlaix (FR)
- Abers – Côtes des legends (FR)
- Rivière Leguer, forêts de Beffou, Coat an Noz et Coat an Hay (FR)
- Cap d'Erquy-Cap Fréhel (FR)
- Ouessant-Molène (FR)

- Chausey (FR)
- Baie de Saint-Brieuc – Est (FR)
- Côtes de Crozon (FR)
- Baie du Mont Saint-Michel (FR)
- Baie de Lancieux, Baie de l'Arguenon, Archipel de Saint Malo et Dinard (FR)
- Estuairie de la Rance (FR)
- Chaussée de Sein (FR)
- Récifs du talus du golfe de Gascogne (FR)

Further information is required to assess the potential effects of the proposed works on these European Sites.

All Natura 2000 sites within 15km, and beyond 15km with the potential for significant effects on Natura 2000 sites (including Irish, French, and UK sites), are listed in Tables 8-10. The qualifying interests, and the potential impact of the development on each European site and qualifying interest, are screened in/out in Table 11.

The proposed Cable Route (incl. Cable Route Option), Survey Route Corridor, and Works is demonstrated in Figures 19-22. SPAs (incl. Marine SPAs), SACs, and Waterbodies proximate to the proposed Cable Route and Survey Route Corridor within Dublin Bay are demonstrated in Figures 23 - 25. SACs and SPAs within 10km of the proposed Cable Route and Survey Route Corridor within Dublin Bay are demonstrated in Figures 26 - 28. SACs and SPAs within 15 km of the proposed Cable Route and Survey Route Corridor are seen in Figures 29 - 31. The proposed fibre optic survey route in relation to the 12 nm limit, Irish EEZ, Designated Irish Continental shelf and Offshore SAC's (no offshore SAC's in the area) is demonstrated in Figure 32. IE, FR, & UK SACs designated for Grey Seals (*Halichoerus grypus*) within 448km of the Proposed Survey Route Corridor are demonstrated in Figure 33. IE, FR, & UK SACs designated for Harbour Seals (*Phoca vitulina*) within 273km of the Proposed Survey Route Corridor are demonstrated in Figure 34. IE, FR, & UK SACs located within the Management Units (MU) for Bottlenose dolphin (*Tursiops truncatus*) and Harbour Porpoise (*Phocoena phocoena*) are demonstrated in Figures 35 & 36.

Table 8. Proximity to designated sites of conservation importance (IE)

Designation	European Site	Distance
SAC	North Dublin Bay SAC	**Within**
SAC	Rockabill to Dalkey Island SAC	**Within**
SAC	Howth Head SAC	500 m
SAC	South Dublin Bay SAC	680 m
SAC	Codling Fault Zone SAC	3.7 km
SAC	Baldoyle Bay SAC	4.1 km
SAC	Ireland's Eye SAC	4.4 km
SAC	Malahide Estuary SAC	9.4 km
SAC	Lambay Island SAC	10.4 km
SAC	Wicklow Mountains SAC	13.9 km
SAC	Rogerstown Estuary SAC	14.3 km
SAC	Slaney River Valley SAC	44 km
SAC	Saltee Islands SAC	131 km
SAC	Roaring Water Bay and Islands SAC	295 km
SAC	Blasket Islands SAC	319 km
SPA	North Bull Island SPA	**Within**
SPA	South Dublin Bay and River Tolka SPA	**Within**
SPA	North-West Irish Sea SPA	**Within**
SPA	Howth Head Coast SPA	200 m
SPA	Ireland's Eye SPA	3.9 km
SPA	Baldoyle Bay SPA	4.6 km
SPA	Dalkey Islands SPA	7.4 km
SPA	Lambay Island SPA	10.1 km
SPA	Malahide Estuary SPA	10.1 km
SPA	Rogerstown Estuary SPA	13.8 km
SPA	Wicklow Mountains SPA	14.3 km

Table 9. Proximity to designated sites of conservation importance (UK)

Designation	European Site	Distance
SAC	North Anglesey Marine/Gogledd Môn Forol	1.9 km **(Within MU for Harbour Porpoise)**
SAC	West Wales Marine / Gorllewin Cymru Forol	56 km **(Within MU for Harbour Porpoise)**
SAC	Pen Llyn a'r Sarnau/Lleyn Peninsula and the Sarnau	59.4 km **(Within MU for Bottlenose Dolphin)**
SAC	Murlough	72.7 km
SAC	North Channel	73.5 km **(Within MU for Harbour Porpoise)**
SAC	Strangford Lough	88.3 km
SAC	Cardigan Bay / Bae Ceredigion	116.8 km **(Within MU for Bottlenose Dolphin)**
SAC	Pembrokeshire Marine / Sir Benfro Forol	151 km
SAC	The Maidens SAC	152.8 km
SAC	Bristol Channel Approaches/Dynesfeydd Môr Hafren	180.6 km **(Within MU for Harbour Porpoise)**
SAC	Lundy	235.9 km
SAC	Isles of Scilly Complex	372.4 km

Table 10. Proximity to designated sites of conservation importance (FR)

Designation	European Site	Distance
SAC	Nord Bretagne DH	426.8 km **(Within MU for Harbour Porpoise)**
SAC	Récifs et landes de la Hague	457.8 km **(Within MU for Harbour Porpoise)**
SAC	Anse de Vauville	465.9 km **(Within MU for Harbour Porpoise)**
SAC	Mers Celtiques – Talus du golfe de Gascogne	468.8 km **(Within MU for Harbour Porpoise)**
SAC	Banc et récifs de Surtainville	483.9 km **(Within MU for Harbour Porpoise)**
SAC	Côte de Granit rose-Sept-Iles	487.5 km **(Within MU for Harbour Porpoise)**
SAC	Trégor – Goëlo	492.9 km **(Within MU for Harbour Porpoise)**
SAC	Baie de Morlaix	510.7 km **(Within MU for Harbour Porpoise)**
SAC	Abers – Côtes des légendes	515.8 km **(Within MU for Harbour Porpoise)**
SAC	Rivière Leguer, forêts de Beffou, Coat an Noz et Coat an Hay	519 km **(Within MU for Harbour Porpoise)**
SAC	Cap d'Erquy-Cap Fréhel	530.9 km **(Within MU for Harbour Porpoise)**
SAC	Ouessant-Molène	532.4 km **(Within MU for Harbour Porpoise)**
SAC	Chausey	533.4 km **(Within MU for Harbour Porpoise)**
SAC	Baie de Saint-Brieuc - Est	549.1 km **(Within MU for Harbour Porpoise)**
SAC	Côtes de Crozon	560 km **(Within MU for Harbour Porpoise)**
SAC	Baie du Mont Saint-Michel	561.7 km **(Within MU for Harbour Porpoise)**
SAC	Baie de Lancieux, Baie de l'Arguenon, Archipel de Saint Malo et Dinard	562.5 km **(Within MU for Harbour Porpoise)**
SAC	Estuairie de la Rance	570.6 km **(Within MU for Harbour Porpoise)**
SAC	Chaussée de Sein	580 km **(Within MU for Harbour Porpoise)**
SAC	Récifs du talus du golfe de Gascogne	598 km **(Within MU for Harbour Porpoise)**

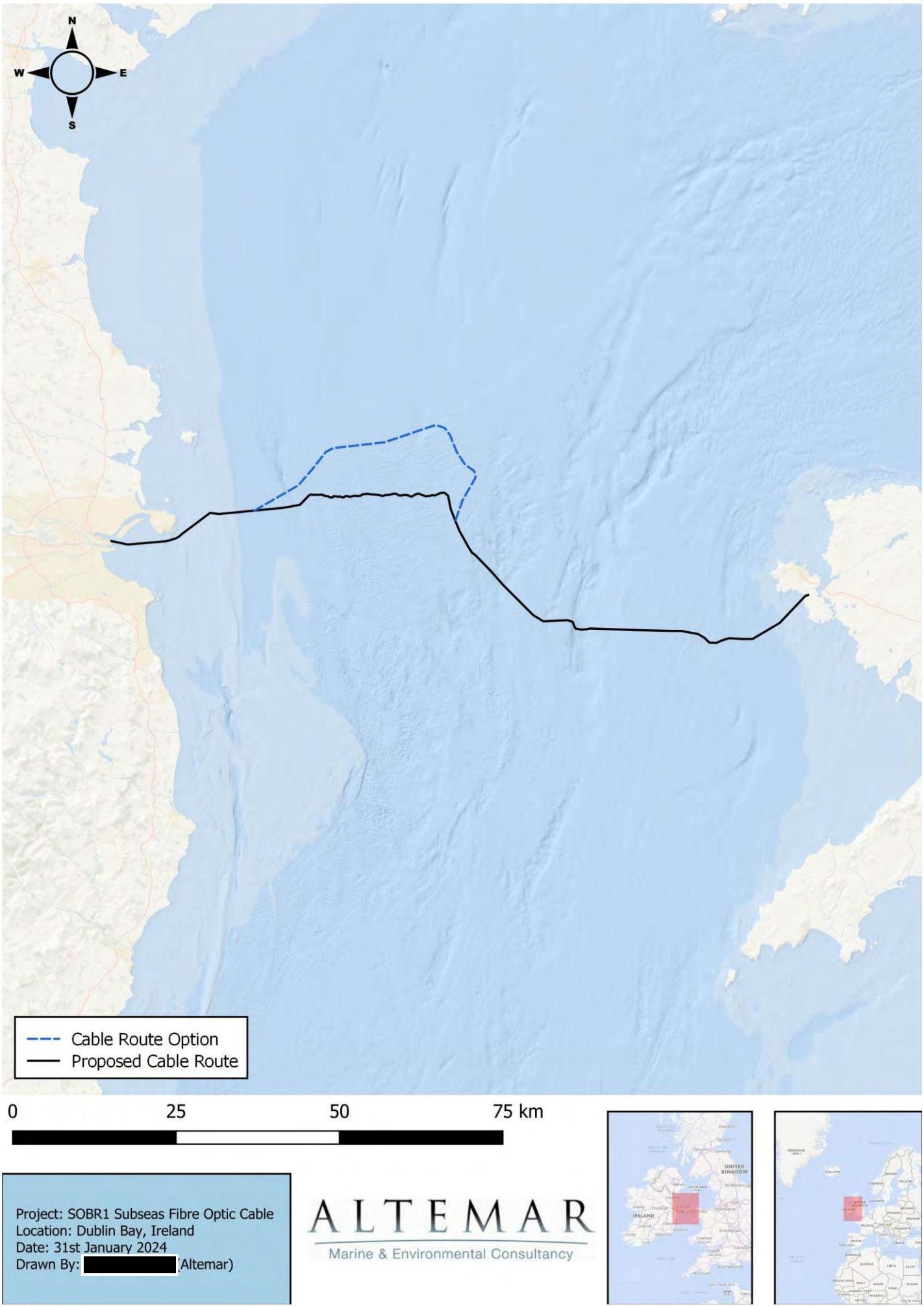

Figure 19: Proposed Cable Route (incl. Cable Route Option)

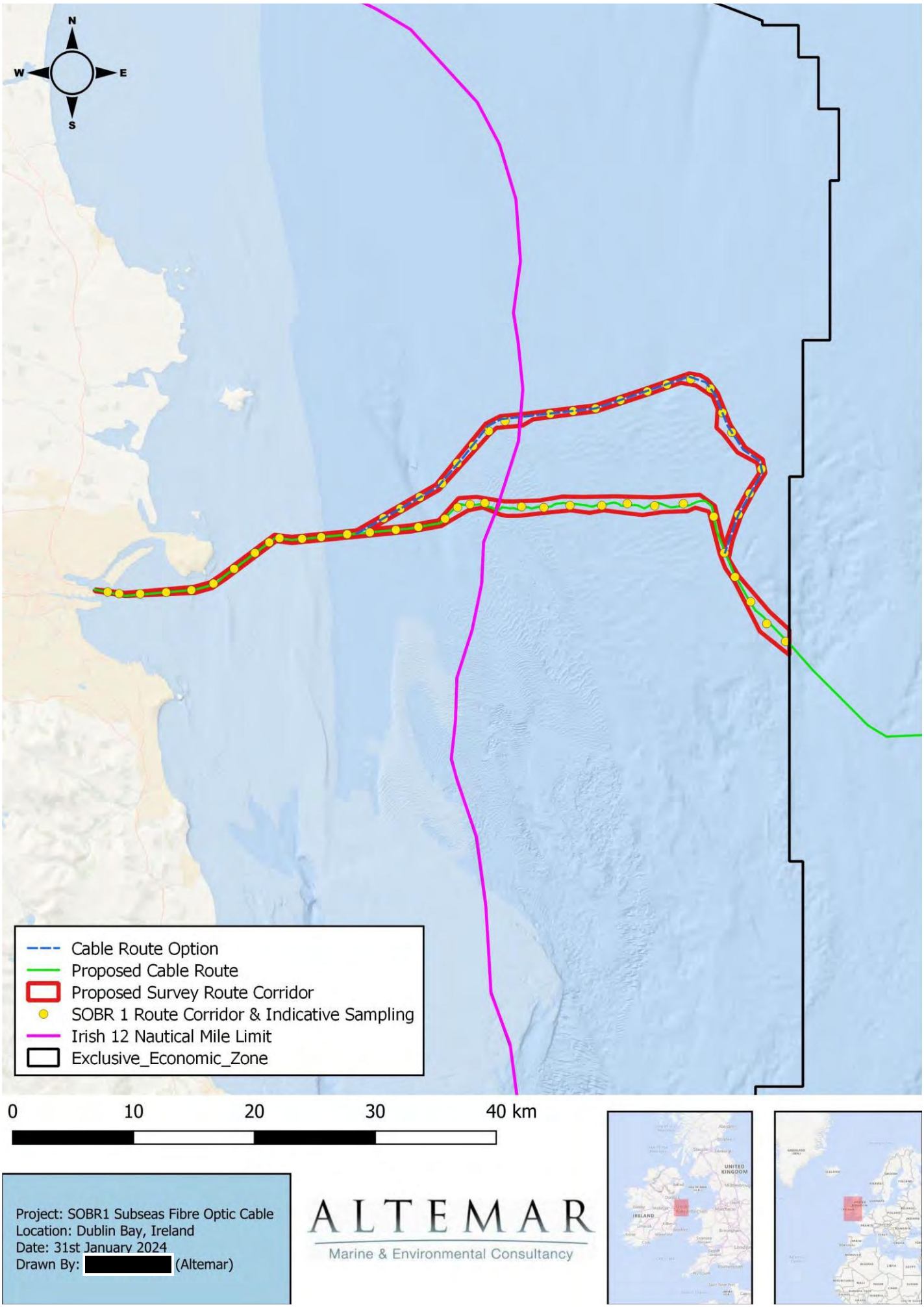

Figure 20: Proposed Cable Route, Survey Route Corridor, and Works (to Irish Exclusive Economic Zone).

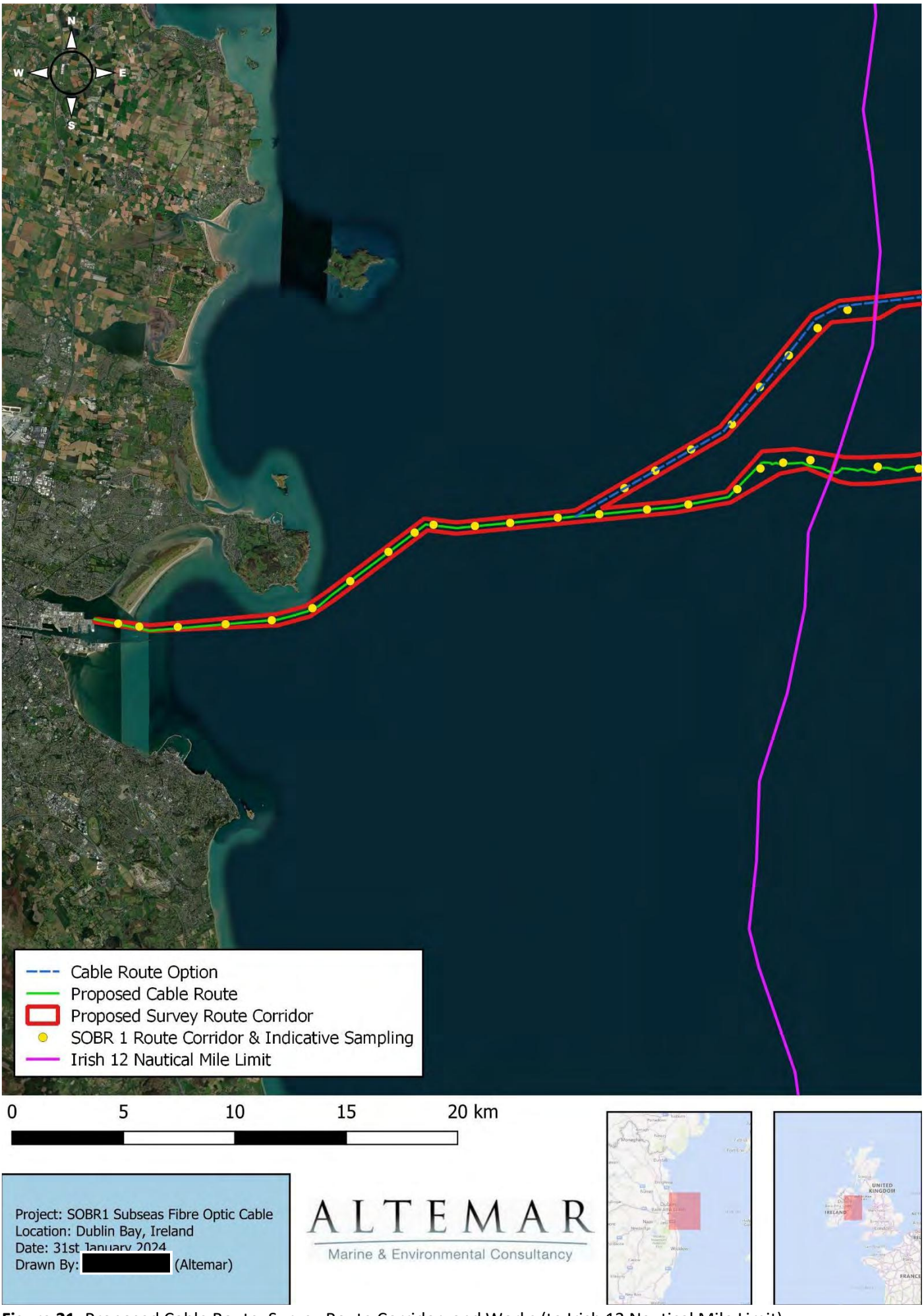

Figure 21: Proposed Cable Route, Survey Route Corridor, and Works (to Irish 12 Nautical Mile Limit).

Figure 22. Proposed Cable Route and Survey Route Corridor within Dublin Bay (incl. High / Low Water Mark)

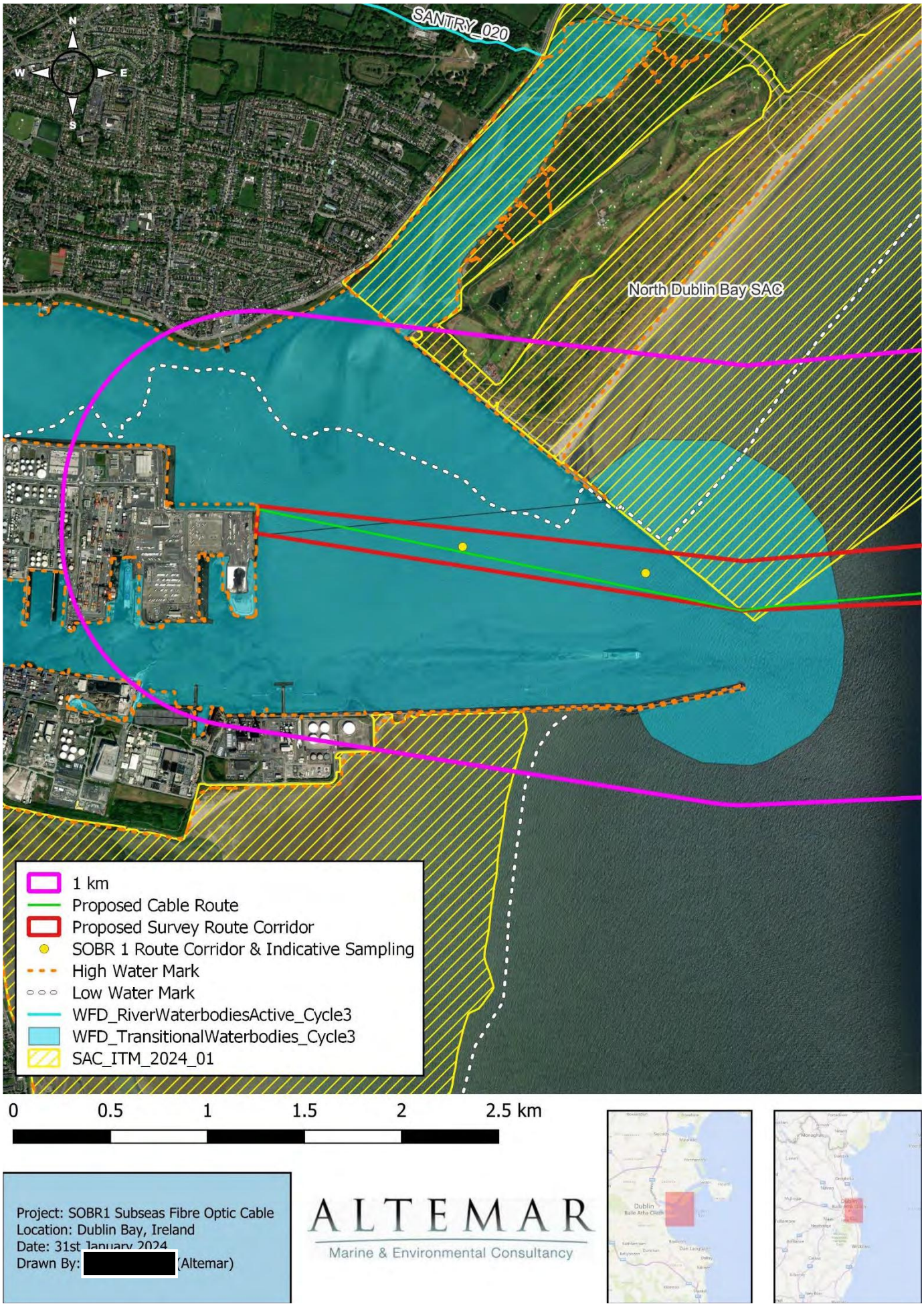

Figure 23: Special Areas of Conservation and Waterbodies proximate to the proposed Cable Route and Survey Route Corridor within Dublin Bay.

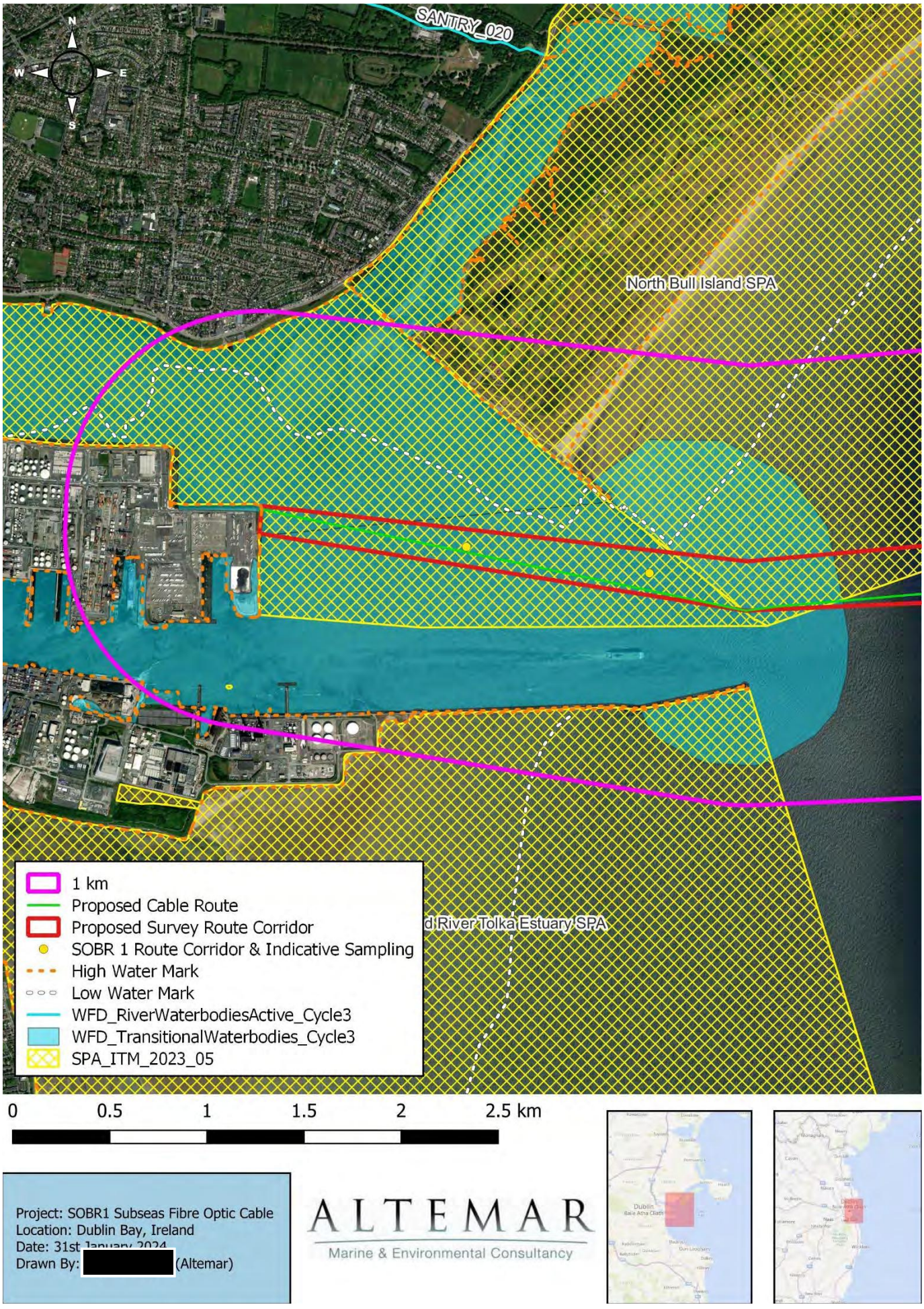

Figure 24: Special Protection Areas and Waterbodies proximate to the proposed Cable Route and Survey Route Corridor within Dublin Bay.

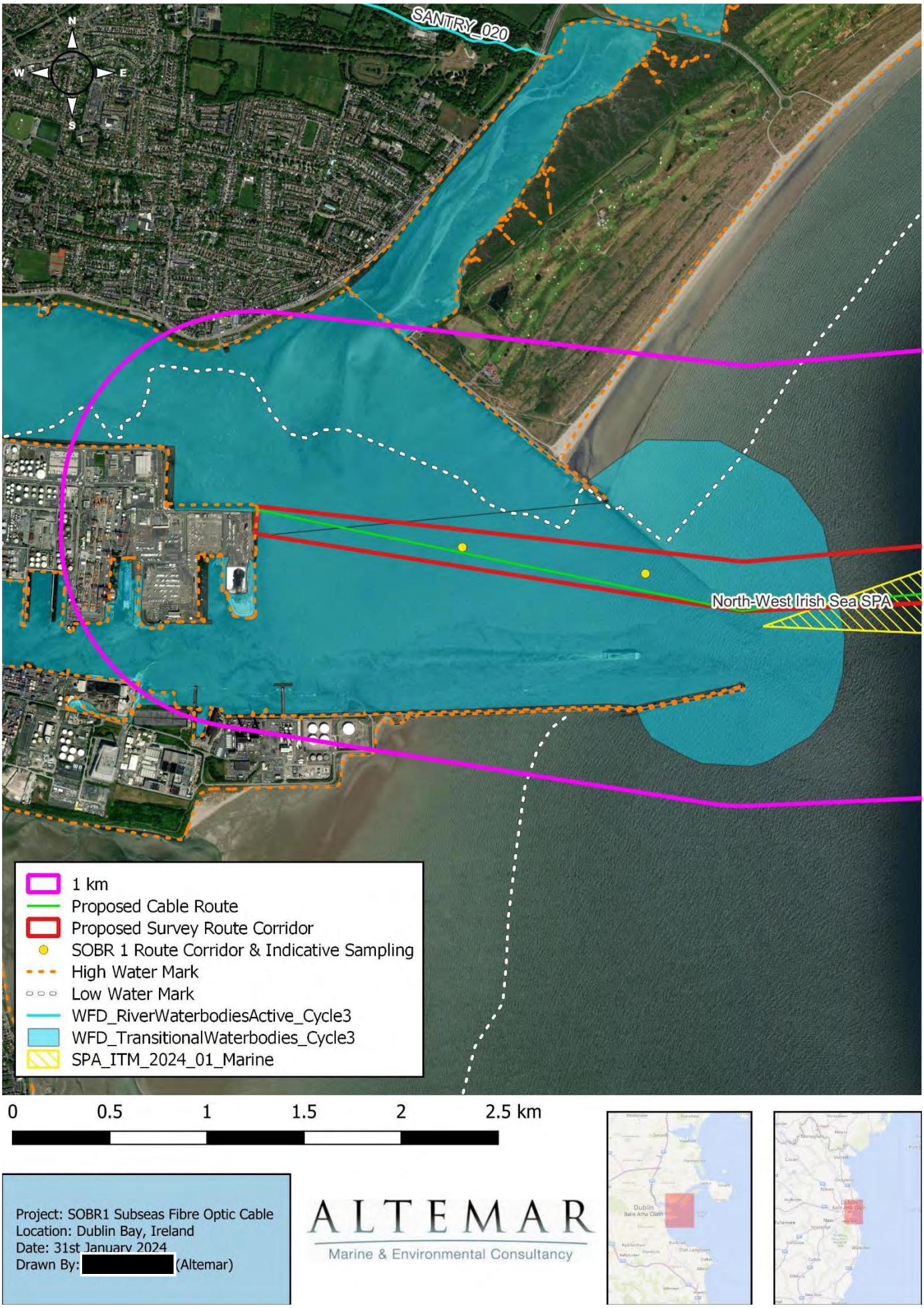

Figure 25: Marine SPAs and EPA Waterbodies proximate to the proposed Cable Route and Survey Route Corridor within Dublin Bay**.**

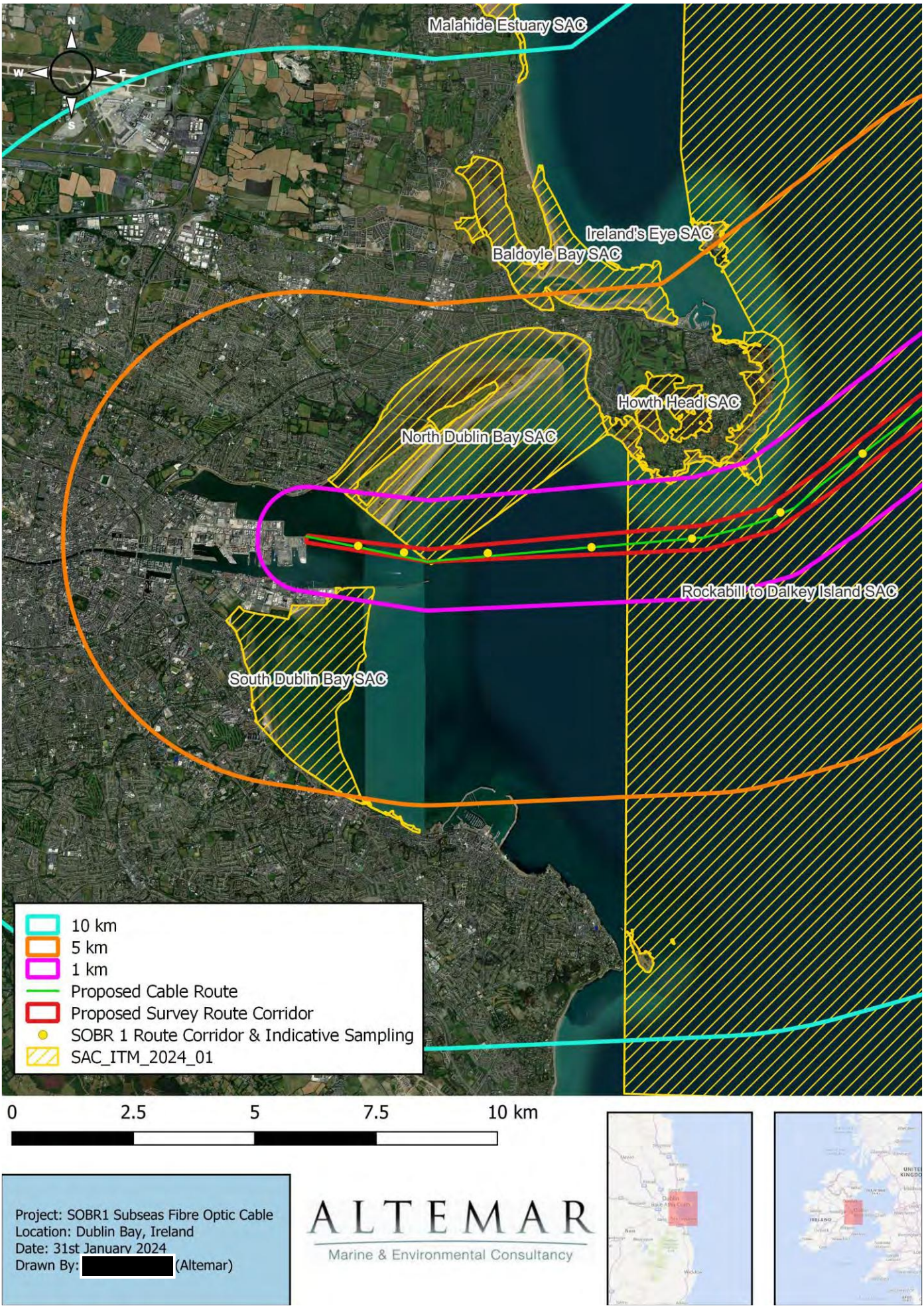

Figure 26: Special Areas of Conservation within 10km of the proposed Cable Route and Survey Route Corridor within Dublin Bay.

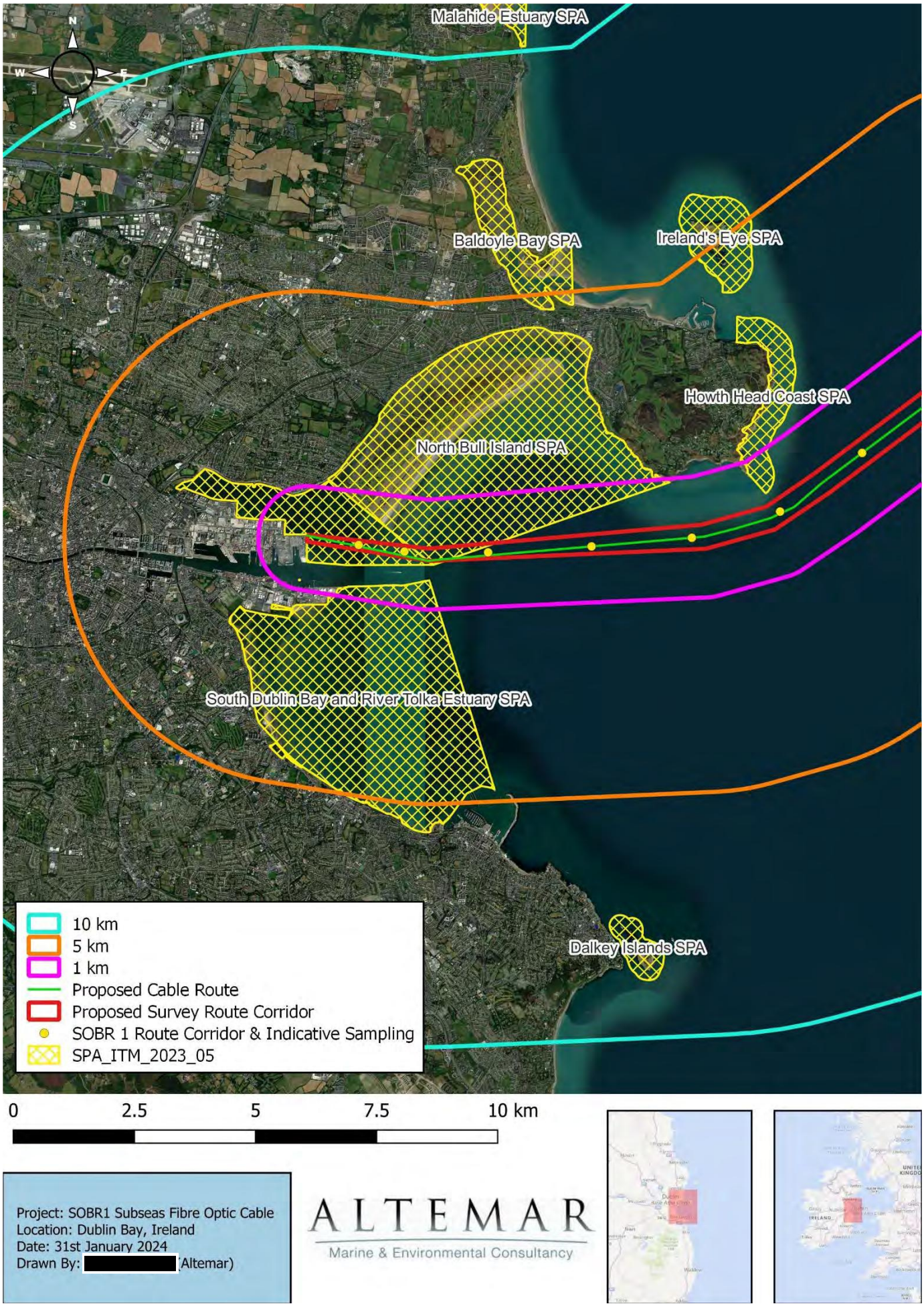

Figure 27: Special Protection Areas within 10km of the proposed Cable Route and Survey Route Corridor within Dublin Bay

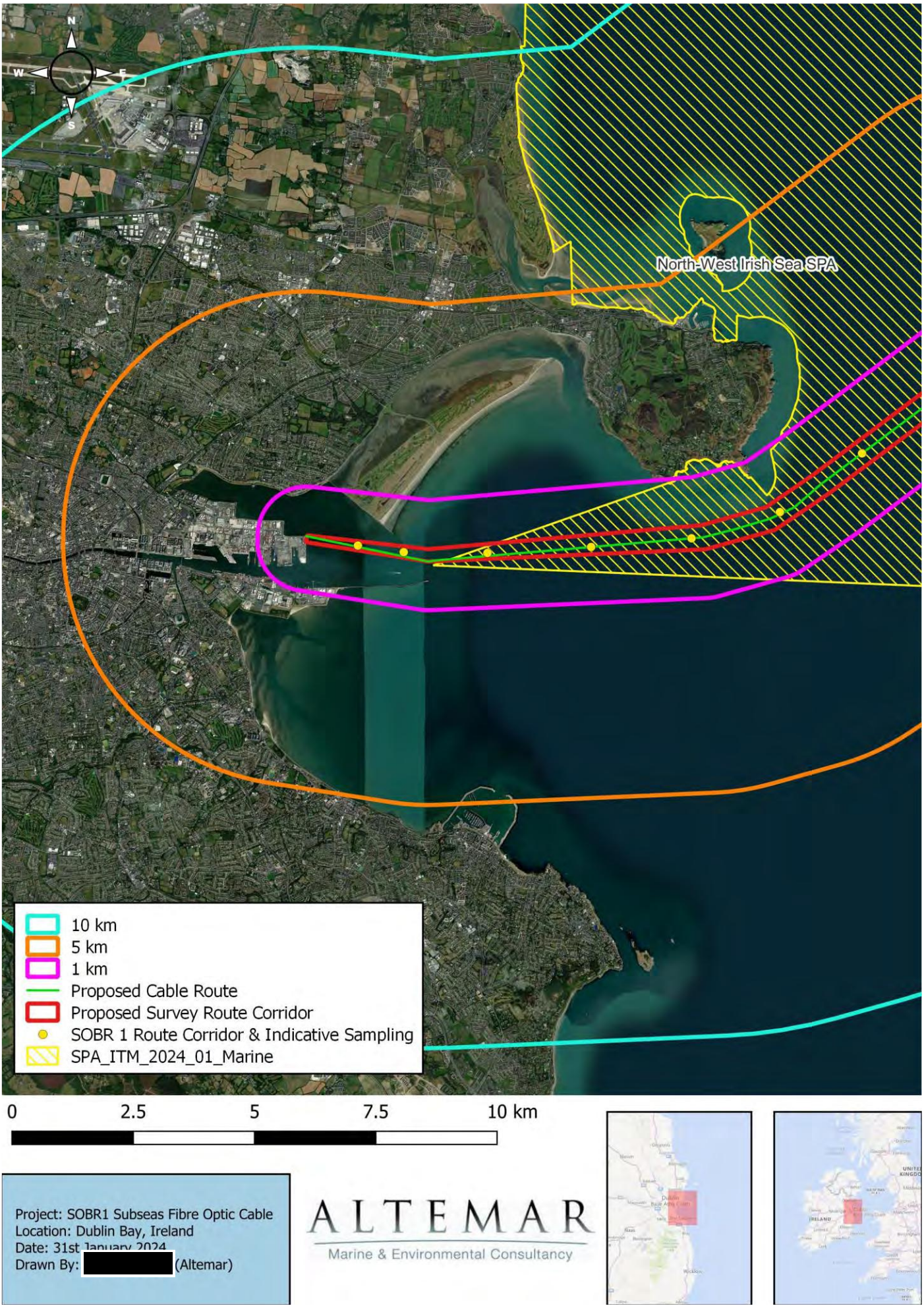

Figure 28: Marine SPAs within 10km of the proposed Cable Route and Survey Route Corridor within Dublin Bay

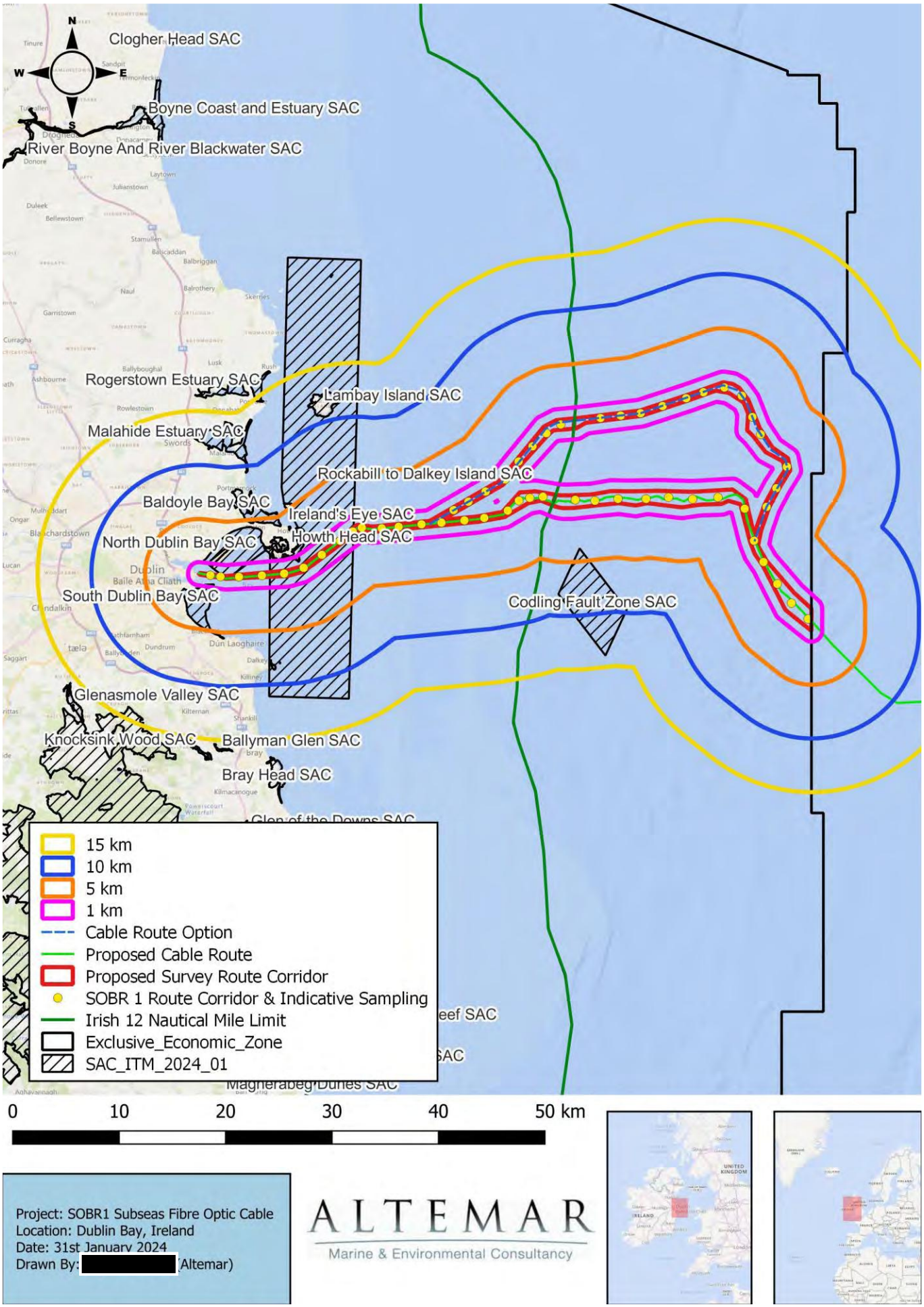

Figure 29: Special Protection Areas within 15 km of the proposed Cable Route and Survey Route Corridor.

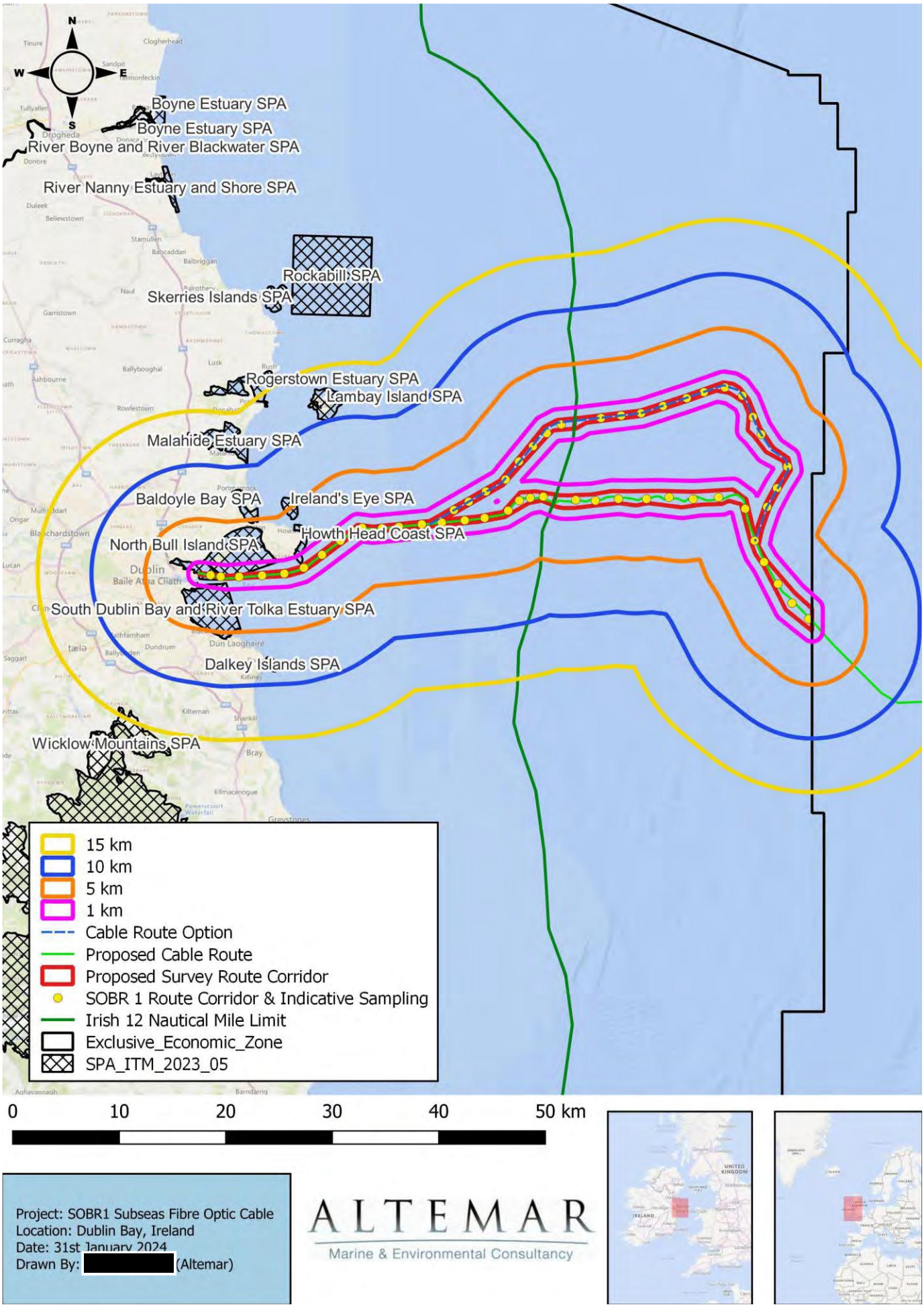

Figure 30: Special Areas of Conservation within 15 km of the proposed Cable Route and Survey Route Corridor .

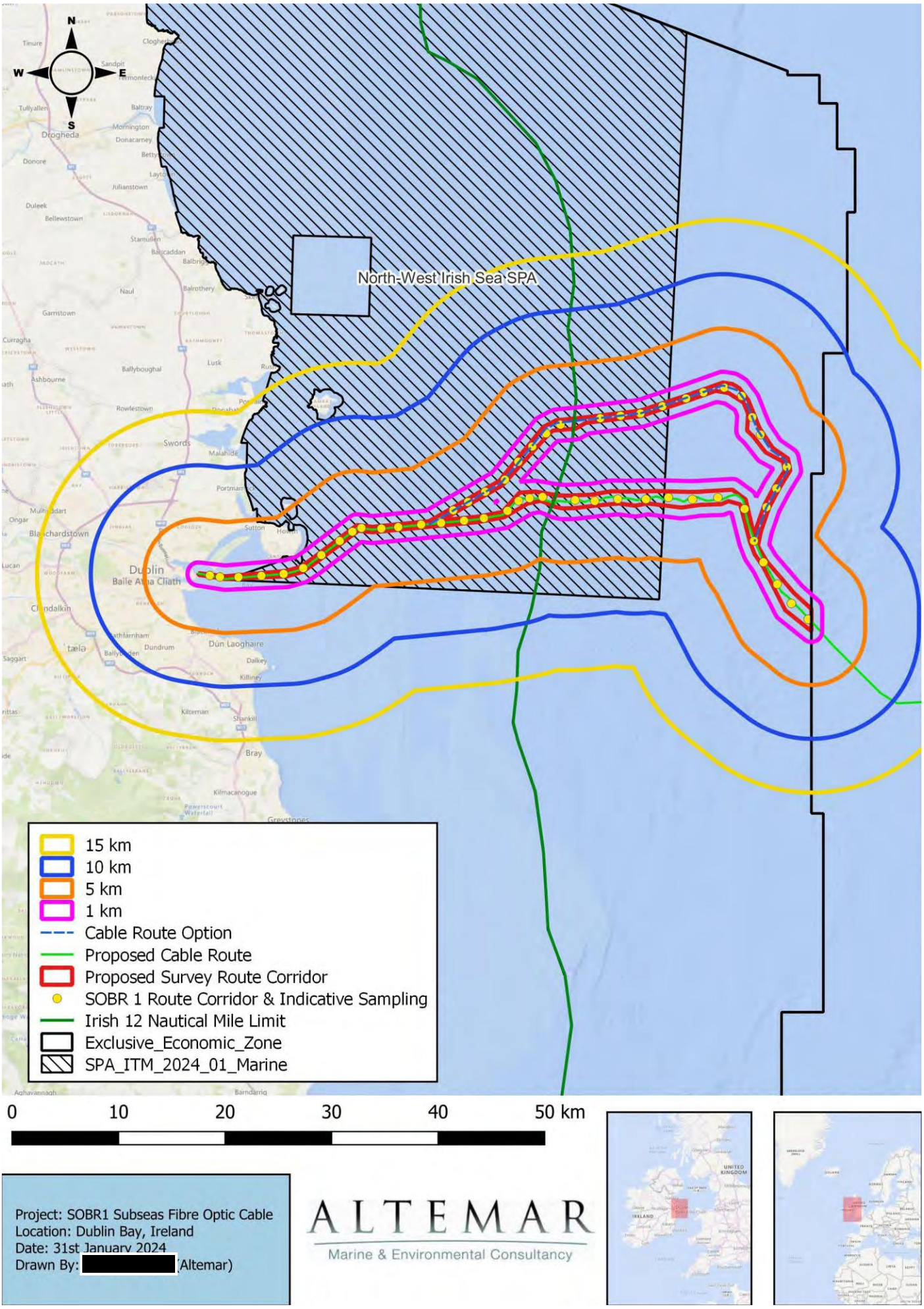

Figure 31: Marine SPAs within 15 km of the proposed Cable Route and Survey Route Corridor.

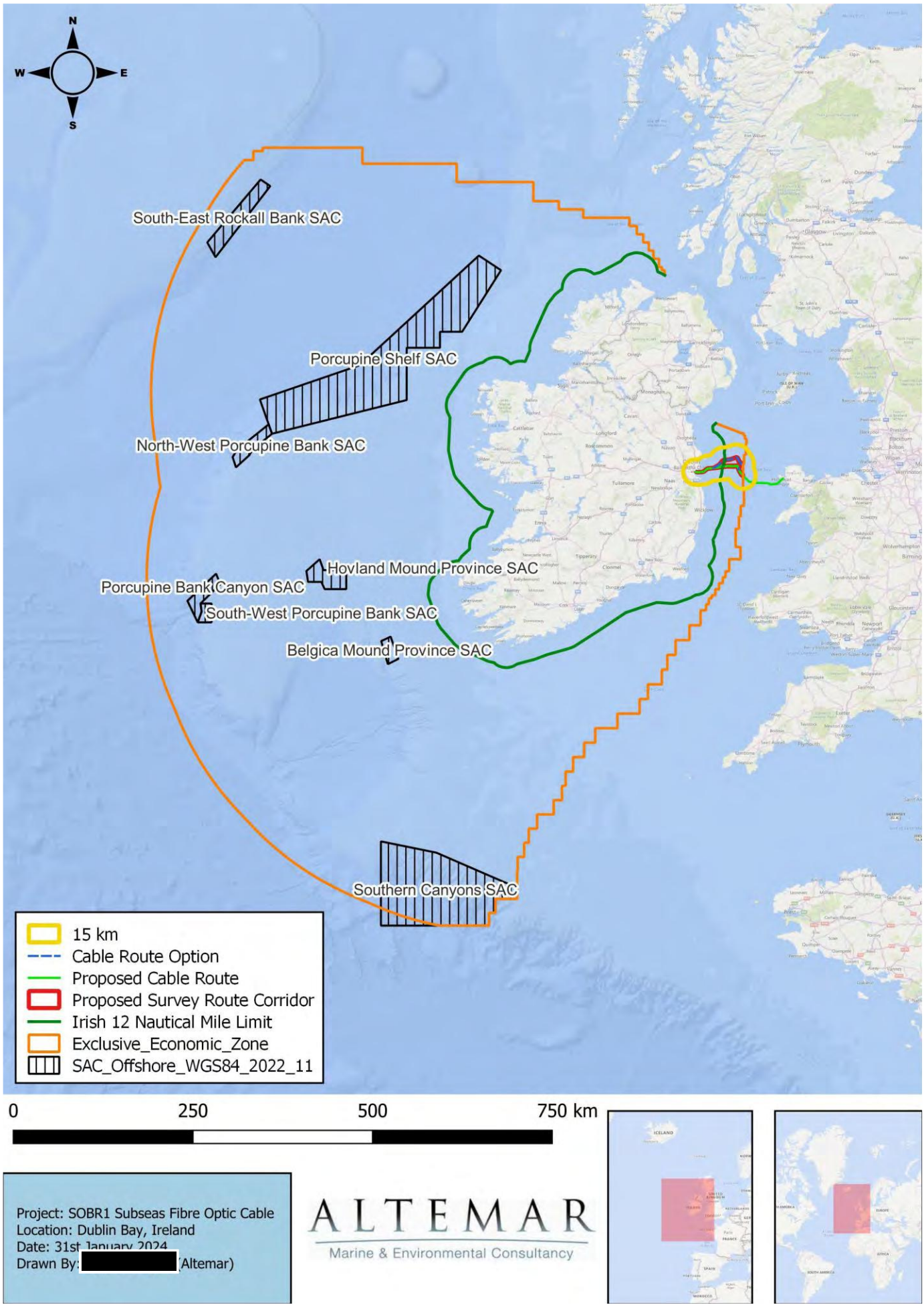

Figure 32: Fibre optic survey route in relation to the 12 nm limit, Designated Irish Continental shelf and Offshore SAC's (no offshore SAC's in the area).

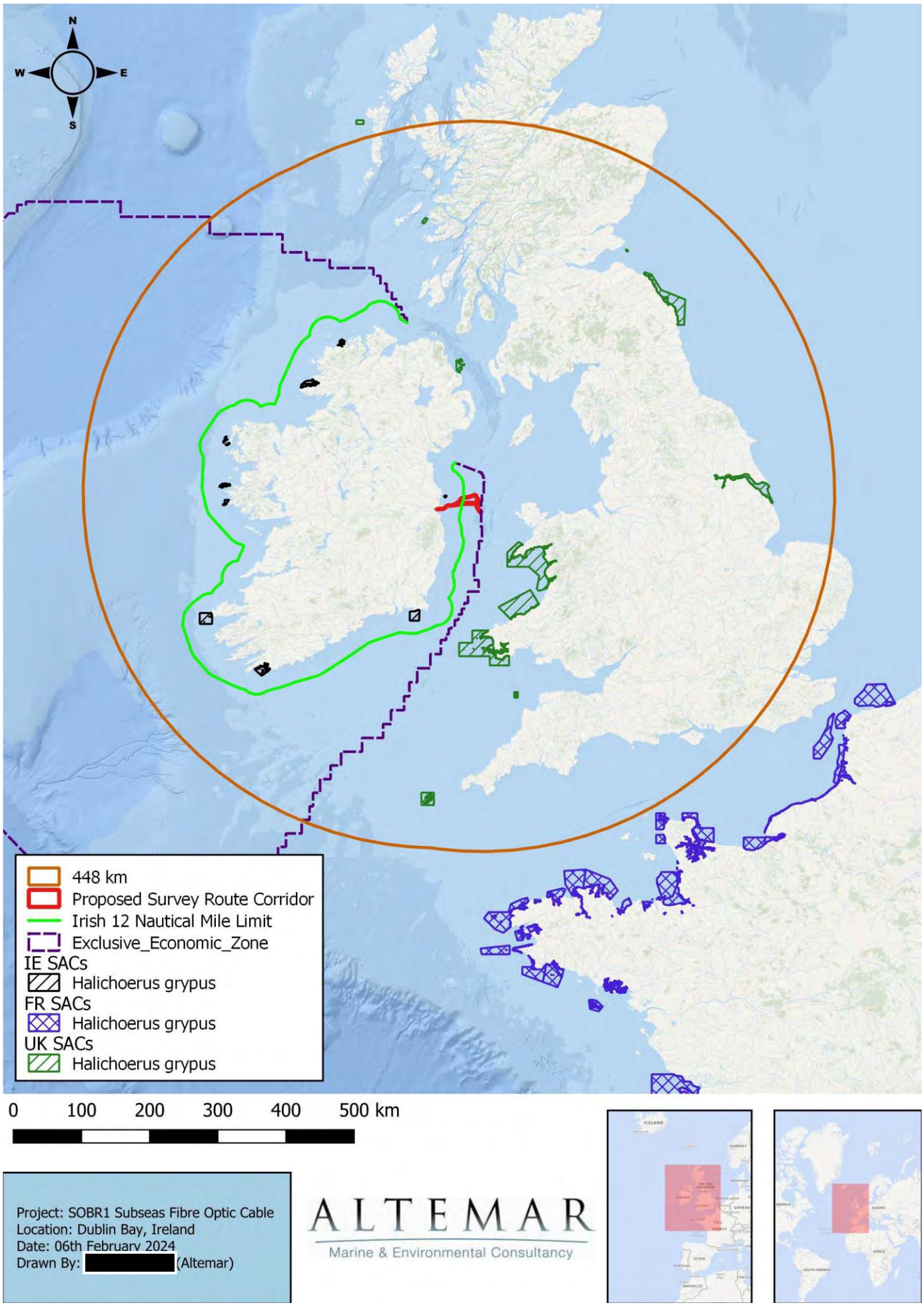

Figure 33: IE, FR, & UK SACs designated for Grey Seals (*Halichoerus grypus*) within 448km of the Proposed Survey Route Corridor.

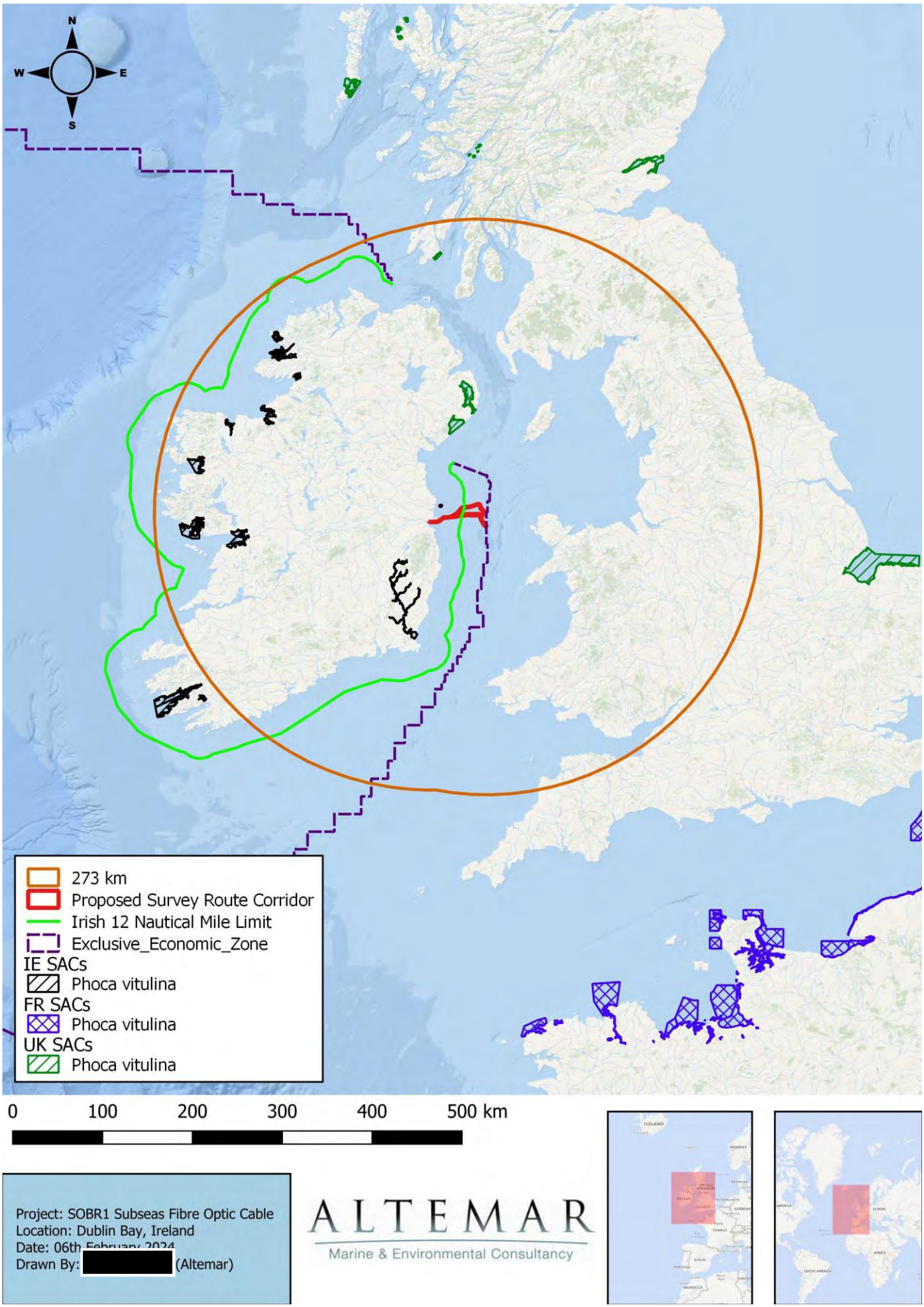

Figure 34: IE, FR, & UK SACs designated for Harbour Seals (*Phoca vitulina*) within 273km of the Proposed Survey Route Corridor.

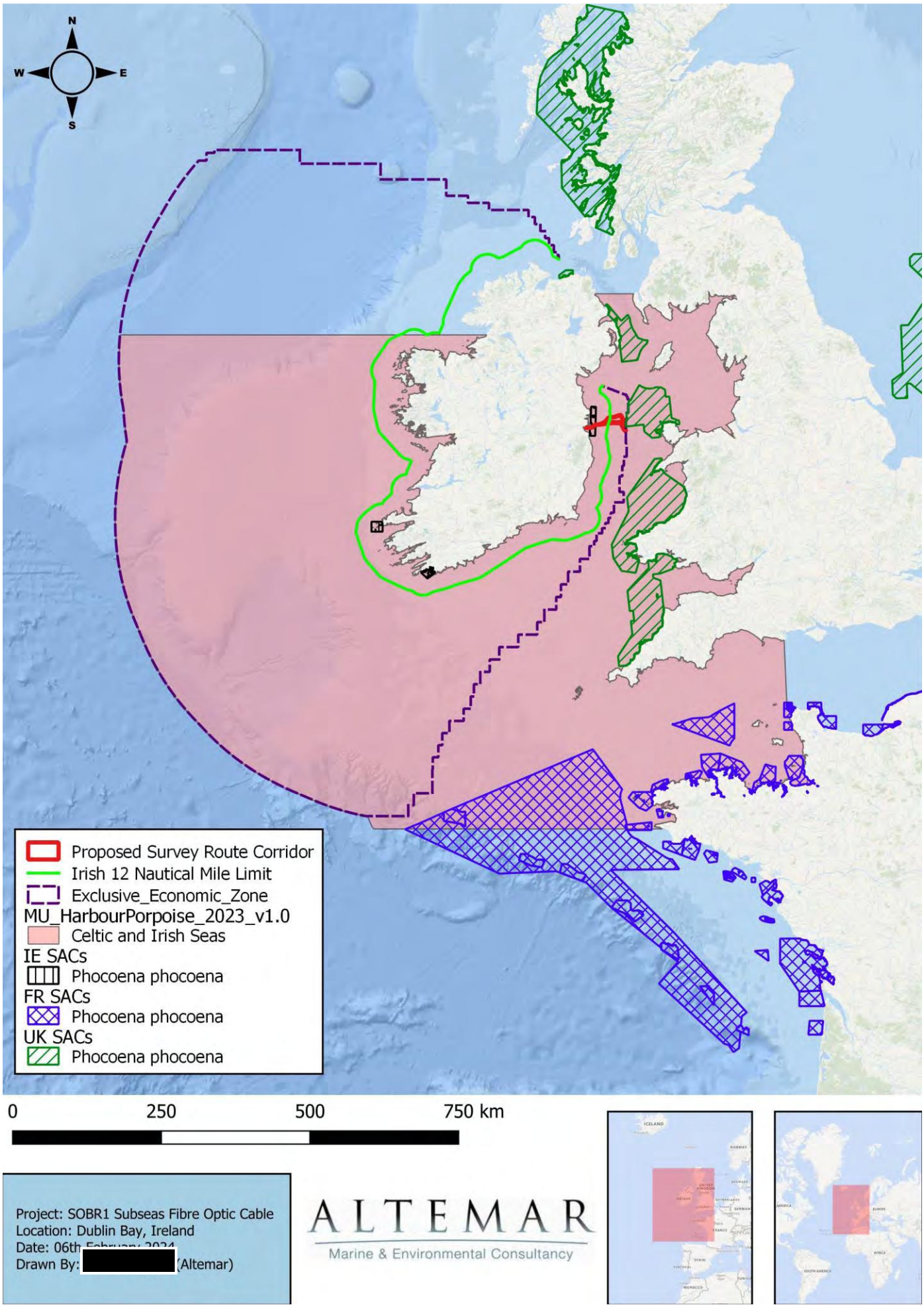

Figure 35: IE, FR, & UK SACs designated for Harbour Porpoise (*Phocoena phocoena*) within the Celtic and Irish Seas MU for Harbour Porpoise.

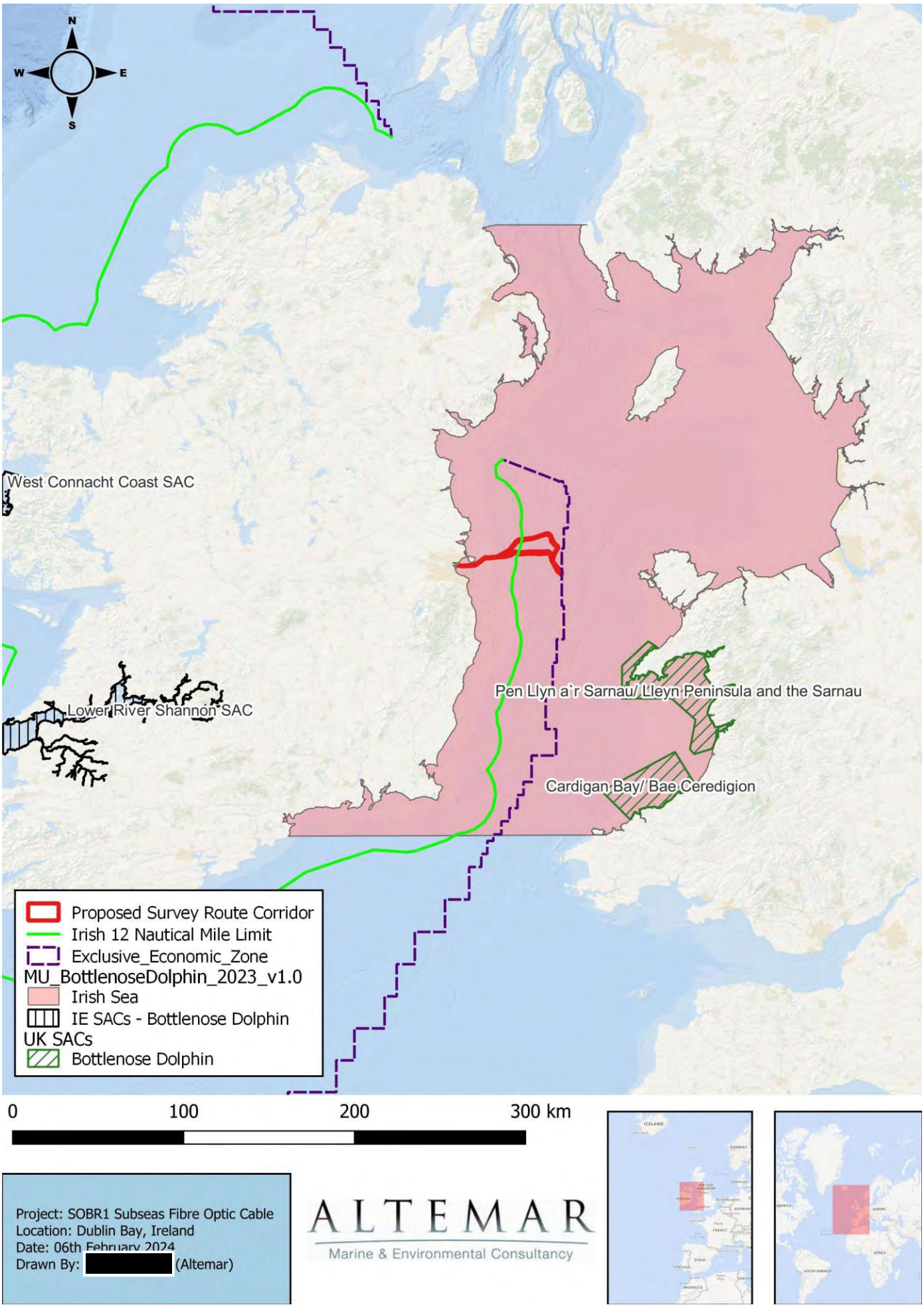

Figure 36: IE, FR, & UK SACs designated for Bottlenose Dolphin (*Tursiops truncatus*) within the Celtic and Irish Seas MU for Bottlenose Dolphin.

Table 11. Initial screening of Natura 2000 sites within the potential ZOI of the proposed project.

NATURA Site Code	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
Special Protection Areas (IE)			
IE004006	North Bull Island SPA	**In**	**Conservation Objective** The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level. **Features of Interest** Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] Shelduck (*Tadorna tadorna*) [A048] Teal (*Anas crecca*) [A052] Pintail (*Anas acuta*) [A054] Shoveler (*Anas clypeata*) [A056] Oystercatcher (*Haematopus ostralegus*) [A130] Golden Plover (*Pluvialis apricaria*) [A140] Grey Plover (*Pluvialis squatarola*) [A141] Knot (*Calidris canutus*) [A143] Sanderling (*Calidris alba*) [A144] Dunlin (*Calidris alpina*) [A149] Black-tailed Godwit (*Limosa limosa*) [A156] Bar-tailed Godwit (*Limosa lapponica*) [A157] Curlew (*Numenius arquata*) [A160] Redshank (*Tringa totanus*) [A162] Turnstone (*Arenaria interpres*) [A169] Black-headed Gull (*Chroicocephalus ridibundus*) [A179] Wetland and Waterbirds [A999] **Potential Impact** The proposed cable survey route passes through this SPA. The survey is in the marine subtidal element of Dublin Port. The marine survey is within an area of existing vessel traffic in Dublin Port. However, initial assessment identifies that, in the absence of mitigation measures, there may be potential for impact on the features of interest of this SPA through physical impact on the intertidal and subtidal sediments within the SPA and physical disturbance which could impact the Features of Interest of this SPA. Mitigation measures are required to protect the SPA from significant effects. **Natura Impact Statement Required.**
IE004024	South Dublin Bay and River Tolka SPA	**In**	**Conservation Objective** The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level. **Qualifying Interest** Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] Oystercatcher (*Haematopus ostralegus*) [A130]

NATURA Site Code	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
			Ringed Plover (*Charadrius hiaticula*) [A137] Grey Plover (*Pluvialis squatarola*) [A141] Knot (*Calidris canutus*) [A143] Sanderling (*Calidris alba*) [A144] Dunlin (*Calidris alpina*) [A149] Bar-tailed Godwit (*Limosa lapponica*) [A157] Redshank (*Tringa totanus*) [A162] Black-headed Gull (*Chroicocephalus ridibundus*) [A179] Roseate Tern (*Sterna dougallii*) [A192] Common Tern (*Sterna hirundo*) [A193] Arctic Tern (*Sterna paradisaea*) [A194] Wetland and Waterbirds [A999] **Potential Impact** The proposed landfall survey area is within this SPA, and the cable survey route passes through this SPA. The survey is in the marine subtidal element of Dublin Port. The marine survey is within an area of existing vessel traffic in Dublin Port. However, initial assessment identifies that, in the absence of mitigation measures, there may be potential for impact on the features of interest of this SPA through pollution and physical impact on the subtidal sediments within the SPA and physical disturbance which could impact the Features of Interest of this SPA. Mitigation measures are required to protect the SPA from significant effects. **Natura Impact Statement Required**
IE004236	North-West Irish Sea SPA	**In**	**Conservation Objectives** The maintenance of habitats and species within European sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level. **Qualifying Interests** Common Scoter (*Melanitta nigra*) [A065] Red-throated Diver (*Gavia stellata*) [A001] Great Northern Diver (*Gavia immer*) [A003] Fulmar (*Fulmarus glacialis*) [A009] Manx Shearwater (*Puffinus puffinus*) [A013] Cormorant (*Phalacrocorax carbo*) [A017] Little Tern (*Sterna albifrons*) [A195] Kittiwake (*Rissa tridactyla*) [A188] Black-headed Gull (*Chroicocephalus ridibundus*) [A179] Common Gull (*Larus canus*) [A182] Lesser Black-backed Gull (*Larus fuscus*) [A183] Herring Gull (*Larus argentatus*) [A184] Roseate Tern (*Sterna dougallii*) [A192] Arctic Tern (*Sterna paradisaea*) [A194] Puffin (*Fratercula arctica*) [A204] Razorbill (*Alca torda*) [A200] Guillemot (*Uria aalge*) [A199] Little Gull (Hydrocoloeus minutus) (A862) Common Tern (*Sterna hirundo*) (A193)

NATURA Site Code	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
			Potential Impact This SPA is located within the proposed cable survey area. The proposed survey route is located in an area that currently experiences a high level of vessel activity. Given the nature and scale of the proposed survey works within open water, and the fact that the qualifying interests of this SPA are bird species, which are highly mobile and accustomed to vessel activity in this area, no significant disturbance impacts on the North-West Irish Sea SPA are foreseen in the absence of mitigation. However, initial assessment identifies that, in the absence of mitigation measures, there may be potential for impact on the features of interest of this SPA through pollution within the SPA which could impact the Features of Interest of this SPA. Mitigation measures are required to protect the SPA from significant effects. **Natura Impact Statement Required.**
IE004113	Howth Head Coast SPA	**Out**	**Conservation Objective** To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA. **Qualifying Interest** Kittiwake (*Rissa tridactyla*) [A188] **Potential Impact** This SPA is located 200m from the proposed cable survey area. The survey is in the marine subtidal element of Dublin Port. The marine survey is within an area of existing vessel traffic in Dublin Port. Due to the scale and timing of the proposed survey works, and the distance from the proposed survey area to this SPA, no disturbance impacts on this SPA are foreseen. The presence of a vessel offshore in an area of vessel activity and at such a distance would not be deemed to have an impact on the conservation objectives of this SPA. In the absence of mitigation, there will be no significant effects on the features of interest from the proposed works associated with this survey license application. **No significant impact likely.**
IE004117	Ireland's Eye SPA	**Out**	**Conservation Objective** To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA. **Qualifying Interest** Cormorant (*Phalacrocorax carbo*) [A017] Herring Gull (*Larus argentatus*) [A184] Kittiwake (*Rissa tridactyla*) [A188] Guillemot (*Uria aalge*) [A199] Razorbill (*Alca torda*) [A200]

NATURA Site Code	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
			Potential Impact This SPA is located 3.9 km from the proposed cable survey area, on the far side of Howth Head. The survey is in the marine subtidal element of Dublin Port. The marine survey is within an area of existing vessel traffic in Dublin Port. Due to the scale and timing of the proposed survey works, and the distance from the proposed survey area to this SPA, no disturbance impacts on this SPA are foreseen. The presence of a vessel offshore in an area of vessel activity and at such a distance would not be deemed to have an impact on the conservation objectives of this SPA. In the absence of mitigation, there will be no significant effects on the features of interest from the proposed works associated with this survey license application. **No significant impact likely.**
IE004016	Baldoyle Bay SPA	**Out**	**Conservation Objective** The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level. **Qualifying Interest** Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] Shelduck (*Tadorna tadorna*) [A048] Ringed Plover (*Charadrius hiaticula*) [A137] Golden Plover (*Pluvialis apricaria*) [A140] Grey Plover (*Pluvialis squatarola*) [A141] Bar-tailed Godwit (*Limosa lapponica*) [A157] Wetland and Waterbirds [A999] **Potential Impact** This SPA is located 4.6 km from the proposed cable survey area, on the far side of Howth Head. The survey is in the marine subtidal element of Dublin Port. The marine survey is within an area of existing vessel traffic in Dublin Port. Due to the scale and timing of the proposed survey works, and the distance from the proposed survey area to this SPA, no disturbance impacts on this SPA are foreseen. The presence of a vessel offshore in an area of vessel activity and at such a distance would not be deemed to have an impact on the conservation objectives of this SPA. In the absence of mitigation, there will be no significant effects on the features of interest from the proposed works associated with this survey license application. **No significant impact likely.**

NATURA Site Code	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
IE004172	Dalkey Island SPA	**Out**	**Conservation Objective** To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA. **Qualifying Interest** Roseate Tern (*Sterna dougallii*) [A192] Common Tern (*Sterna hirundo*) [A193] Arctic Tern (*Sterna paradisaea*) [A194] **Potential Impact** This SPA is located 7.4 km from the proposed cable survey area. The survey is in the marine subtidal element of Dublin Port. The marine survey is within an area of existing vessel traffic in Dublin Port. Due to the scale and timing of the proposed survey works, and the distance from the proposed survey area to this SPA, no disturbance impacts on this SPA are foreseen. The presence of a vessel offshore in an area of vessel activity and at such a distance would not be deemed to have an impact on the conservation objectives of this SPA. In the absence of mitigation, there will be no significant effects on the features of interest from the proposed works associated with this survey license application. **No significant impact likely.**
IE004069	Lambay Island SPA	**Out**	**Conservation Objective** To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA. **Qualifying Interest** Fulmar (*Fulmarus glacialis*) [A009] Cormorant (*Phalacrocorax carbo*) [A017] Shag (*Phalacrocorax aristotelis*) [A018] Greylag Goose (*Anser anser*) [A043] Lesser Black-backed Gull (*Larus fuscus*) [A183] Herring Gull (*Larus argentatus*) [A184] Kittiwake (*Rissa tridactyla*) [A188] Guillemot (*Uria aalge*) [A199] Razorbill (*Alca torda*) [A200] Puffin (*Fratercula arctica*) [A204] **Potential Impact** This SPA is located 10.1 km from the proposed cable survey area, on the far side of Howth Head. The survey is in the marine subtidal element of Dublin Port. The marine survey is within an area of existing vessel traffic in Dublin Port. Due to the scale and timing of the proposed survey works, and the distance from the proposed survey area to this SPA, no disturbance impacts on this SPA are foreseen. The presence of a vessel offshore in an area of vessel activity and at such a distance would not be deemed to have an impact on the conservation objectives of this SPA. In the absence of

NATURA Site Code	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
			mitigation, there will be no significant effects on the features of interest from the proposed works associated with this survey license application. **No significant impact likely.**
IE004025	Malahide Estuary SPA	**Out**	**Conservation Objective** The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level. **Qualifying Interest** Great Crested Grebe (*Podiceps cristatus*) [A005] Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] Shelduck (*Tadorna tadorna*) [A048] Pintail (*Anas acuta)* [A054] Goldeneye (*Bucephala clangula*) [A067] Red-breasted Merganser (*Mergus serrator*) [A069] Oystercatcher (*Haematopus ostralegus*) [A130] Golden Plover (*Pluvialis apricaria*) [A140] Grey Plover (*Pluvialis squatarola*) [A141] Knot (*Calidris canutus*) [A143] Dunlin (*Calidris alpina*) [A149] Black-tailed Godwit (*Limosa limosa*) [A156] Bar-tailed Godwit (*Limosa lapponica*) [A157] Redshank (*Tringa totanus*) [A162] Wetland and Waterbirds [A999] **Potential Impact** This SPA is located 10.1 km from the proposed cable survey area, on the far side of Howth Head. The survey is in the marine subtidal element of Dublin Port. The marine survey is within an area of existing vessel traffic in Dublin Port. Due to the scale and timing of the proposed survey works, and the distance from the proposed survey area to this SPA, no disturbance impacts on this SPA are foreseen. The presence of a vessel offshore in an area of vessel activity and at such a distance would not be deemed to have an impact on the conservation objectives of this SPA. In the absence of mitigation, there will be no significant effects on the features of interest from the proposed works associated with this survey license application. **No significant impact likely.**
IE004015	Rogerstown Estuary SPA	**Out**	**Conservation Objective** The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level. **Qualifying Interest** Greylag Goose (*Anser anser*) [A043] Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] Shelduck (*Tadorna tadorna*) [A048]

NATURA Site Code	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
			Shoveler (*Anas clypeata*) [A056] Oystercatcher (*Haematopus ostralegus*) [A130] Ringed Plover (*Charadrius hiaticula*) [A137] Grey Plover (*Pluvialis squatarola*) [A141] Knot (*Calidris canutus*) [A143] Dunlin (*Calidris alpina*) [A149] Black-tailed Godwit (*Limosa limosa*) [A156] Redshank (*Tringa totanus*) [A162] Wetland and Waterbirds [A999] **Potential Impact** This SPA is located 13.8 km from the proposed cable survey area, on the far side of Howth Head. The survey is in the marine subtidal element of Dublin Port. The marine survey is within an area of existing vessel traffic in Dublin Port. Due to the scale and timing of the proposed survey works, and the distance from the proposed survey area to this SPA, no disturbance impacts on this SPA are foreseen. The presence of a vessel offshore in an area of vessel activity and at such a distance would not be deemed to have an impact on the conservation objectives of this SPA. In the absence of mitigation, there will be no significant effects on the features of interest from the proposed works associated with this survey license application. **No significant impact likely.**
IE004040	Wicklow Mountains SPA	**Out**	**Conservation Objective** To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA: **Qualifying Interest** Merlin (Falco columbarius) [A098] Peregrine (Falco peregrinus) [A103] **Potential Impact** This SPA is over 14.3 km from the proposed cable survey area. This SPA is located inland. No potential impacts on this SPA are foreseen. Due to the distance of the survey from this SPA, it that there will be no significant effects on the features of interest from the proposed works associated with this survey license application. **No significant impact likely.**

NATURA Site	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
Special Areas of Conservation (IE)			
IE000206	North Dublin Bay SAC	**In**	**Conservation Objective** The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level. **Qualifying Interests** Mudflats and sandflats not covered by seawater at low tide [1140] Annual vegetation of drift lines [1210] Salicornia and other annuals colonising mud and sand [1310] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Humid dune slacks [2190] *Petalophyllum ralfsii* (Petalwort) [1395] **Potential Impact** The proposed cable survey route passes through this SAC. The survey is in the marine subtidal element of Dublin Port. The marine survey is within an area of existing vessel traffic in Dublin Port. However, initial assessment identifies that, in the absence of mitigation measures, there may be potential for impact on the features of interest of this SAC through pollution or physical impact on the intertidal and subtidal sediments within the SAC and physical disturbance which could impact the Features of Interest of this SAC. Mitigation measures are required to protect the SAC from significant effects. **Natura Impact Statement Required**
IE003000	Rockabill to Dalkey Island SAC	**In**	**Conservation Objective** The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level. **Qualifying Interests** Reefs [1170] *Phocoena phocoena* (Harbour Porpoise) [1351] **Potential Impact** The proposed cable survey route passes through this SAC. The survey is in the marine subtidal element of Dublin Port. The

NATURA Site	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
			marine survey is within an area of existing vessel traffic in Dublin Port. However, initial assessment identifies that, in the absence of mitigation measures, there may be potential for impact on the features of interest of this SAC through underwater noise, pollution, physical impact on the intertidal and subtidal sediments within the SAC and physical disturbance which could impact the Features of Interest of this SAC. Mitigation measures are required to protect the SAC from significant effects. **Natura Impact Statement Required**
IE000202	Howth Head SAC	**Out**	**Conservation Objective** The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level. **Qualifying Interests** Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] European dry heaths [4030] **Potential Impact** This SAC is 500 m from the proposed cable survey area. The features of interest are terrestrial habitats. No mobile marine species are associated with this SAC. Due to the scale and timing of the proposed survey works, and the distance from the proposed survey area to this SAC, in the absence of mitigation, there will be no significant effects on the features of interest from the proposed works associated with this survey license application. **No significant impact likely.**
IE000210	South Dublin Bay SAC	**Out**	**Conservation Objective** The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level. **Qualifying Interests** Mudflats and sandflats not covered by seawater at low tide [1140] Annual vegetation of drift lines [1210] Salicornia and other annuals colonising mud and sand [1310] Embryonic shifting dunes [2110] **Potential Impact** This SAC is 680 m from the proposed cable survey area. The features of interest are intertidal and terrestrial habitats. No mobile marine species are associated with this SAC. Due to the scale and timing of the proposed survey works, and the distance from the proposed survey area to this SAC, in the

NATURA Site	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
			absence of mitigation, there will be no significant effects on the features of interest from the proposed works associated with this survey license application. **No significant impact likely.**
IE003015	Codling Fault Zone SAC	**Out**	**Conservation Objective** To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected **Qualifying Interest** Submarine structures made by leaking gases [1180] **Potential Impact** This SAC is 3.7 km from the proposed cable survey area. The features of interest are subtidal habitats. No survey works will take place in this SAC. No mobile marine species are associated with this SAC. Due to the scale and timing of the proposed survey works, and the distance from the proposed survey area to this SAC, in the absence of mitigation, there will be no significant effects on the features of interest from the proposed works associated with this survey license application. **No significant impact likely.**
IE000199	Baldoyle Bay SAC	**Out**	**Conservation Objective** The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level. **Qualifying Interests** Mudflats and sandflats not covered by seawater at low tide [1140] Salicornia and other annuals colonising mud and sand [1310] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410] **Potential Impact** This SAC is 4.1 km from the proposed cable survey area. The survey area is located on the far side of Howth Head from this conservation site and the features of interest are intertidal and terrestrial habitats. No mobile marine species are associated with this SAC. Due to the scale and timing of the proposed survey works, and the distance from the proposed survey area to this SAC, in the absence of mitigation, there will be no significant effects on the features of interest from the proposed works associated with this survey license application. **No significant impact likely.**

NATURA Site	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
IE002193	Ireland's Eye SAC	**Out**	**Conservation Objective** The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level. **Features of Interest** Perennial vegetation of stony banks [1220] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] **Potential Impact** This SAC is 4.4 km from the proposed cable survey area. The survey area is located on the far side of Howth Head from this conservation site and the features of interest are intertidal or terrestrial habitats. No mobile marine species are associated with this SAC Due to the scale and timing of the proposed survey works, and the distance from the proposed survey area to this SAC, in the absence of mitigation, there will be no significant effects on the features of interest from the proposed works associated with this survey license application. **No significant impact likely.**
IE000205	Malahide Estuary SAC	**Out**	**Conservation Objective** The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level. **Features of Interest** Mudflats and sandflats not covered by seawater at low tide [1140] Salicornia and other annuals colonising mud and sand [1310] Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] Mediterranean salt meadows (Juncetalia maritimi) [1410] Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] **Potential Impact** This SAC is 9.4 km from the proposed cable survey area. The survey area is located on the far side of Howth Head from this conservation site and the features of interest are intertidal and terrestrial habitats. No mobile marine species are associated with this SAC Due to the scale and timing of the proposed survey works, and the distance from the proposed survey area to this SAC, in the absence of mitigation, there will be no significant effects on the features of interest from the proposed works associated with this survey license application.

NATURA Site	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
			No significant impact likely.
IE000204	Lambay Island SAC	**In**	**Conservation Objective** The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level. **Features of Interest** Reefs [1170] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Halichoerus grypus (Grey Seal) [1364] Phoca vitulina (Harbour Seal) [1365] **Potential Impact** Initial assessment identifies that in the absence of mitigation measures there may be potential for impact on the qualifying interests of this SAC through disturbance (noise). In particular, mitigation measures are required to ensure that there are no impacts on grey seals and harbour seals, which are features of interest of this SAC. Due to short term scale of the project, the distance from the works to the SAC, and the low level of impact, there is no possibility of significant effects on the other features of interest of this SAC. Mitigation measures are required for grey seals and harbour seals. Further information is required to determine the potential for adverse effects on this SAC. **NIS is Required.**
IE002122	Wicklow Mountains	**Out**	**Conservation Objective** The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level. **Features of Interest** Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) [3110] Natural dystrophic lakes and ponds [3160] Northern Atlantic wet heaths with Erica tetralix [4010] European dry heaths [4030] Alpine and Boreal heaths [4060] Calaminarian grasslands of the Violetalia calaminariae [6130] Species-rich Nardus grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe) [6230] Blanket bogs (* if active bog) [7130] Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani) [8110]

NATURA Site	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
			Calcareous rocky slopes with chasmophytic vegetation [8210] Siliceous rocky slopes with chasmophytic vegetation [8220] Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] Lutra lutra (Otter) [1355] **Potential Impact** This SAC is 13.9 km from the proposed cable survey area. This SAC is located inland, and the features of interest are terrestrial species/habitats. No mobile marine species associated with this SAC would be in the vicinity of the works. This SAC is located in the upland terrestrial environment, and otters protected as qualifying interests of this SAC are not expected to be located within the coastal environment proximate to the proposed survey area. Due to the distance of the survey from this SAC, it that there will be no significant effects on the features of interest from the proposed works associated with this survey license application. **No significant impact likely.**
IE000208	Rogerstown Estuary SAC	**Out**	**Conservation Objective** The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level. **Features of Interest** Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Salicornia and other annuals colonising mud and sand [1310] Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] Mediterranean salt meadows (Juncetalia maritimi) [1410] Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] **Potential Impact** This SAC is 14.3 km from the proposed cable survey area. The survey area is located on the far side of Howth Head from this conservation site and the features of interest are intertidal and terrestrial habitats. No mobile marine species are associated with this SAC. Due to the scale and timing of the proposed survey works, and the distance from the proposed survey area to this SAC, in the absence of mitigation, there will be no significant effects on the features of interest from the proposed works associated with this survey license application. **No significant impact likely.**

NATURA Site	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
IE000781	Slaney River Valley SAC	**In**	**Conservation Objective** The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level. **Features of Interest** Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410] Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260] Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] Alluvial forests with Alnus glutinosa and Fraxinus excelsior (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0] *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] *Petromyzon marinus* (Sea Lamprey) [1095] *Lampetra planeri* (Brook Lamprey) [1096] *Lampetra fluviatilis* (River Lamprey) [1099] *Alosa fallax fallax* (Twaite Shad) [1103] *Salmo salar* (Salmon) [1106] *Lutra lutra* (Otter) [1355] *Phoca vitulina* (Harbour Seal) [1365] **Potential Impact** This SAC is 44 km from the proposed cable survey area. The proposed cable survey area is located within the foraging range of harbour seal (273 km) (Carter et al., 2022). Initial assessment identifies that, in the absence of mitigation measures, there may be potential for impact on harbour seal (feature of interest of this SAC) through underwater noise and physical disturbance which could impact the Feature of Interest of this SAC should this species enter the Zone of Influence. Mitigation measures are required to protect the SAC from significant effects. The survey area is located 44km from this conservation site. Given the nature of the proposed works, and the significant distance to this SAC across a marine environment, in the absence of mitigation measures, no significant impacts on designated habitats, Lamprey species (Sea, Brook, and River), or Freshwater pearl mussel protected as a qualifying interest of this SAC are foreseen from the proposed works associated with this survey license application. In relation to Atlantic salmon, it has been found that salmon from southeast Ireland tend to move out to the shelf edge before crossing the Atlantic towards Greenland (Rikardson et al., 2021). Given that the proposed project is located within

NATURA Site	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
			Dublin Bay (outside of the recorded areas of salmon migration – see Appendix I), and the temporal nature of the proposed works, no significant impacts on salmon are foreseen as a result of the proposed project in the absence of mitigation. In relation to Twaite Shad, given the spatial and temporal nature of the proposed works, and the distance to this SAC, the proposed project is considered too far for any significant interaction to occur. Further, no significant impacts on otter are foreseen. As detailed by Reid et al. (2013), female otters have territories of 7.5 ± 1.5km in length along a riverine environment and 6.5 ± 1.0km in coastal environments, while male otter territory along rivers is approximately 13.2 ± 5.3km in length with a high degree of variability. Given the nature of the proposed works and the significant distance between the proposed survey area and this SAC (295km), in the absence of mitigation, no significant effects on otter species are likely as a result of the proposed project. The proposed project has the potential to introduce noise into the marine environment and mitigation measures are required to protect harbour seals. **Natura Impact Statement Required**
IE000707	Saltee Islands SAC	**In**	**Conservation Objective** The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level. **Features of Interest** Mudflats and sandflats not covered by seawater at low tide [1140] Large shallow inlets and bays [1160] Reefs [1170] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Submerged or partially submerged sea caves [8330] *Halichoerus grypus* (Grey Seal) [1364] **Potential Impact** This SAC is located 131 km from the proposed cable survey area. The proposed cable survey area is located within the foraging range of grey seal (448 km) (Carter et al., 2022). Initial assessment identifies that, in the absence of mitigation measures, there may be potential for impact on grey seal (feature of interest of this SAC) through underwater noise and physical disturbance which could impact the Feature of Interest of this SAC if grey seal from this SAC were to enter the SAC. Mitigation measures are required to protect the SAC from significant effects. The survey area is located 131 km from this conservation site. Given the nature of the proposed works, and the significant

NATURA Site	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
			distance to this SAC across a marine environment, in the absence of mitigation measures, no significant impacts on habitats protected as a qualifying interest of this SAC are foreseen from the proposed works associated with this survey license application. The proposed project has the potential to introduce noise into the marine environment and mitigation measures are required to protect grey seals. **Natura Impact Statement Required**
IE000101	Roaringwater Bay and Islands SAC	**In**	**Conservation Objective** The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level. **Features of Interest** Large shallow inlets and bays [1160] Reefs [1170] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] European dry heaths [4030] Submerged or partially submerged sea caves [8330] *Phocoena phocoena* (Harbour Porpoise) [1351] *Lutra lutra* (Otter) [1355] *Halichoerus grypus* (Grey Seal) [1364] **Potential Impact** This SAC is 295 km from the proposed cable survey area. The proposed cable survey area is located within the Celtic and Irish Seas MU for Harbour Porpoise (JNCC, 2023) and is located within the foraging range of grey seal (448 km) (Carter et al., 2022). Initial assessment identifies that, in the absence of mitigation measures, there may be potential for impact on grey seal and harbour porpoise (features of interest of this SAC) through underwater noise and physical disturbance which could impact the Features of Interest of this SAC should this mobile marine mammal enter the ZoI. Mitigation measures are required to protect the SAC from significant effects. The survey area is located 295 km from this conservation site. Given the nature of the proposed works, and the significant distance to this SAC across a marine environment, in the absence of mitigation measures, no significant impacts on habitats protected as a qualifying interest of this SAC are foreseen from the proposed works associated with this survey license application. Further, no significant impacts on otter are foreseen. As detailed by Reid et al. (2013), female otters have territories of 7.5 ± 1.5km in length along a riverine environment and 6.5 ± 1.0km in coastal environments, while male otter territory along rivers is approximately 13.2 ± 5.3km in length with a high

NATURA Site	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
			degree of variability. Given the nature of the proposed works and the significant distance between the proposed survey area and this SAC (295km), in the absence of mitigation, no significant effects on otter species are likely as a result of the proposed project. The proposed project has the potential to introduce noise, pollution, and physical disturbance into the marine environment and mitigation measures are required to protect harbour porpoise and grey seals. **Natura Impact Statement Required**
IE002172	Blasket Islands SAC	**In**	**Conservation Objective** The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level. **Features of Interest** Reefs [1170] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] European dry heaths [4030] Submerged or partially submerged sea caves [8330] *Phocoena phocoena* (Harbour Porpoise) [1351] *Halichoerus grypus* (Grey Seal) [1364] **Potential Impact** This SAC is 319 km from the proposed cable survey area. The proposed cable survey area is located within the Celtic and Irish Seas MU for Harbour Porpoise (JNCC, 2023) and is located within the foraging range of grey seal (448 km) (Carter et al., 2022). Initial assessment identifies that, in the absence of mitigation measures, there may be potential for impact on grey seal and harbour porpoise (features of interest of this SAC) through underwater noise and physical disturbance which could impact the Features of Interest of this SAC should this mobile marine mammal enter the ZoI. Mitigation measures are required to protect the SAC from significant effects. The survey area is located 319 km from this conservation site. Given the nature of the proposed works, and the significant distance to this SAC across a marine environment, in the absence of mitigation measures, no significant impacts on habitats protected as a qualifying interest of this SAC are foreseen from the proposed works associated with this survey license application. The proposed project has the potential to introduce noise into the marine environment and mitigation measures are required to protect harbour porpoise and grey seals. **Natura Impact Statement Required**

NATURA Site Code	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
Special Areas of Conservation (UK)			
UK0030398	North Anglesey Marine/Gogledd Môn Forol	**In**	**Conservation Objective** Maintain site integrity by ensuring: 1. Harbour porpoise are a viable component of the site. 2. There is no significant disturbance of the species. 3. The condition of supporting habitats and processes, and the availability of prey is maintained. **Qualifying Interest** Harbour Porpoise (*Phocoena phocoena*) [1351] **Potential Impact** This SAC is 1.9 km from the proposed cable survey area. The proposed cable survey area is located within the Celtic and Irish Seas MU for Harbour Porpoise (JNCC, 2023). Initial assessment identifies that, in the absence of mitigation measures, and out of an abundance of caution, there may be potential for impact on harbour porpoise (qualifying interest of this SAC) through underwater noise and physical disturbance which could impact the Qualifying Interest of this SAC. Mitigation measures are required to protect the SAC from significant effects. The proposed project has the potential to introduce noise into the marine environment and mitigation measures are required to protect harbour porpoise. **Natura Impact Statement Required**
UK0030397	West Wales Marine / Gorllewin Cymru Forol	**In**	**Conservation Objective** Maintain site integrity by ensuring: 1. Harbour porpoise are a viable component of the site. 2. There is no significant disturbance of the species. 3. The condition of supporting habitats and processes, and the availability of prey is maintained. **Qualifying Interest** Harbour Porpoise (*Phocoena phocoena*) [1351] **Potential Impact** This SAC is 56 km from the proposed cable survey area. The proposed cable survey area is located within the Celtic and Irish Seas MU for Harbour Porpoise (JNCC, 2023). Initial assessment identifies that, in the absence of mitigation measures, and out of an abundance of caution, there may be potential for impact on harbour porpoise (qualifying interest of this SAC) through underwater noise and physical disturbance which could impact the Qualifying Interest of this SAC. Mitigation measures are required to protect the SAC from significant effects.

NATURA Site Code	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
			The proposed project has the potential to introduce noise into the marine environment and mitigation measures are required to protect harbour porpoise. **Natura Impact Statement Required**
UK0013117	Pen Llyn a'r Sarnau/Lleyn Peninsula and the Sarnau	**In**	**Conservation Objective** To achieve favourable conservation status all the following, subject to natural processes, need to be fulfilled and maintained in the long-term. If these objectives are not met restoration measures will be needed to achieve favourable conservation status. **Qualifying Interest** Mudflats and sandflats not covered by seawater at low tide [1140] Salicornia and other annuals colonizing mud and sand [1310] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] Submerged or partially submerged sea caves [8330] *Lutra lutra* (Otter) [1355] *Tursiops truncatus* (Common Bottlenose Dolphin) [1349] *Halichoerus grypus* (Grey Seal) [1364] **Potential Impact** This SAC is 59.4 km from the proposed cable survey area. The proposed cable survey area is located within the Irish Sea MU for Bottlenose Dolphin (JNCC, 2023) and is located within the foraging range of grey seal (448 km) (Carter et al., 2022). Initial assessment identifies that, in the absence of mitigation measures, there may be potential for impact on grey seal and bottlenose dolphin (features of interest of this SAC) through underwater noise and physical disturbance which could impact the Features of Interest of this SAC. Mitigation measures are required to protect the SAC from significant effects. The survey area is located 59.4 km from this conservation site. Given the nature of the proposed works, and the significant distance to this SAC across a marine environment, in the absence of mitigation measures, no significant impacts on habitats protected as a qualifying interest of this SAC are foreseen from the proposed works associated with this survey license application. Further, no significant impacts on otter are foreseen. As detailed by Reid et al. (2013), female otters have territories of 7.5 ± 1.5km in length along a riverine environment and 6.5 ± 1.0km in coastal environments, while male otter territory along rivers is approximately 13.2 ± 5.3km in length with a high degree of variability. Given the nature of the proposed works and the significant distance between the proposed survey area and this SAC (59.4km), in the absence of mitigation, no significant effects on otter species are likely as a result of the proposed project.

NATURA Site Code	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
			Initial assessment identifies that, in the absence of mitigation measures, and out of an abundance of caution, there may be potential for impact on bottlenose dolphins and grey seals (qualifying interests of this SAC) through underwater noise and physical disturbance which could impact the Qualifying Interest of this SAC. Mitigation measures are required to protect the SAC from significant effects. The proposed project has the potential to introduce noise into the marine environment and mitigation measures are required to protect bottlenose dolphins and grey seals. **Natura Impact Statement Required**
UK0016612	Murlough	**In**	**Conservation Objective** To maintain (or restore where appropriate) the qualifying interests to favourable condition. **Qualifying Interest** Fixed coastal dunes with herbaceous vegetation ("grey dunes") [2130] *priority habitat. Atlantic decalcified fixed dunes (*Calluno-Ulicetea*) [2150] *priority habitat. Sandbanks which are slightly covered by sea water all the time [1110] Mudflats and sandflats not covered by seawater at low tide [1140] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with Ammophila arenaria ("white dunes") [2120] Dunes with Salix repens ssp. argentea (*Salicion arenariae*) [2170] Marsh fritillary butterfly (*Euphydryas (Eurodryas, Hypodryas) aurinia*) [1065] Harbour Seal (*Phoca vitulina*) [1365] **Potential Impact** This SAC is 72.7 km from the proposed cable survey area. The proposed cable survey area is located within the foraging range of harbour seal (273 km) (Carter et al., 2022). Initial assessment identifies that, in the absence of mitigation measures, and out of an abundance of caution, there may be potential for impact on harbour seals (qualifying interests of this SAC) through underwater noise and physical disturbance which could impact the Qualifying Interest of this SAC. Mitigation measures are required to protect the SAC from significant effects. The survey area is located 72.7 km from this conservation site. Given the nature of the proposed works, and the significant distance to this SAC across a marine environment, in the absence of mitigation measures, no significant impacts on habitats or the marsh fritillary butterfly protected as a

NATURA Site Code	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
			qualifying interest of this SAC are foreseen from the proposed works associated with this survey license application. The proposed project has the potential to introduce noise into the marine environment and mitigation measures are required to protect harbour seals. **Natura Impact Statement Required**
UK0030399	North Channel	In	**Conservation Objective** Maintain site integrity by ensuring: 1. Harbour porpoise are a viable component of the site. 2. There is no significant disturbance of the species. 3. The condition of supporting habitats and processes, and the availability of prey is maintained. **Qualifying Interest** Harbour Porpoise (*Phocoena phocoena*) [1351] **Potential Impact** This SAC is 73.5 km from the proposed cable survey area. The proposed cable survey area is located within the Celtic and Irish Seas MU for Harbour Porpoise (JNCC, 2023). Initial assessment identifies that, in the absence of mitigation measures, and out of an abundance of caution, there may be potential for impact on harbour porpoise (qualifying interest of this SAC) through underwater noise and physical disturbance which could impact the Qualifying Interest of this SAC. Mitigation measures are required to protect the SAC from significant effects. The proposed project has the potential to introduce noise into the marine environment and mitigation measures are required to protect harbour porpoise. **Natura Impact Statement Required**
UK0016618	Strangford Lough	In	**Conservation Objective** To maintain (or restore where appropriate) the qualifying interests to favourable condition. **Qualifying Interest** Large shallow inlet and bay [1160] Coastal lagoons [1150] Mudflats and sandflats not covered by sea water at low tide [1140] Reefs [1170] Annual vegetation of drift lines [1210] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] Perennial vegetation of stony banks [1220] Salicornia and other annuals colonising mud and sand [1310] Harbour (Common) Seal (*Phoca vitulina*) [1351]

NATURA Site Code	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
			Potential Impact This SAC is 88.3 km from the proposed cable survey area. The proposed cable survey area is located within the foraging range of harbour seal (273 km) (Carter et al., 2022). Initial assessment identifies that, in the absence of mitigation measures, there may be potential for impact on harbour seal (feature of interest of this SAC) through underwater noise and physical disturbance which could impact the Feature of Interest of this SAC. Mitigation measures are required to protect the SAC from significant effects. The survey area is located 88.3 km from this conservation site. Given the nature of the proposed works, and the significant distance to this SAC across a marine environment, in the absence of mitigation measures, no significant impacts on habitats protected as qualifying interests of this SAC are foreseen from the proposed works associated with this survey license application. The proposed project has the potential to introduce noise into the marine environment and mitigation measures are required to protect harbour seals. **Natura Impact Statement Required**
UK0012712	Cardigan Bay / Bae Ceredigion	**In**	**Conservation Objective** To maintain (or restore where appropriate) the qualifying interests to favourable condition. **Qualifying Interest** Bottlenose dolphin (*Tursiops truncatus*) [1349] **Potential Impact** This SAC is 116.8 km from the proposed cable survey area. The proposed cable survey area is located within the Irish Sea MU for Bottlenose dolphin (JNCC, 2023). Initial assessment identifies that, in the absence of mitigation measures, and out of an abundance of caution, there may be potential for impact on bottlenose dolphin (qualifying interest of this SAC) through underwater noise and physical disturbance which could impact the Qualifying Interest of this SAC. Mitigation measures are required to protect the SAC from significant effects. The proposed project has the potential to introduce noise into the marine environment and mitigation measures are required to protect bottlenose dolphin. **Natura Impact Statement Required**
UK0013116	Pembrokeshire Marine / Sir Benfro Forol	**In**	**Conservation Objective** To maintain (or restore where appropriate) the qualifying interests to favourable condition.

NATURA Site Code	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
			Qualifying Interests Sandbanks which are slightly covered by seawater all the time [1110] Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Coastal lagoons [1150] Large shallow inlets and bays [1160] Reefs [1170] Submerged or partially submerged sea caves [8330] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] Grey Seal (*Halichoeurus grypus*) [1364] Otter (*Lutra lutra*) [1355] Allis shad (*Alosa alosa*) [1102] Twaite shad (*Alosa fallax*) [1103] River lamprey (*Lampetra fluviatilis*) [1099] Sea lamprey (*Petromyzon marinus*) [1095] Shore dock (*Rumex rupestris*) [1441] **Potential Impact** This SAC is 151 km from the proposed cable survey area. The proposed cable survey area is located within the foraging range of grey seal (448 km) (Carter et al., 2022). Initial assessment identifies that, in the absence of mitigation measures, and out of an abundance of caution, there may be potential for impact on grey seal (qualifying interest of this SAC) through underwater noise and physical disturbance which could impact the Qualifying Interest of this SAC. Mitigation measures are required to protect the SAC from significant effects. The survey area is located 151 km from this conservation site. Given the nature of the proposed works, and the significant distance to this SAC across a marine environment, in the absence of mitigation measures, no significant impacts on designated habitats, Lamprey species (Sea and River), or Shore dock protected as a qualifying interest of this SAC are foreseen from the proposed works associated with this survey license application. In relation to Twaite shad and Allis shad, given the spatial and temporal nature of the proposed works, and the distance to this SAC, the proposed project is considered too far for any significant interaction to occur. Further, no significant impacts on otter are foreseen. As detailed by Reid et al. (2013), female otters have territories of 7.5 ± 1.5km in length along a riverine environment and 6.5 ± 1.0km in coastal environments, while male otter territory along rivers is approximately 13.2 ± 5.3km in length with a high degree of variability. Given the nature of the proposed works and the significant distance between the proposed survey area and this SAC (151km), in the absence of mitigation, no

NATURA Site Code	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
			significant effects on otter species are likely as a result of the proposed project. The proposed project has the potential to introduce noise into the marine environment and mitigation measures are required to protect harbour seals. **Natura Impact Statement Required**
UK0030384	The Maidens	**In**	**Conservation Objective** To maintain (or restore where appropriate) the qualifying interests to favourable condition. **Qualifying Interest** Sandbanks which are slightly covered by seawater all the time [1110] Reefs [1170] Grey Seal (*Halichoeurus grypus*) [1364] **Potential Impact** This SAC is 152.8 km from the proposed cable survey area. The proposed cable survey area is located within the foraging range of grey seal (448 km) (Carter et al., 2022). Initial assessment identifies that, in the absence of mitigation measures, there may be potential for impact on grey seal (feature of interest of this SAC) through underwater noise and physical disturbance which could impact the Feature of Interest of this SAC. Mitigation measures are required to protect the SAC from significant effects. The survey area is located 152.8 km from this conservation site. Given the nature of the proposed works, and the significant distance to this SAC across a marine environment, in the absence of mitigation measures, no significant impacts on sandbanks or reefs protected as qualifying interests of this SAC are foreseen from the proposed works associated with this survey license application. The proposed project has the potential to introduce noise into the marine environment and mitigation measures are required to protect grey seals. **Natura Impact Statement Required**
UK0030396	Bristol Channel Approaches/Dynesfeydd Môr Hafren	**In**	**Conservation Objective** To maintain (or restore where appropriate) the qualifying interests to favourable condition. **Qualifying Interest** Harbour porpoise (*Phocoena phocoena*) [1351] **Potential Impact** This SAC is 180.6 km from the proposed cable survey area. The proposed cable survey area is located within the Celtic and Irish Seas MU for harbour porpoise (JNCC, 2023).

NATURA Site Code	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
			Initial assessment identifies that, in the absence of mitigation measures, and out of an abundance of caution, there may be potential for impact on harbour porpoise (qualifying interest of this SAC) through underwater noise and physical disturbance which could impact the Qualifying Interest of this SAC. Mitigation measures are required to protect the SAC from significant effects. The proposed project has the potential to introduce noise into the marine environment and mitigation measures are required to protect harbour porpoise. **Natura Impact Statement Required**
UK0013114	Lundy	**In**	**Conservation Objective** To maintain (or restore where appropriate) the qualifying interests to favourable condition. **Qualifying Interest** Sandbanks which are slightly covered by seawater all the time [1110] Reefs [1170] Submerged or partially submerged sea caves [8330] Grey Seal (*Halichoeurus grypus*) [1364] **Potential Impact** This SAC is 235.9 km from the proposed cable survey area. The proposed cable survey area is located within the foraging range of grey seal (448 km) (Carter et al., 2022). Initial assessment identifies that, in the absence of mitigation measures, there may be potential for impact on grey seal (feature of interest of this SAC) through underwater noise and physical disturbance which could impact the Feature of Interest of this SAC. Mitigation measures are required to protect the SAC from significant effects. The survey area is located 235.9 km from this conservation site. Given the nature of the proposed works, and the significant distance to this SAC across a marine environment, in the absence of mitigation measures, no significant impacts on habitats protected as qualifying interests of this SAC are foreseen from the proposed works associated with this survey license application. The proposed project has the potential to introduce noise into the marine environment and mitigation measures are required to protect grey seals. **Natura Impact Statement Required**
UK0013694	Isles of Scilly Complex	**In**	**Conservation Objective** To maintain (or restore where appropriate) the qualifying interests to favourable condition.

NATURA Site Code	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
			Qualifying Interest Sandbanks which are slightly covered by seawater all the time [1110] Mudflats and sandflats not covered by seawater at low tide [1140] Reefs [1170] Shore Dock (*Rumex rupestris*) [1441] Grey Seal (*Halichoeurus grypus*) [1364] **Potential Impact** This SAC is 372.4 km from the proposed cable survey area. The proposed cable survey area is located within the foraging range of grey seal (448 km) (Carter et al., 2022). Initial assessment identifies that, in the absence of mitigation measures, there may be potential for impact on grey seal (feature of interest of this SAC) through underwater noise and physical disturbance which could impact the Feature of Interest of this SAC. Mitigation measures are required to protect the SAC from significant effects. The survey area is located 372.4 km from this conservation site. Given the nature of the proposed works, and the significant distance to this SAC across a marine environment, in the absence of mitigation measures, no significant impacts on habitats or shore dock protected as qualifying interests of this SAC are foreseen from the proposed works associated with this survey license application. The proposed project has the potential to introduce noise into the marine environment and mitigation measures are required to protect grey seals. **Natura Impact Statement Required**

NATURA Site Code	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
Special Areas of Conservation (FR)			
FR2502022	Nord Bretagne DH	**In**	**Conservation Objective** To maintain (or restore where appropriate) the qualifying interests to favourable condition. **Qualifying Interests** *Phocoena phocoena* (Harbour Porpoise) [1351] **Potential Impact** This SAC is 426.8 km from the proposed cable survey area. The proposed cable survey area is located within the Celtic and Irish Seas MU for Harbour Porpoise (JNCC, 2023).

NATURA Site Code	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
			Initial assessment identifies that, in the absence of mitigation measures, and out of an abundance of caution, there may be potential for impact on harbour porpoise (qualifying interest of this SAC) through underwater noise and physical disturbance which could impact the Qualifying Interest of this SAC. Mitigation measures are required to protect the SAC from significant effects. The proposed project has the potential to introduce noise into the marine environment and mitigation measures are required to protect harbour porpoise. **Natura Impact Statement Required**
FR2500084	Récifs et landes de la Hague	**In**	**Conservation Objective** To maintain (or restore where appropriate) the qualifying interests to favourable condition. **Qualifying Interests** *Phocoena phocoena* (Harbour Porpoise) [1351] **Potential Impact** This SAC is 457.8 km from the proposed cable survey area. The proposed cable survey area is located within the Celtic and Irish Seas MU for Harbour Porpoise (JNCC, 2023). Initial assessment identifies that, in the absence of mitigation measures, and out of an abundance of caution, there may be potential for impact on harbour porpoise (qualifying interest of this SAC) through underwater noise and physical disturbance which could impact the Qualifying Interest of this SAC. Mitigation measures are required to protect the SAC from significant effects. The proposed project has the potential to introduce noise into the marine environment and mitigation measures are required to protect harbour porpoise. **Natura Impact Statement Required**
FR2502019	Anse de Vauville	**In**	**Conservation Objective** To maintain (or restore where appropriate) the qualifying interests to favourable condition. **Qualifying Interests** *Phocoena phocoena* (Harbour Porpoise) [1351] **Potential Impact** This SAC is 465.9 km from the proposed cable survey area. The proposed cable survey area is located within the Celtic and Irish Seas MU for Harbour Porpoise (JNCC, 2023). Initial assessment identifies that, in the absence of mitigation measures, and out of an abundance of caution, there may be potential for impact on harbour porpoise (qualifying interest of this SAC) through underwater noise and physical disturbance which could impact the Qualifying Interest of this

NATURA Site Code	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
			SAC. Mitigation measures are required to protect the SAC from significant effects. The proposed project has the potential to introduce noise into the marine environment and mitigation measures are required to protect harbour porpoise. **Natura Impact Statement Required**
FR5302015	Mers Celtiques – Talus du golfe de Gascogne	**In**	**Conservation Objective** To maintain (or restore where appropriate) the qualifying interests to favourable condition. **Qualifying Interests** *Phocoena phocoena* (Harbour Porpoise) [1351] **Potential Impact** This SAC is 468.8 km from the proposed cable survey area. The proposed cable survey area is located within the Celtic and Irish Seas MU for Harbour Porpoise (JNCC, 2023). Initial assessment identifies that, in the absence of mitigation measures, and out of an abundance of caution, there may be potential for impact on harbour porpoise (qualifying interest of this SAC) through underwater noise and physical disturbance which could impact the Qualifying Interest of this SAC. Mitigation measures are required to protect the SAC from significant effects. The proposed project has the potential to introduce noise into the marine environment and mitigation measures are required to protect harbour porpoise. **Natura Impact Statement Required**
FR2502018	Banc et récifs de Surtainville	**In**	**Conservation Objective** To maintain (or restore where appropriate) the qualifying interests to favourable condition. **Qualifying Interests** *Phocoena phocoena* (Harbour Porpoise) [1351] **Potential Impact** This SAC is 483.9 km from the proposed cable survey area. The proposed cable survey area is located within the Celtic and Irish Seas MU for Harbour Porpoise (JNCC, 2023). Initial assessment identifies that, in the absence of mitigation measures, and out of an abundance of caution, there may be potential for impact on harbour porpoise (qualifying interest of this SAC) through underwater noise and physical disturbance which could impact the Qualifying Interest of this SAC. Mitigation measures are required to protect the SAC from significant effects.

NATURA Site Code	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
			The proposed project has the potential to introduce noise into the marine environment and mitigation measures are required to protect harbour porpoise. **Natura Impact Statement Required**
FR5300009	Côte de Granit rose-Sept-Iles	**In**	**Conservation Objective** To maintain (or restore where appropriate) the qualifying interests to favourable condition. **Qualifying Interests** *Phocoena phocoena* (Harbour Porpoise) [1351] **Potential Impact** This SAC is 487.5 km from the proposed cable survey area. The proposed cable survey area is located within the Celtic and Irish Seas MU for Harbour Porpoise (JNCC, 2023). Initial assessment identifies that, in the absence of mitigation measures, and out of an abundance of caution, there may be potential for impact on harbour porpoise (qualifying interest of this SAC) through underwater noise and physical disturbance which could impact the Qualifying Interest of this SAC. Mitigation measures are required to protect the SAC from significant effects. The proposed project has the potential to introduce noise into the marine environment and mitigation measures are required to protect harbour porpoise. **Natura Impact Statement Required**
FR5300010	Trégor – Goëlo	**In**	**Conservation Objective** To maintain (or restore where appropriate) the qualifying interests to favourable condition. **Qualifying Interests** *Phocoena phocoena* (Harbour Porpoise) [1351] **Potential Impact** This SAC is 492.9 km from the proposed cable survey area. The proposed cable survey area is located within the Celtic and Irish Seas MU for Harbour Porpoise (JNCC, 2023). Initial assessment identifies that, in the absence of mitigation measures, and out of an abundance of caution, there may be potential for impact on harbour porpoise (qualifying interest of this SAC) through underwater noise and physical disturbance which could impact the Qualifying Interest of this SAC. Mitigation measures are required to protect the SAC from significant effects. The proposed project has the potential to introduce noise into the marine environment and mitigation measures are required to protect harbour porpoise. **Natura Impact Statement Required**

NATURA Site Code	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
FR5300015	Baie de Morlaix	**In**	**Conservation Objective** To maintain (or restore where appropriate) the qualifying interests to favourable condition. **Qualifying Interests** *Phocoena phocoena* (Harbour Porpoise) [1351] **Potential Impact** This SAC is 510.7 km from the proposed cable survey area. The proposed cable survey area is located within the Celtic and Irish Seas MU for Harbour Porpoise (JNCC, 2023). Initial assessment identifies that, in the absence of mitigation measures, and out of an abundance of caution, there may be potential for impact on harbour porpoise (qualifying interest of this SAC) through underwater noise and physical disturbance which could impact the Qualifying Interest of this SAC. Mitigation measures are required to protect the SAC from significant effects. The proposed project has the potential to introduce noise into the marine environment and mitigation measures are required to protect harbour porpoise. **Natura Impact Statement Required**
FR5300017	Abers – Côtes des légendes	**In**	**Conservation Objective** To maintain (or restore where appropriate) the qualifying interests to favourable condition. **Qualifying Interests** *Phocoena phocoena* (Harbour Porpoise) [1351] **Potential Impact** This SAC is 515.8 km from the proposed cable survey area. The proposed cable survey area is located within the Celtic and Irish Seas MU for Harbour Porpoise (JNCC, 2023). Initial assessment identifies that, in the absence of mitigation measures, and out of an abundance of caution, there may be potential for impact on harbour porpoise (qualifying interest of this SAC) through underwater noise and physical disturbance which could impact the Qualifying Interest of this SAC. Mitigation measures are required to protect the SAC from significant effects. The proposed project has the potential to introduce noise into the marine environment and mitigation measures are required to protect harbour porpoise. **Natura Impact Statement Required**
FR5300008	Rivière Leguer, forêts de Beffou, Coat an Noz et Coat an Hay	**In**	**Conservation Objective** To maintain (or restore where appropriate) the qualifying interests to favourable condition.

NATURA Site Code	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
			Qualifying Interests *Phocoena phocoena* (Harbour Porpoise) [1351] **Potential Impact** This SAC is 519 km from the proposed cable survey area. The proposed cable survey area is located within the Celtic and Irish Seas MU for Harbour Porpoise (JNCC, 2023). Initial assessment identifies that, in the absence of mitigation measures, and out of an abundance of caution, there may be potential for impact on harbour porpoise (qualifying interest of this SAC) through underwater noise and physical disturbance which could impact the Qualifying Interest of this SAC. Mitigation measures are required to protect the SAC from significant effects. The proposed project has the potential to introduce noise into the marine environment and mitigation measures are required to protect harbour porpoise. **Natura Impact Statement Required**
FR5300011	Cap d'Erquy-Cap Fréhel	**In**	**Conservation Objective** To maintain (or restore where appropriate) the qualifying interests to favourable condition. **Qualifying Interests** *Phocoena phocoena* (Harbour Porpoise) [1351] **Potential Impact** This SAC is 530.9 km from the proposed cable survey area. The proposed cable survey area is located within the Celtic and Irish Seas MU for Harbour Porpoise (JNCC, 2023). Initial assessment identifies that, in the absence of mitigation measures, and out of an abundance of caution, there may be potential for impact on harbour porpoise (qualifying interest of this SAC) through underwater noise and physical disturbance which could impact the Qualifying Interest of this SAC. Mitigation measures are required to protect the SAC from significant effects. The proposed project has the potential to introduce noise into the marine environment and mitigation measures are required to protect harbour porpoise. **Natura Impact Statement Required**
FR5300018	Ouessant-Molène	**In**	**Conservation Objective** To maintain (or restore where appropriate) the qualifying interests to favourable condition. **Qualifying Interests** *Phocoena phocoena* (Harbour Porpoise) [1351]

NATURA Site Code	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
			Potential Impact This SAC is 532.4 km from the proposed cable survey area. The proposed cable survey area is located within the Celtic and Irish Seas MU for Harbour Porpoise (JNCC, 2023). Initial assessment identifies that, in the absence of mitigation measures, and out of an abundance of caution, there may be potential for impact on harbour porpoise (qualifying interest of this SAC) through underwater noise and physical disturbance which could impact the Qualifying Interest of this SAC. Mitigation measures are required to protect the SAC from significant effects. The proposed project has the potential to introduce noise into the marine environment and mitigation measures are required to protect harbour porpoise. **Natura Impact Statement Required**
FR2500079	Chausey	**In**	**Conservation Objective** To maintain (or restore where appropriate) the qualifying interests to favourable condition. **Qualifying Interests** *Phocoena phocoena* (Harbour Porpoise) [1351] **Potential Impact** This SAC is 533.4 km from the proposed cable survey area. The proposed cable survey area is located within the Celtic and Irish Seas MU for Harbour Porpoise (JNCC, 2023). Initial assessment identifies that, in the absence of mitigation measures, and out of an abundance of caution, there may be potential for impact on harbour porpoise (qualifying interest of this SAC) through underwater noise and physical disturbance which could impact the Qualifying Interest of this SAC. Mitigation measures are required to protect the SAC from significant effects. The proposed project has the potential to introduce noise into the marine environment and mitigation measures are required to protect harbour porpoise. **Natura Impact Statement Required**
FR5300066	Baie de Saint-Brieuc - Est	**In**	**Conservation Objective** To maintain (or restore where appropriate) the qualifying interests to favourable condition. **Qualifying Interests** *Phocoena phocoena* (Harbour Porpoise) [1351] **Potential Impact** This SAC is 549.1 km from the proposed cable survey area. The proposed cable survey area is located within the Celtic and Irish Seas MU for Harbour Porpoise (JNCC, 2023).

NATURA Site Code	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
			Initial assessment identifies that, in the absence of mitigation measures, and out of an abundance of caution, there may be potential for impact on harbour porpoise (qualifying interest of this SAC) through underwater noise and physical disturbance which could impact the Qualifying Interest of this SAC. Mitigation measures are required to protect the SAC from significant effects. The proposed project has the potential to introduce noise into the marine environment and mitigation measures are required to protect harbour porpoise. **Natura Impact Statement Required**
FR5302006	Côtes de Crozon	**In**	**Conservation Objective** To maintain (or restore where appropriate) the qualifying interests to favourable condition. **Qualifying Interests** *Phocoena phocoena* (Harbour Porpoise) [1351] **Potential Impact** This SAC is 560 km from the proposed cable survey area. The proposed cable survey area is located within the Celtic and Irish Seas MU for Harbour Porpoise (JNCC, 2023). Initial assessment identifies that, in the absence of mitigation measures, and out of an abundance of caution, there may be potential for impact on harbour porpoise (qualifying interest of this SAC) through underwater noise and physical disturbance which could impact the Qualifying Interest of this SAC. Mitigation measures are required to protect the SAC from significant effects. The proposed project has the potential to introduce noise into the marine environment and mitigation measures are required to protect harbour porpoise. **Natura Impact Statement Required**
FR2500077	Baie du Mont Saint-Michel	**In**	**Conservation Objective** To maintain (or restore where appropriate) the qualifying interests to favourable condition. **Qualifying Interests** *Phocoena phocoena* (Harbour Porpoise) [1351] **Potential Impact** This SAC is 561.7 km from the proposed cable survey area. The proposed cable survey area is located within the Celtic and Irish Seas MU for Harbour Porpoise (JNCC, 2023). Initial assessment identifies that, in the absence of mitigation measures, and out of an abundance of caution, there may be potential for impact on harbour porpoise (qualifying interest of this SAC) through underwater noise and physical disturbance which could impact the Qualifying Interest of this

NATURA Site Code	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
			SAC. Mitigation measures are required to protect the SAC from significant effects. The proposed project has the potential to introduce noise into the marine environment and mitigation measures are required to protect harbour porpoise. **Natura Impact Statement Required**
FR5300012	Baie de Lancieux, Baie de l'Arguenon, Archipel de Saint Malo et Dinard	**In**	**Conservation Objective** To maintain (or restore where appropriate) the qualifying interests to favourable condition. **Qualifying Interests** *Phocoena phocoena* (Harbour Porpoise) [1351] **Potential Impact** This SAC is 562.5 km from the proposed cable survey area. The proposed cable survey area is located within the Celtic and Irish Seas MU for Harbour Porpoise (JNCC, 2023). Initial assessment identifies that, in the absence of mitigation measures, and out of an abundance of caution, there may be potential for impact on harbour porpoise (qualifying interest of this SAC) through underwater noise and physical disturbance which could impact the Qualifying Interest of this SAC. Mitigation measures are required to protect the SAC from significant effects. The proposed project has the potential to introduce noise into the marine environment and mitigation measures are required to protect harbour porpoise. **Natura Impact Statement Required**
FR5300061	Estuairie de la Rance	**In**	**Conservation Objective** To maintain (or restore where appropriate) the qualifying interests to favourable condition. **Qualifying Interests** *Phocoena phocoena* (Harbour Porpoise) [1351] **Potential Impact** This SAC is 570.6 km from the proposed cable survey area. The proposed cable survey area is located within the Celtic and Irish Seas MU for Harbour Porpoise (JNCC, 2023). Initial assessment identifies that, in the absence of mitigation measures, and out of an abundance of caution, there may be potential for impact on harbour porpoise (qualifying interest of this SAC) through underwater noise and physical disturbance which could impact the Qualifying Interest of this SAC. Mitigation measures are required to protect the SAC from significant effects.

NATURA Site Code	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
			The proposed project has the potential to introduce noise into the marine environment and mitigation measures are required to protect harbour porpoise. **Natura Impact Statement Required**
FR5302007	Chaussée de Sein	**In**	**Conservation Objective** To maintain (or restore where appropriate) the qualifying interests to favourable condition. **Qualifying Interests** *Phocoena phocoena* (Harbour Porpoise) [1351] **Potential Impact** This SAC is 580 km from the proposed cable survey area. The proposed cable survey area is located within the Celtic and Irish Seas MU for Harbour Porpoise (JNCC, 2023). Initial assessment identifies that, in the absence of mitigation measures, and out of an abundance of caution, there may be potential for impact on harbour porpoise (qualifying interest of this SAC) through underwater noise and physical disturbance which could impact the Qualifying Interest of this SAC. Mitigation measures are required to protect the SAC from significant effects. The proposed project has the potential to introduce noise into the marine environment and mitigation measures are required to protect harbour porpoise. **Natura Impact Statement Required**
FR5302016	Récifs du talus du golfe de Gascogne	**In**	**Conservation Objective** To maintain (or restore where appropriate) the qualifying interests to favourable condition. **Qualifying Interests** *Phocoena phocoena* (Harbour Porpoise) [1351] **Potential Impact** This SAC is 598 km from the proposed cable survey area. The proposed cable survey area is located within the Celtic and Irish Seas MU for Harbour Porpoise (JNCC, 2023). Initial assessment identifies that, in the absence of mitigation measures, and out of an abundance of caution, there may be potential for impact on harbour porpoise (qualifying interest of this SAC) through underwater noise and physical disturbance which could impact the Qualifying Interest of this SAC. Mitigation measures are required to protect the SAC from significant effects. The proposed project has the potential to introduce noise into the marine environment and mitigation measures are required to protect harbour porpoise. **Natura Impact Statement Required**

4.5 Cumulative Impact Assessment

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 potential for in-combination effects within the ZoI that may occur as a result of the proposed project, during and post works has been assessed. The following cumulative impact assessment has been guided by the EC 2021 AA guidance document[d], with particular reference to "Table 2. Cumulative impact assessment".

4.5.1 Geographic Boundaries and the Timeline for Assessment

The proposed project is primarily located within the intertidal and subtidal elements of Dublin Bay and within the Irish EEZ. The potential ZoI for in-combination effects for this assessment has been deemed to be projects located proximate to the landfall and intertidal elements of the survey works in addition to subtidal elements relating to underwater noise. Terrestrial planning applications have been examined for the potential for in-combination effects. Given that the proposed survey works extend to the offshore subtidal in Dublin Bay and the Irish Sea, the geographic boundaries of assessment was expanded to include coastal and offshore marine projects located within the Irish Sea.

In relation to the timeline for assessment, given the short temporal nature of the proposed works, and the fact that the proposed works will be isolated to the survey corridor extents with potential for noise to extend beyond the survey area, the most recent projects located within the vicinity of the proposed survey works area have been examined for potential in-combination effects.

4.5.2 Identification of Plans/Projects that could act In Combination

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

Table 12. *Dublin City Council Planning Permissions.*

Ref. No.	Address	Proposal
3872/20	Irish Bitumen Storage Limited, Alexandra Road, Dublin Port, Dublin 1, D01 V0V2	The site is adjacent to Breakwater Road and Jetty Road. The development consists of removal of twelve bitumen & lubricant oil storage tanks with total capacity 3,105m3, removal of the associated equipment and removal of a control room building, followed by the installation of a new bitumen storage tank of 28m in diameter and 13.45m in height with a volume of approximately 8,275m3 and installation of a pump platform.
3625/20	Poolbeg Generating Station, Pigeon House Road, Dublin 4	Planning permission for development on a c. 5.3 ha site located within the existing Poolbeg Generating Station, Pigeon House Road, Dublin 4 (Eircode D04 XD82), which is licenced by the Environmental Protection Agency (EPA) under an Industrial Emissions (IE) Licence [Ref. P0577-03]. The development will consist of: (a) The demolition of three existing disused modern buildings with a combined floor area of 3,240 sq.m. comprising: (1) a single storey [up to 3.6 m high], c. 166 sq.m. Safety Centre (Pavilion) building; (2) a single storey [up to 4.5 m high], c. 463 sq. m. Store building; (3) a multi-storey [up to 20 m high], c. 2,611 sq.m. Store / Workshop building; (b) Works including: (1) remediation and cladding of exposed northern façade of 5-storey [up to 20.4 m high], redundant former Administration building; (2) cladding of exposed western façade of turbine hall building on eastern boundary of development site; (3) ancillary site clearance, grading and surfacing; (c) Construction and operation of a 75 MW capacity battery energy storage system (BESS) facility within a secured compound including the following elements: (1) Up to 24 battery container unit arrangements comprising: 24 Concrete plinths (c. 110 sq. m. , c. 0.5 m high) typically supporting battery

[d] Official Journal C 437/2021 (europa.eu)

Ref. No.	Address	Proposal
		containers (c. 2.6 m high); air conditioning (A/C) unit (c. 1.8 m high); inverter unit (c. 3.8 m high); battery transformer unit (c. 3.3 m high); ring main unit (RMU) (c. 3.3 m high); (2) a c. 126 sq. m., c. 4.7 m high control building; (3) industrial/ electrical plant including: (i) 3 lightning monopoles (c. 20 m high); (ii) SCADA communication mast (c. 18 m high); (iii) VAR support unit on concrete plinth (c. 24 sq. m., c. 3.4 m high); (iv) 2 bunded house transformers (c. 19.8 sq. m., c. 3.2 m high); (v) spare parts storage container (c. 36 sq. m., c. 2.6 m high); (vi) fenced transformer compound (c. 1,309 sq. m., c. 5.6 m high); (vii) cable trays (and associated service connections); (viii) pole mounted security cameras (c. 8.3 m high); (4) Removal of existing fencing and gates, and installation of: various boundary and internal fencing and gates with different treatments including palisade specification (c. 2.6 m high), and chainlink specification (c. 2.7 m high); (5) ancillary development works including provision of areas of hardstanding, internal access roads, onsite drainage and attenuation, temporary construction laydown areas; and connections to site services networks including: telecommunications, electrical, water supply, surface water drainage/ attenuation, and ancillary cabling. The primary access will be via the existing Poolbeg Generating Station entrance at Pigeon House Road with a temporary construction access via the existing entrance off the road immediately south of the Poolbeg Generating Station.
3711/18	Lands at Berth 47A, adjacent to Pigeon House Road, Dublin 4, north of the Ringsend Wastewater Treatment Works.	Permission is sought for development that will consist of: construction of a bridge to span the existing cooling water outfall channel, adjacent to Pigeon House Road; construction of a new junction opposite the entrance to the Ecocem Ireland Plant; hard surfacing; site drainage and outfall; the use of lands for the storage of port-related maintenance and service equipment, construction project materials, contractor's site compound and project cargo; amendments to boundaries; and all associated services and site development works.
3638/18	Former Calor Yard and Ferry Terminals 1 and 2, Dublin Port, Dublin 1	The development will consist of a unified State services facility including: 2 no. Inspection Sheds (each 207sq.m and 7.5m in height), 2 no. single storey State Service office blocks (each 266sq.m and 3.5m in height), 5 no. Immigration Control Booths with a total floor area of 66sq.m and including canopy (293sq.m and 7.7m in height) and 4 no. gateways, control point comprising canopy (216sq.m and 7.7m in height) and 4 no. gateways, 24 no. staff car parking spaces, 20 no. car parking spaces, 18 no. HGV parking spaces, new 20m vehicular access onto Tolka Quay Road, 4 no. CCTV poles (18m high), new lighting (including 3 no. lighting columns 30m high and 8 no. lighting columns 12m high), 2.4m palisade fencing along sections of the northern and eastern site boundary and Alexandra Road, demolition of existing boundary wall along Tolka Quay Road and boundary fencing along Alexandra Road and, all associated site works. The development also includes modifications to check-in facilities and internal roads and circulation which will consist of: Demolition of existing freight office (612sq.m and 9.8m in height) and 3 no. check in booths with a total floor area of 32sq.m and associated site works and resurfacing to tie in with adjacent stacking areas, removal of Terminal Road West including associated fencing and resurfacing to tie in with adjacent stacking areas, realignment and lane alteration of Terminal Road South at junction with Terminal Road West; provision of signage gantry on Terminal Road South, extension of HGV check-in area including 6 no. booths with a total area of 60sq.m, 6 no. weighbridges and canopy (416sq.m and 7.8m in height). Associated site works including drainage, utility services, fencing, gates and bollards. All development to take place on a site of approx. 7.8 hectares.

Ref. No.	Address	Proposal
3540/18	Calor Office Site, Tolka Quay Road,Dublin Port, Dublin 1	Demolition of a single storey office building (785sq.m); demolition of a maintenance shed building (840sq.m);demolition of reinforced concrete bund and steel tank (42sqm); demolition of boiler room building (25sqm); demolition of sections of northern boundary wall, and all associated general site clearance. The development also includes: Construction of new hard surface including underground drainage infrastructure; new 2.4m palisade security fence on sections of northern and western boundary, and the upgrade of the existing access to provide a 12 m wide sliding gate access on Tolka Quay Road. An existing substation on site will remain in situ. All development to take place on a site of approx. 0.4 hectares.
2130/18	The Hammond Lane Metal Company Ltd., Pigeon House Road, Ringsend, Dublin 4	Demolition of existing two-storey administration building (534 sq.m); construction of a new two-storey building (563 sq.m) containing an administration area, staff facilities and a non-ferrous metals recovery area; 2 no. 18 m long weighbridges; 1 no. dry wheelwash; car parking; all associated site development works all on a site of 1.79 Ha. This application relates to a development which comprises an activity for which an Industrial Emissions License under Part IV of the EPA 1992 (as amended) is required.
3084/16	Dublin Port, Alexandria Road, Dublin 1	The development comprises of works to the Port's private internal road network, and includes works on public roads at East Wall Road, Bond Road and Alfie Byrne Road. The development will consist of: a) Construction of new roads and enhancements to existing roads within the Dublin Port estate north of River Liffey; b) Construction of enhanced landscaping and amenity route along the northern boundary; c) Construction of new pedestrian and cycle overbridge at Promenade Road; d) Construction of access ramps to pedestrian and cycle overbridge at Promenade Road; e) Construction of new pedestrian and cycle underpass at Promenade Road; f) Construction of 11 no. new signage gantries; g) Ancillary construction works, including site clearance, demolitions, earthworks, pavement construction, construction of verges, modifications to accesses, construction of new and amended drainage services, diversion and installation of utility services, installation of road markings and signs and accommodation works; h) Works to existing boundaries and construction of new boundaries; i) Construction of minor works to the junctions of East Wall Road with Tolka Quay Road and East Wall Road with Alexandra Road. The application is for a 10 year planning permission.

Table 13. *Foreshore/Marine licence applications proximate to the proposed survey corridor*

Reference	Title	Year	Location	Activity	Status
FS007635	MaresConnect Electiricity Interconnector Site Investigation	2023	FLAA is from Portmarknock, Co. Dublin to Skerries, Co. Dublin Investigative landfall zones include: Ardgillan - Barnageeragh Cove Balcarrick - Eagans Field Loughshiny - Rockabill View Robswalls - Malahide Rush	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	Applied

Reference	Title	Year	Location	Activity	Status
				communications technology for data acquisition	
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, off Counties Wexford, Wicklow, and Dublin	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 a number of 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. proposing to develop windfarm off Dublin/Wicklow	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

Reference	Title	Year	Location	Activity	Status
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, off counties Louth, Meath, and Dublin	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
FS007151	Site Investigations for the proposed Sunrise Offshore Wind Farm, off Counties Dublin and Wicklow	2021	Off Counties Dublin and Wicklow	Site investigation activities to undertake a variety of marine surveys at the proposed site in order 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. The site investigation surveys in the proposed Foreshore Licence Application Area will support the development of the proposed Sunrise Offshore Wind Farm.	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 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	Determination

Reference	Title	Year	Location	Activity	Status
				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, located off the coasts of Dublin, Meath and Louth. 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).	
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 14. *MARA licence applications proximate to the proposed survey corridor*

Reference	Title	Year	Location	Activity	Status
LIC230028	LIC230028 – Iarnrod Eireann	2023	East Coast – Dublin to Wicklow	A Geotechnical Investigation (GI) and Geophysical site investigation surveys to inform design options for the proposed East Coast Rail Infrastructure Protection Projects (ECRIPP). The purpose of ECRIPP is to implement protection measures to at risk sections of the Dublin to Wexford railway line from the effects of climate change and coastal erosion	Applied
LIC230018	LIC230018 – Microsoft Ireland Operations Ltd.	2023	Portmarnock, Co. Dublin	Geophysical survey and site investigations for a proposed subsea fibre optic cable having a landfall in Portmarnock, County Dublin to evaluate options for the route traversing the Irish Sea to Abergele, Wales.	Applied
LC230006	University College Cork Cetacean study within the	2023	Irish and Celtic Seas	The proposed maritime usage is to deploy passive acoustic monitoring devices to describe	Determined

Reference	Title	Year	Location	Activity	Status
	Irish and Celtic Seas			seasonal and diurnal occurrence of whales, dolphins and porpoises (cetaceans) in the Irish Sea and the Celtic Sea. The work is being carried out as part of a larger multidisciplinary research project called CETUS. The CETUS project: Cetacean, Elasmobranch, Turtle, and Seabird distribution modelling platform will provide scientific data that can be used to support the sustainable development of offshore renewable energy and is funded by Sustainable Energy Authority of Ireland (SEAI).	

4.5.3 Impact Identification

There are no projects, identified within Dublin City Council, Foreshore Licence applications, or MARA planning records, that have been granted planning or currently under construction, proximate to the proposed survey works, that could potentially cause significant in combination effects on European sites.

The potential impacts of the proposed cable route survey are Temporary (i.e. Effects lasting less than a year) in relation to seabed sampling and brief, lasting less than a day, in relation to underwater noise and primarily to occur during the brief survey period (with the presence of boats, machinery and personnel in the vicinity of the works). Impacts on infauna would be deemed to be temporary (i.e. Effects lasting less than a year).

4.5.4 Pathway Identification

The proposed cable survey route is in an area that experiences significant, constant vessel activity (due to proximity to Dublin Port). Given that intertidal elements of the proposed survey works are located within the intertidal of Dublin Bay, there is a potential hydrological pathway from the research vessel to designated conservation sites located within Dublin Bay. These conservation sites are located downstream of a number of terrestrial planning applications outlined in Table 12. In the marine offshore subtidal of Dublin Bay and the Irish Sea, there is a potential hydrological pathway from the research vessel to marine-based conservation sites within the Irish Sea. A number of Foreshore applications are located in this area, and may share a hydrological pathway with the proposed survey works.

4.5.5 Prediction

The survey works would not be seen to have a significant impact on water quality of the area, including impacting the water quality status. Given the scale and the temporal nature of the proposed survey works, no significant cumulative effects with other identified plans or projects are foreseen. Any potential impacts from a pathway that the research vessel may share with projects identified in Tables 12 - 14 are considered to be minimal, and no significant cumulative effects on designated conservation sites are foreseen.

4.5.6 Assessment

The projects outlined above are either completed or, are currently going through planning stages and are not expected to be carried out concurrently or are not at a scale or location where in combination effects are foresee with the proposed project. This report pertains to survey works for the proposed route 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 works, 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).

No likely in combination effects are foreseen from the project in conjunction with other projects.

4.6 Appropriate Assessment Screening Conclusions

An initial screening of the proposed works, using the precautionary principle (without the use of any mitigation measures) and Natura 2000 sites with the potential to result in significant effects on the conservation objectives and features of interest of the Natura 2000 sites was carried out in Table 11. Based on best scientific knowledge and objective information and assessment, the possibility of significant effects caused by the proposed project was excluded for the following Natura 2000 sites:

Special Protection Areas

Howth Head Coast SPA
Irelands' Eye SPA
Baldoyle Bay SPA
Dalkey Islands SPA
Lambay Island SPA
Malahide Estuary SPA
Rogerstown Estuary SPA
Wicklow Mountains SPA

Special Areas of Conservation

Howth Head SAC
South Dublin Bay SAC
Codling Fault Zone SAC
Baldoyle Bay SAC
Ireland's Eye SAC
Malahide Estuary SAC
Wicklow Mountains
Rogerstown Estuary SAC

The project is limited in scale and extent and the potential zone of influence is restricted to the immediate vicinity of the survey route, with the exception of underwater noise that may extend beyond the survey corridor. The proposed intertidal survey is within North Dublin Bay SAC, Rockabill to Dalkey Island SAC, South Dublin Bay and River Tolka Estuary SPA, North-West Irish Sea SPA and North Bull Island SPA. Subtidal elements of the project are located within the boundaries of North Dublin Bay SAC, Rockabill to Dalkey Island SAC, South Dublin Bay and River Tolka Estuary SPA, North-West Irish Sea SPA and North Bull Island SPA. Further, it should be noted that the following Natura 2000 sites have been screened IN due to the potential movements of harbour porpoise, common bottlenose dolphin, harbour seals, and grey seals (qualifying interests of these SAC):

- Slaney River Valley SAC (IE)
- Saltee Islands SAC (IE)
- Roaring Water Bay and Islands SAC (IE)
- Blasket Islands SAC (IE)
- North Anglesey Marine/Gogledd Môn Forol (UK)
- West Wales Marine / Gorllewin Cymru Forol (UK)
- Pen Llyn a'r Sarnau/Lleyn Peninsula and the Sarnau (UK)
- Murlough (UK)
- North Channel (UK)
- Strangford Lough (UK)
- Cardigan Bay / Bae Ceredigion (UK)
- Pembrokeshire Marine / Sir Benfro Forol (UK)
- The Maidens SAC (UK)
- Bristol Channel Approaches/Dynesfeydd Môr Hafren (UK)
- Lundy (UK)

- Isles of Scilly Complex (UK)
- Nord Bretagne DH (FR)
- Récifs et landes de la Hague (FR)
- Anse de Vauville (FR)
- Mers Celtiques – Talus du golfe de Gascogne (FR)
- Banc et récifs de Surtainville (FR)
- Côte de Granit rose-Sept-Iles (FR)
- Trégor – Goëlo (FR)
- Baie de Morlaix (FR)
- Abers – Côtes des legends (FR)
- Rivière Leguer, forêts de Beffou, Coat an Noz et Coat an Hay (FR)
- Cap d'Erquy-Cap Fréhel (FR)
- Ouessant-Molène (FR)
- Chausey (FR)
- Baie de Saint-Brieuc – Est (FR)
- Côtes de Crozon (FR)
- Baie du Mont Saint-Michel (FR)
- Baie de Lancieux, Baie de l'Arguenon, Archipel de Saint Malo et Dinard (FR)
- Estuairie de la Rance (FR)
- Chaussée de Sein (FR)
- Récifs du talus du golfe de Gascogne (FR)

The distribution of these species may bring them within the proximity of the subtidal survey works. Standard marine mammal mitigation measures will be in place (in compliance with NPWS guidance) and as a result it is required to go to NIS for these SACs.

Acting on a strictly precautionary basis, NIS is required in respect of the effects of the project on the Natura 2000 sites screened IN for NIS (potential habitat and disturbance effects in the absence of mitigation) because it cannot be excluded on the basis of best objective scientific information following screening, in the absence of control or mitigation measures that the plan or project, individually and/or in combination with other plans or projects, will have a significant effect on the named European Site/s.

An NIS or Stage 2 Appropriate Assessment is not required for the effects of the project on all other Natura sites because it can be excluded on the basis of the best objective scientific information following screening that the plan or project, individually and/or in combination with other plans or projects, will have a significant effect on the European Site/s.

A Stage 2 AA is required for the proposed project.

4.7 Data Used for AA Screening

NPWS site synopses and Conservation objectives of sites within 15km were assessed. The most recent SAC and SPA boundary shapefiles were downloaded and overlaid on Bing road maps and satellite imagery. A Dublin Port site visit was carried out at low tide (0.1m) on the 2nd September 2023. It should be noted that the mudflats are exposed only at very low spring tides.

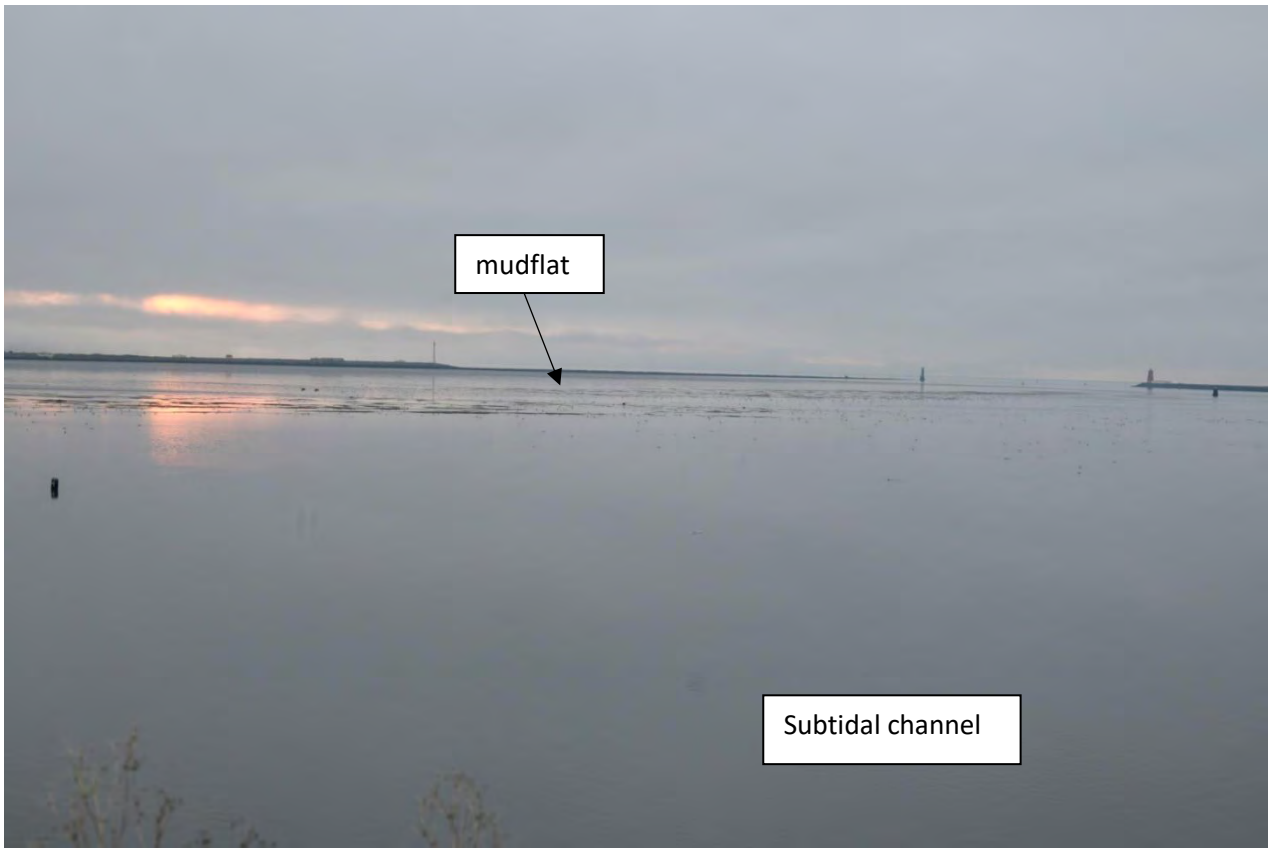

Plate 1. Low tide within Dublin bay (At landfall facing east)

Plate 2. Landfall at low tide facing east. Reclaimed land with fucoid dominated boulders.

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Appendix I

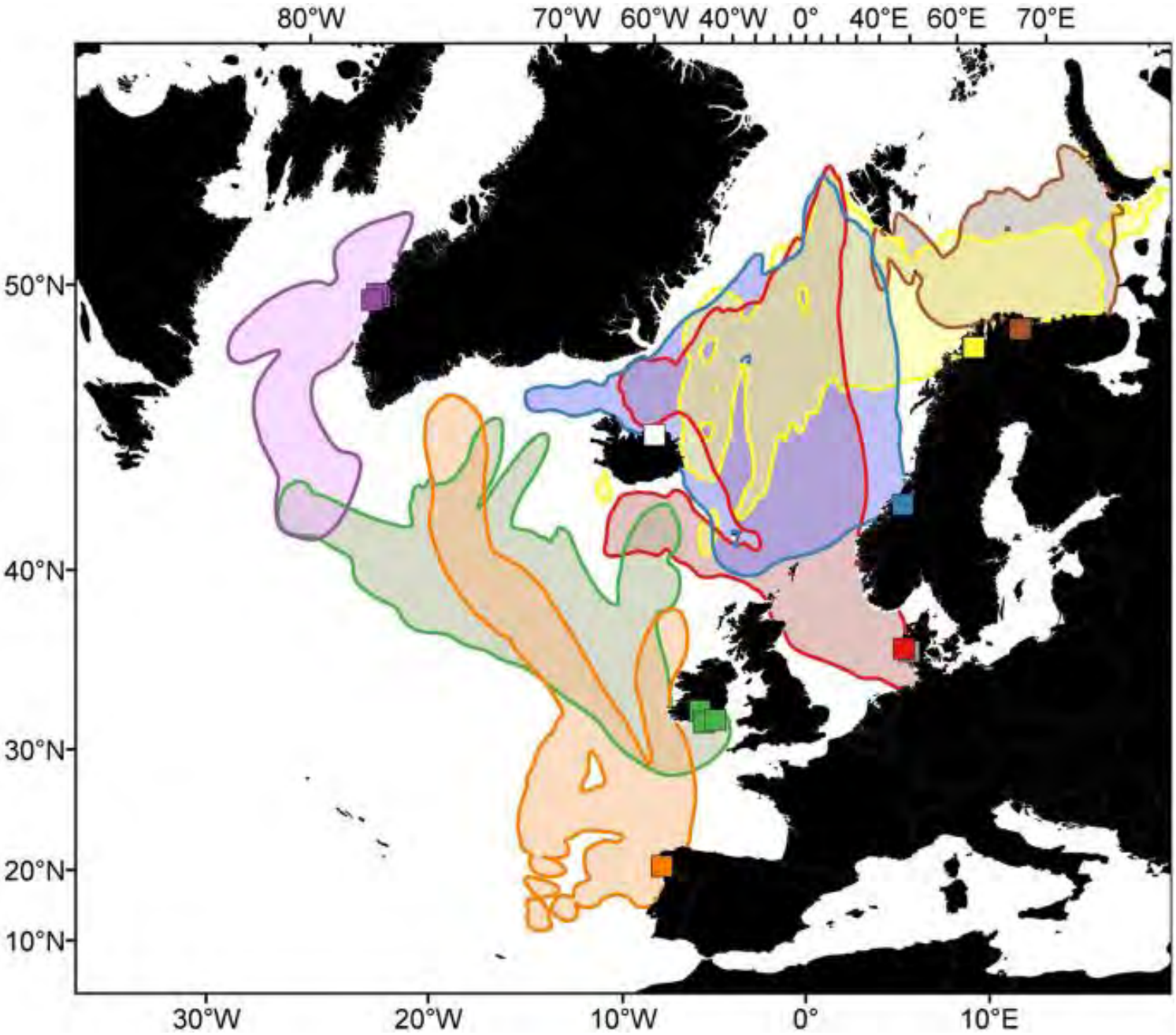

Figure A.1. Area use during the ocean migration of tagged Atlantic salmon (Ireland = Green) (Source: Rikardsen et al., 2021).