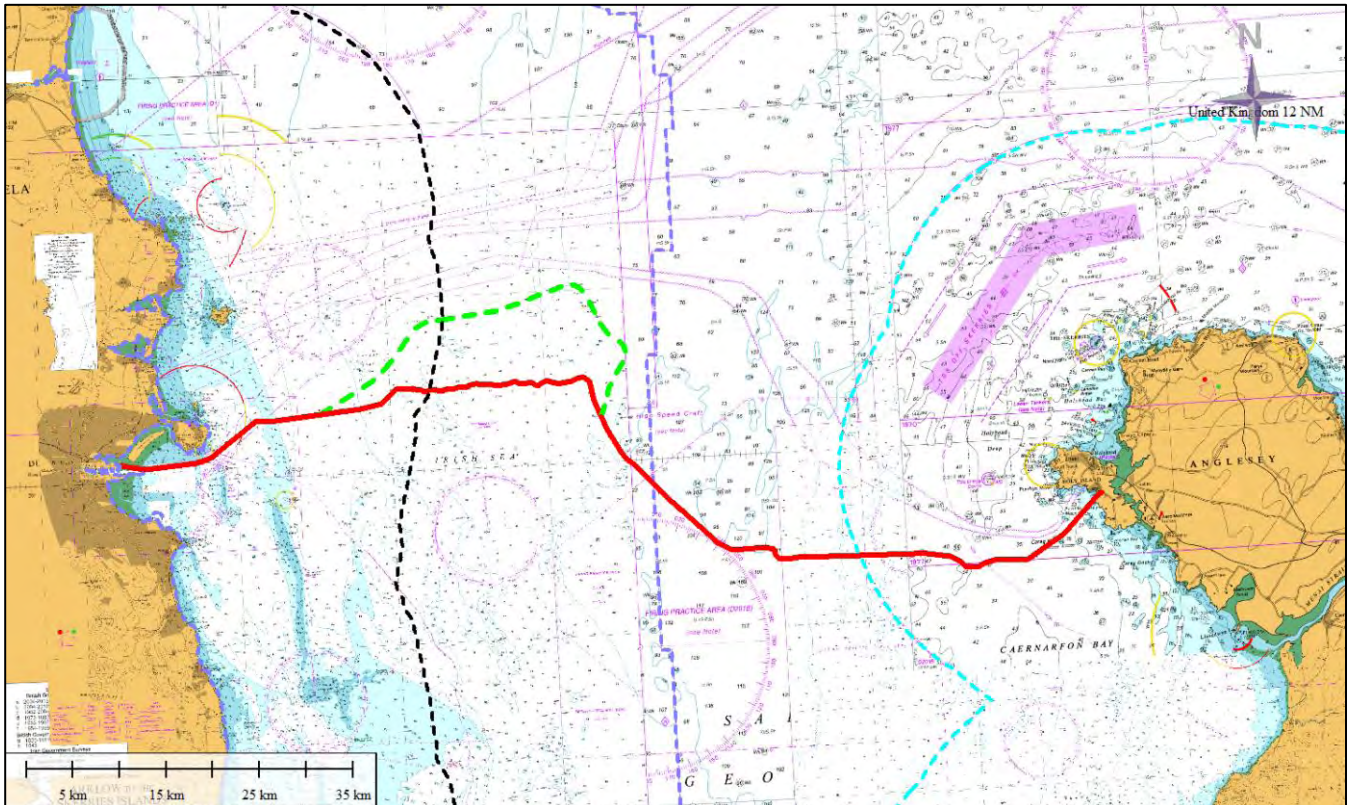


Natura Impact Statement – Information for a Stage 2 (Natura Impact Statement) AA for marine survey and site investigation works for a fibre optic cable at Dublin Bay.



12th February 2024

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Document Control Sheet

Project	Natura Impact Statement - Information for a Stage 2 (Natura Impact Statement) AA for marine survey and site investigation works for a fibre optic cable at Dublin Bay.		
Report	Natura Impact Statement		
Date	12 th February 2024		
Version	Author	Reviewed	Date
Draft 01	██████████	██████████e	30 th June 2023
Draft 02	██████████	██████████	08 th August 2023
Planning	██████████		26 th September 2023
RFI	██████████		12 th February 2024

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1. Introduction

The following Natura Impact Statement (NIS) has been prepared by **Altemar Ltd.** for marine survey and site investigation works for an Ireland/UK marine fibre optic cable.

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 European sites. European sites are those sites designated as Special Areas of Conservation (SAC) or Special Protection Areas (SPA). An Supporting Information for Screening for Appropriate Assessment Report (SISAA) was carried out for the proposed project and concluded that *'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.'

This Natura Impact Statement (NIS) examines whether the plan or project, either alone, or in combination with other plans and projects, in the view of best scientific knowledge and in view of the sites' conservation objectives, will adversely affect the integrity of the European sites or species populations for which the site/s were designated.

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] is the managing director of Altemar. [REDACTED] 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. [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 Appropriate Assessment Screening.

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. Article 6(3) establishes the requirement for Appropriate Assessment:

"Any plan or project not directly connected with or necessary to the management of the [EUROPEAN] 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 Appropriate Assessment screening 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 European 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 2: Appropriate 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.

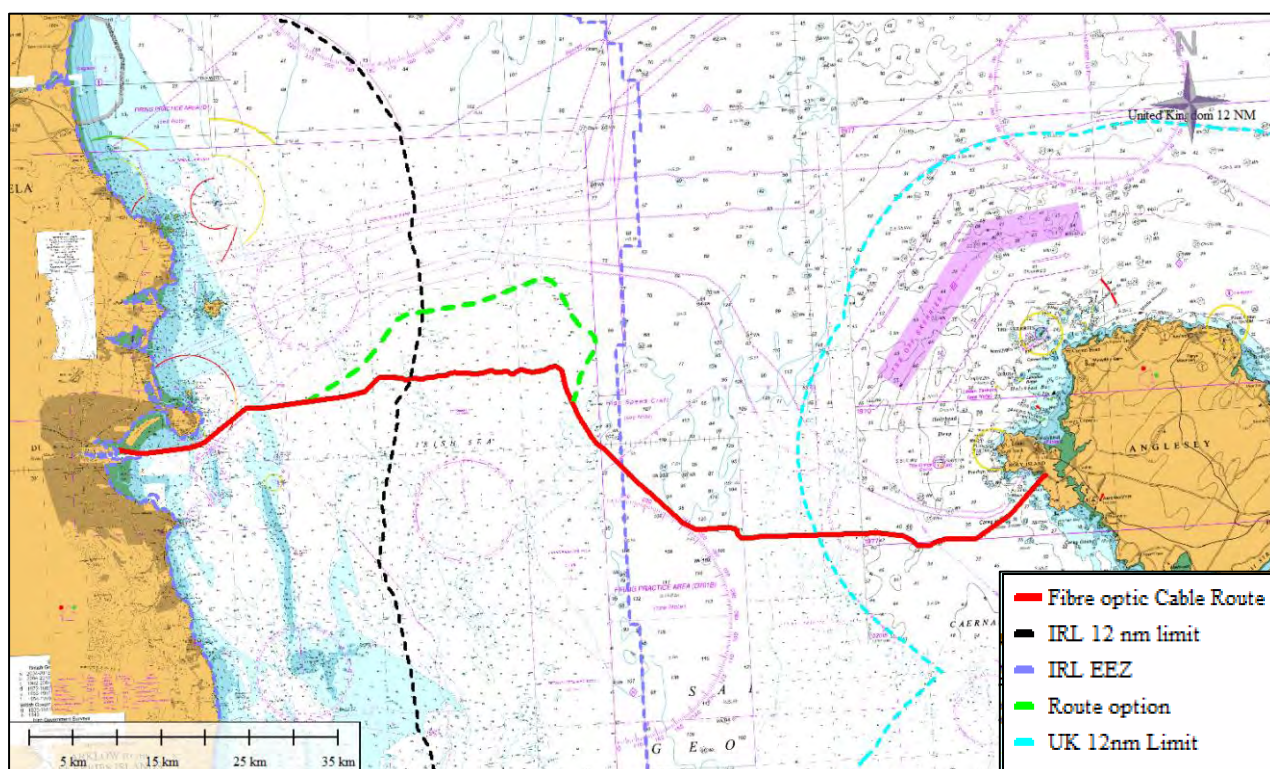


Figure 1. Proposed SOBR1 Telecoms Cable System

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.

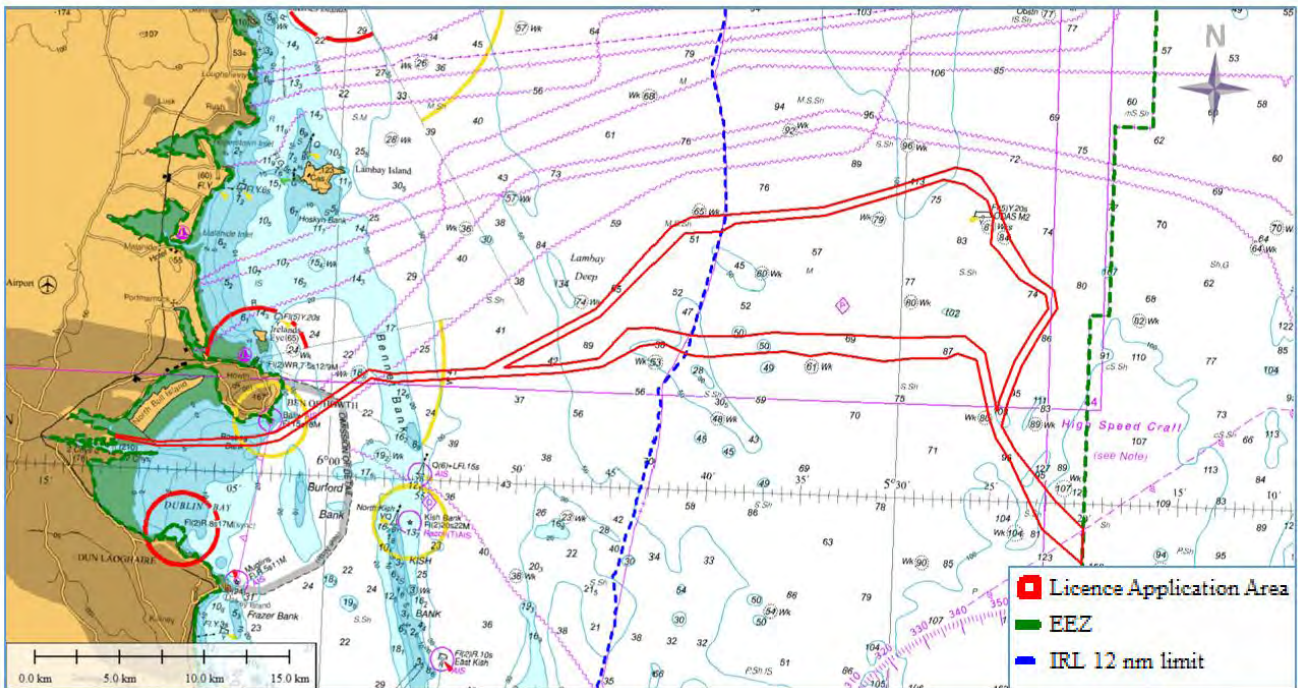


Figure 2. Proposed Survey Licence Application Area.

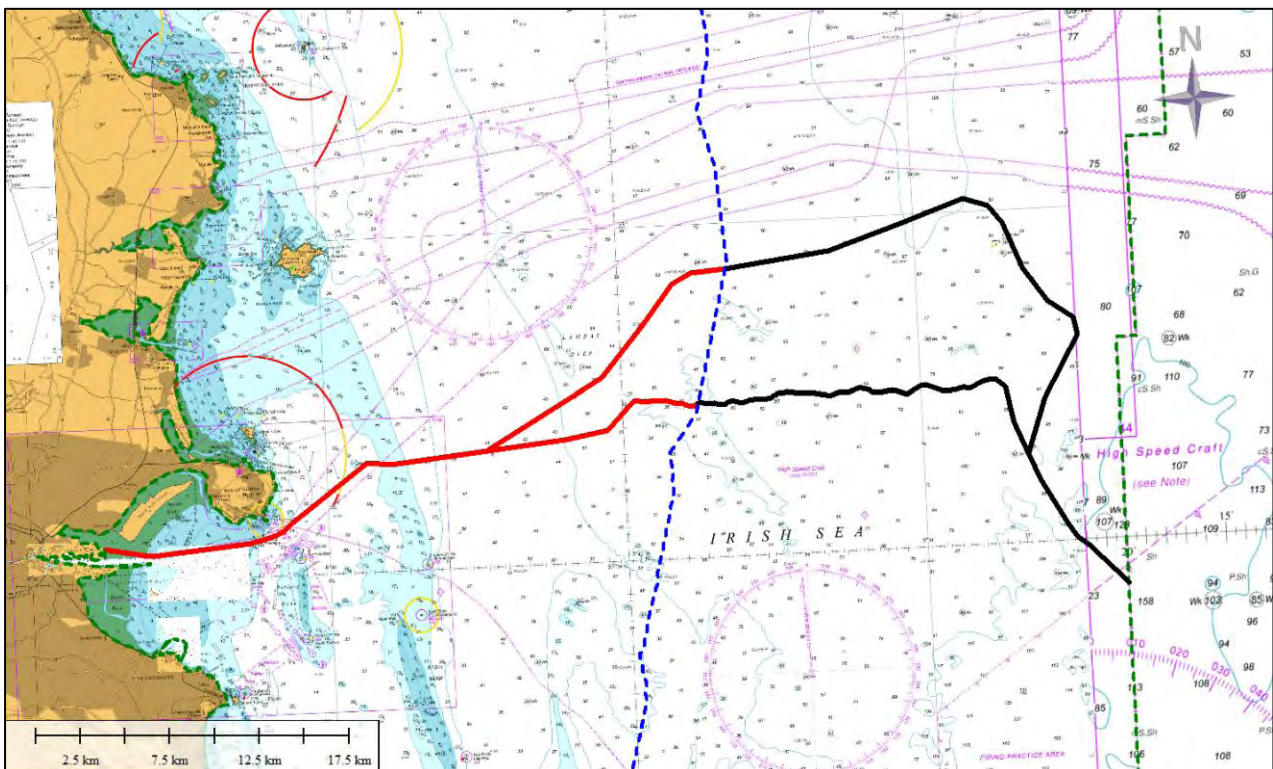


Figure 3. Offshore Survey Route.

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.

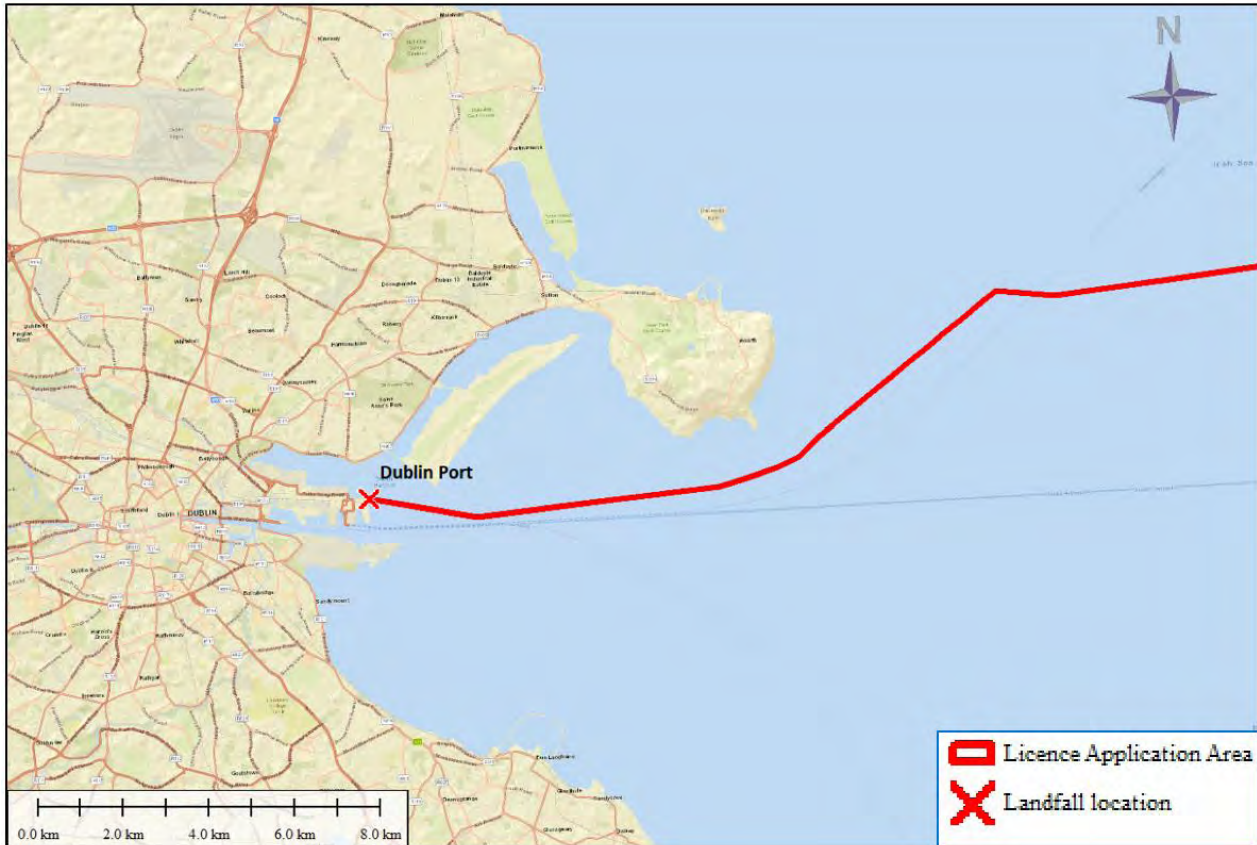


Figure 4. Landfall Location.

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.

As was seen during the fieldwork, the proposed landfall is within an area of reclaimed Dublin Port land and has a steep artificial boulder shore to the sub tidal environment. There is a very limited intertidal zone and this intertidal zone consists of a Furoid dominated, with *Ulva* sp., shore on reclaimed material and stone (Plate 1 & Figure 5).



Plate 1. Artificial boulder/cobble shore in landfall area in Dublin Port.



Figure 5. Landfall at Dublin Port



Figure 6. Landfall Access at T5

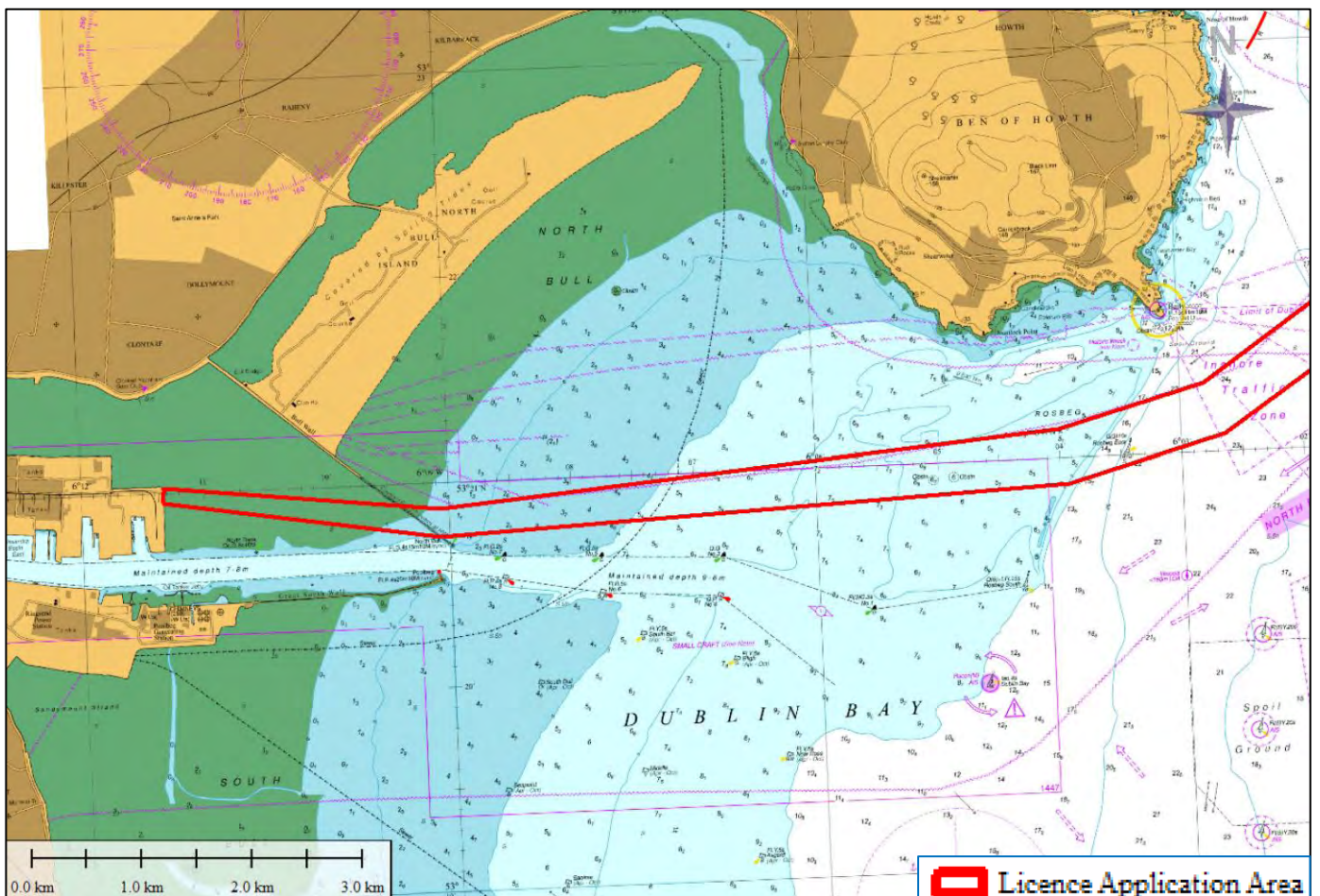


Figure 7. Inshore Survey Sections and Landfall.

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	5	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.

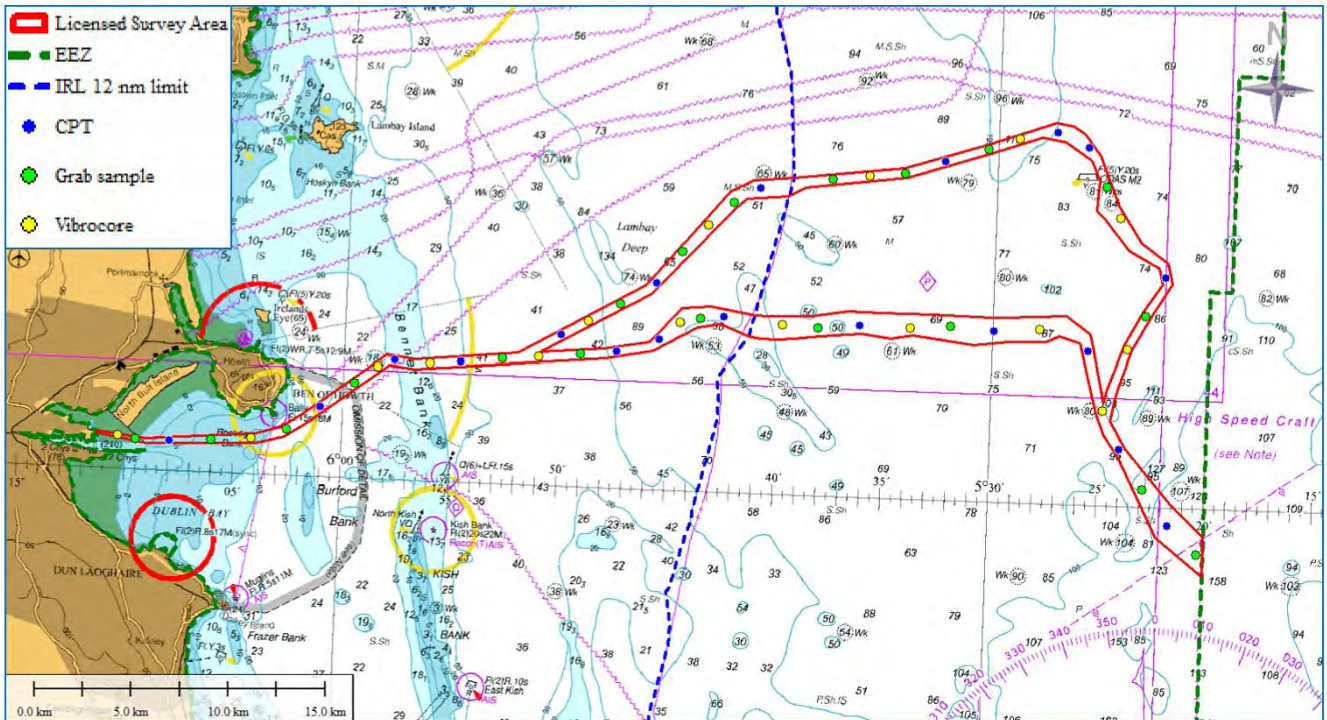


Figure 86. Indicative CPT and Vibrocore Locations.

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.

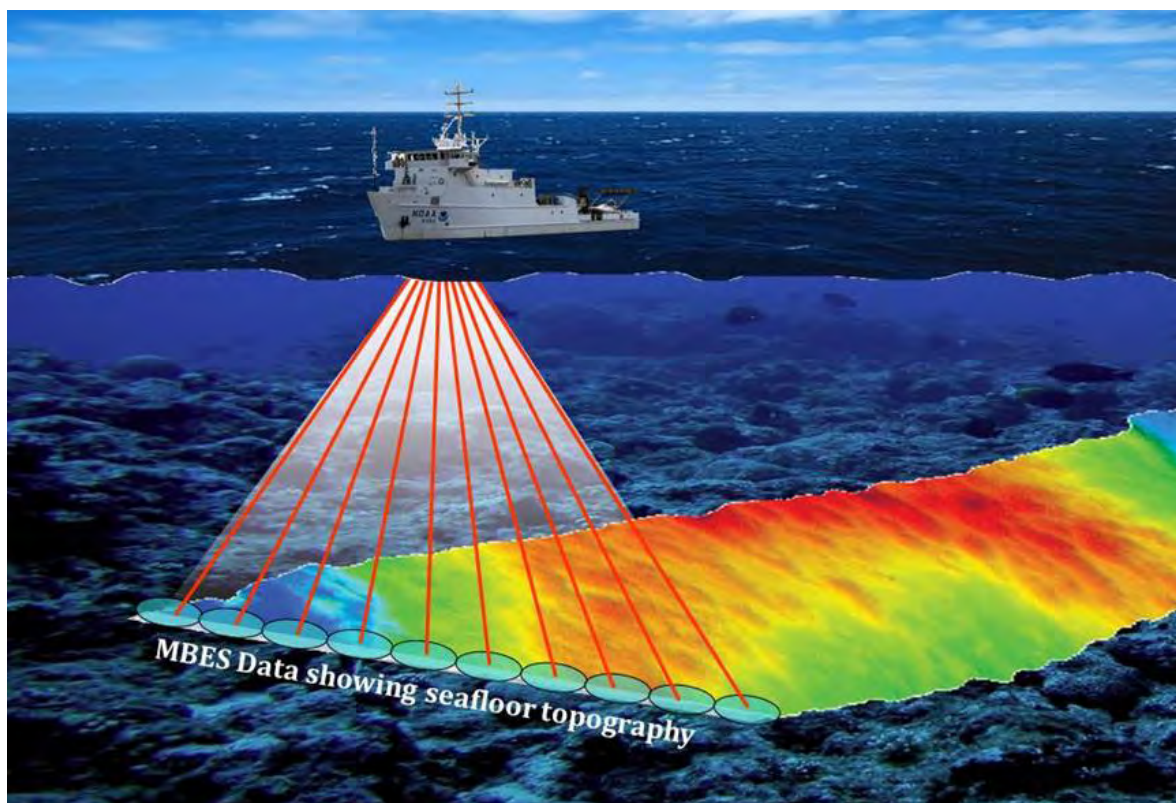


Figure 9 Graphic of MBES survey in operation.

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 1 μ Pa 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 L_{p,pk} 225-228 dB re 1 μ Pa at 1m (L_{E,p} 181-197 dB re 1 μ Pa² 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).

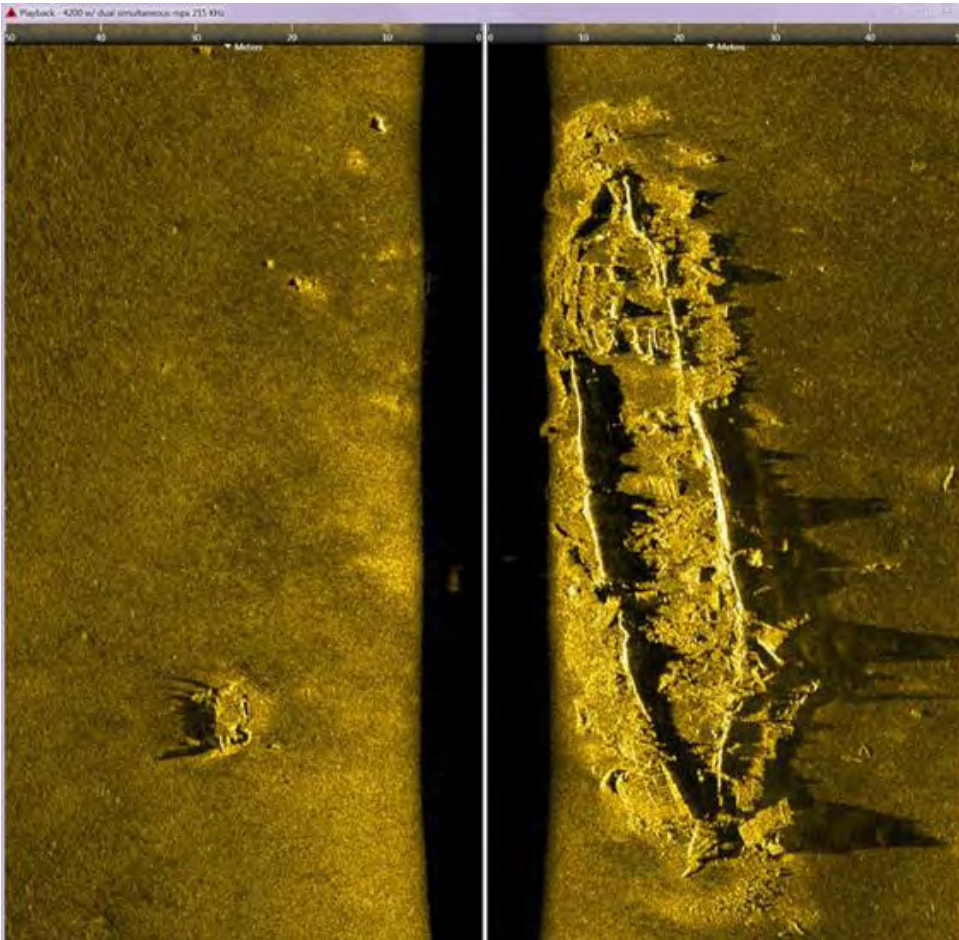


Figure 10. SSS image of shipwreck on seabed and nadir gap.

The 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 $L_{p,pk}$ 200-240 dB re $1\mu\text{Pa}$ at 1m. (BOEM 2016, BEIS 2020, DAHG 2014). Maximum calibrated source levels, (sound pressure) measured by Crocker & Fratantonio (2016) were $L_{p,pk}$ 227 dB re $1\mu\text{Pa}$ at 1m for a 0.1 ms pulse, whereas the highest energy source level of $L_{E,p}$ 205 dB re $1\mu\text{Pa}^2 \text{ s}$ at 1m corresponded to a longer pulse of 1.1 ms at lower maximum pressure ($L_{p,pk}$ 210 dB re $1\mu\text{Pa}$ 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 $\pm 0.5\text{nT}$.

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

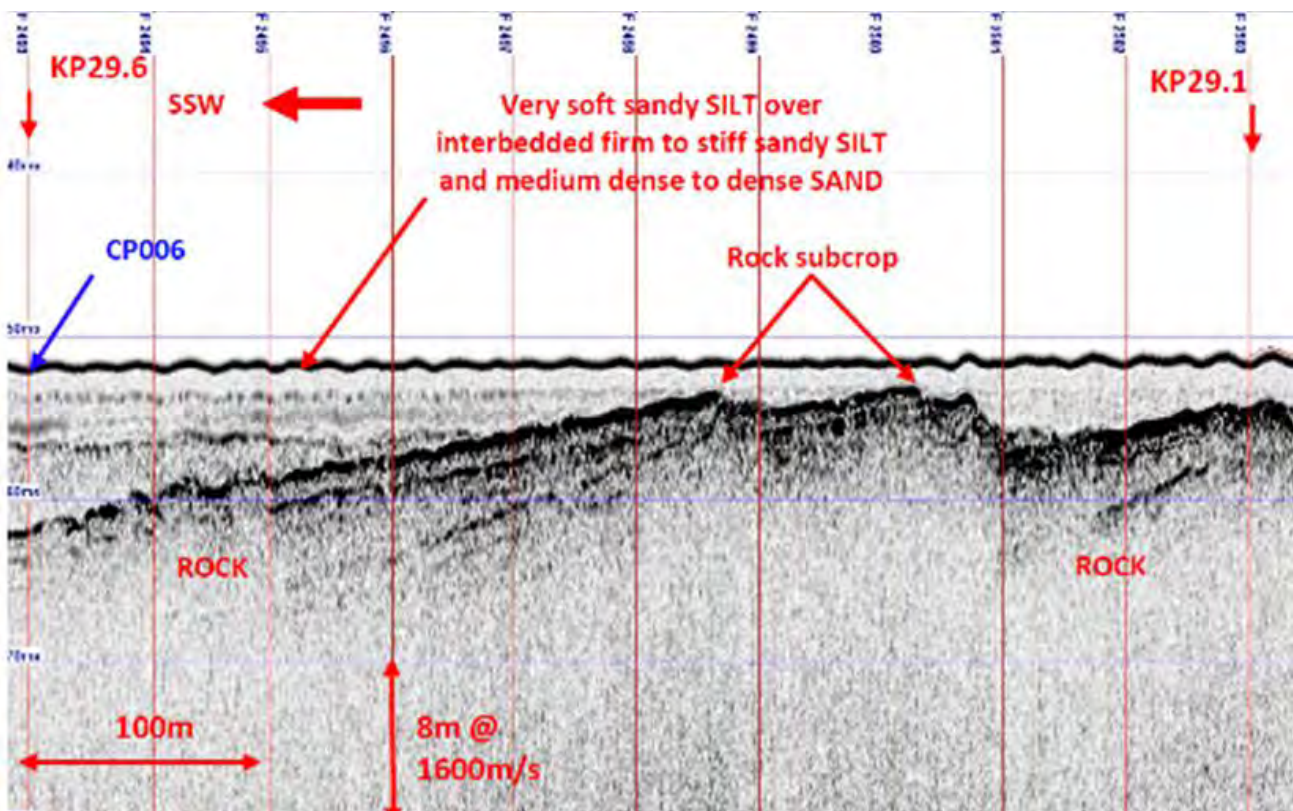


Figure 13. Interpreted SBP seabed profile.

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 $L_{p,pk}$ 185-247 dB re $1\mu Pa$ 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 1 μ Pa at 1m), medium size vessel (50-100 m) 165-180 dB (re 1 μ Pa at 1m) and large vessels (>100 m) 180-190 dB (re 1 μ Pa 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)	8m ²	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)	1m ²	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)	8m ²	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)	0.5m ²	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 NPWS² *“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) methodology³. 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 ± 1.5 km in length along a riverine environment and 6.5 ± 1.0 km in coastal environments, while male otter territory along rivers is approximately 13.2 ± 5.3 km 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 Twaité 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) within the survey area:

- 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 Lancier, Baie de l'Arguenon, Archipel de Saint Malo et Dinard (FR)
- Estuaire 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)

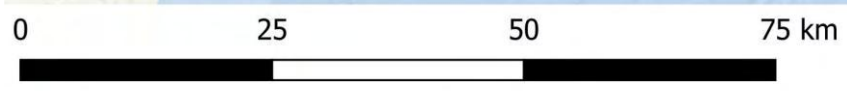
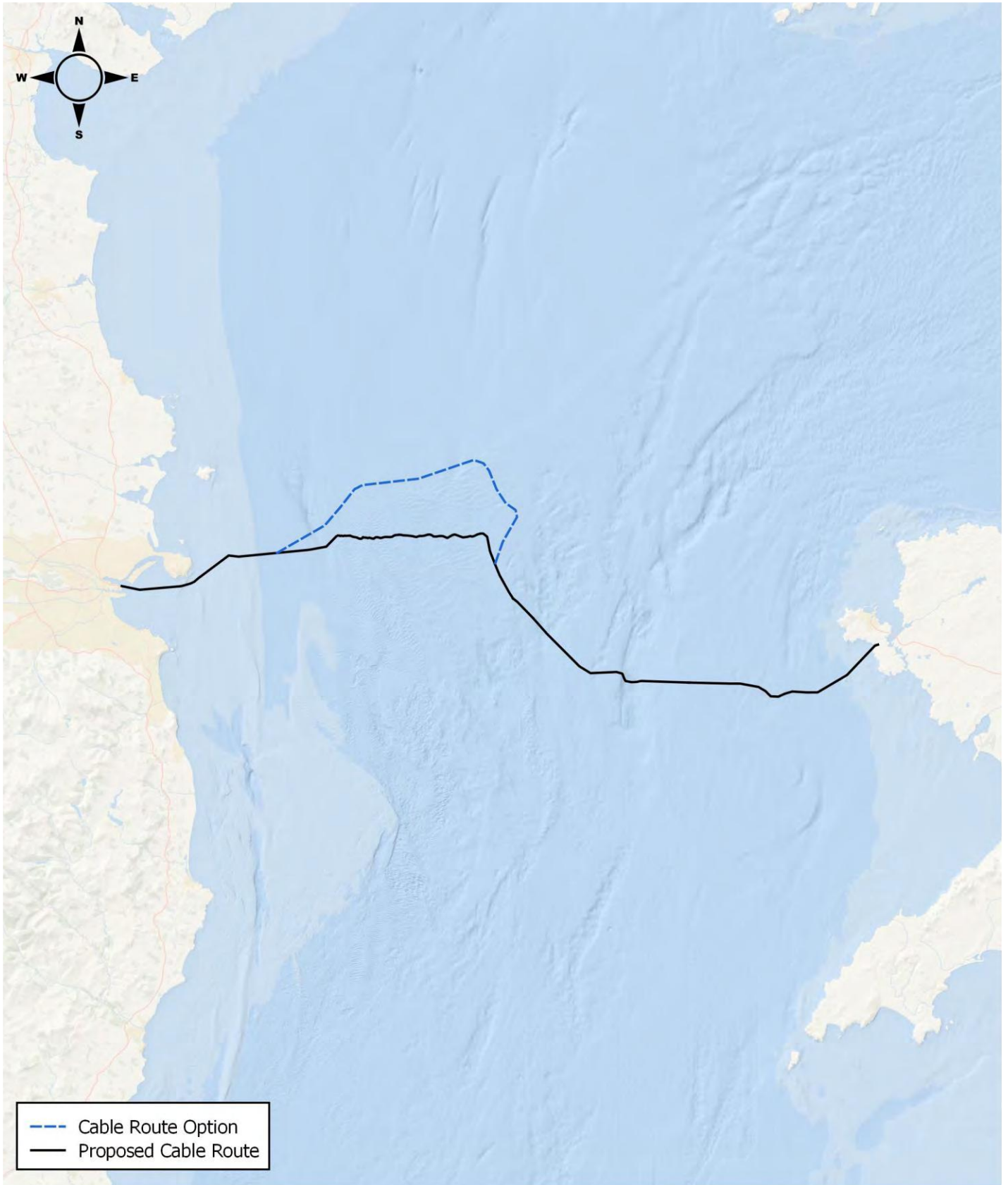
Designation	European Site	Distance
SAC	North Dublin Bay SAC	Within
SAC	Rockabill to Dalkey Island SAC	Within
SAC	Howth Head SAC	500 m
SAC	South Dublin Bay SAC	680 m
SAC	Codling Fault Zone SAC	3.7 km
SAC	Baldoyle Bay SAC	4.1 km
SAC	Ireland's Eye SAC	4.4 km
SAC	Malahide Estuary SAC	9.4 km
SAC	Lambay Island 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)

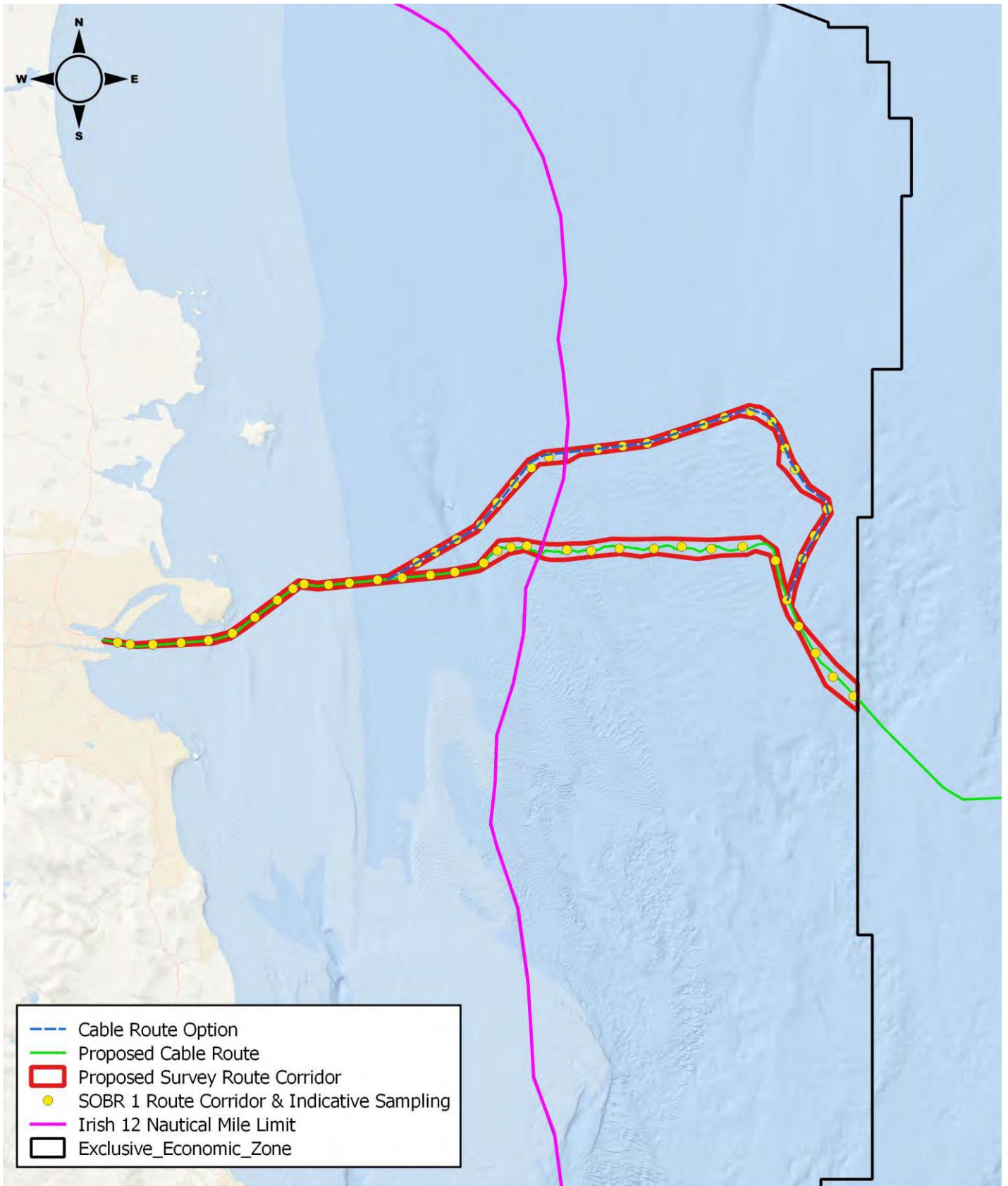
Designation	European Site	Distance
SAC	Nord Bretagne DH	426.8 km (Within MU for Harbour Porpoise)
SAC	Récifs et landes de la Hague	457.8 km (Within MU for Harbour Porpoise)
SAC	Anse de Vauville	465.9 km (Within MU for Harbour Porpoise)
SAC	Mers Celtiques – Talus du golfe de Gascogne	468.8 km (Within 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	Estuaire 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)



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



0 10 20 30 40 km

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

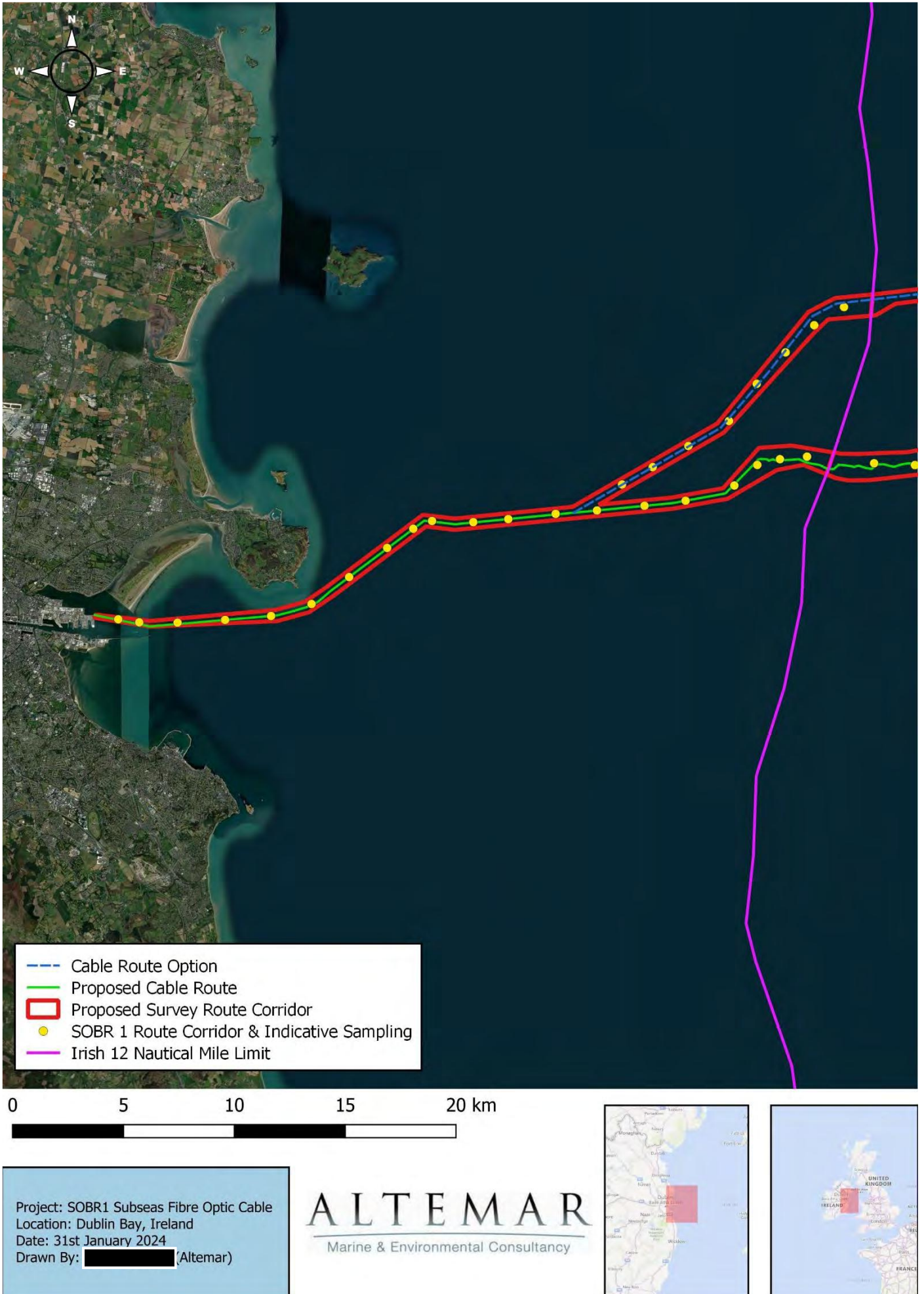


Figure 21: Proposed Cable Route, Survey Route Corridor, and Works (to Irish 12 Nautical Mile Limit).



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

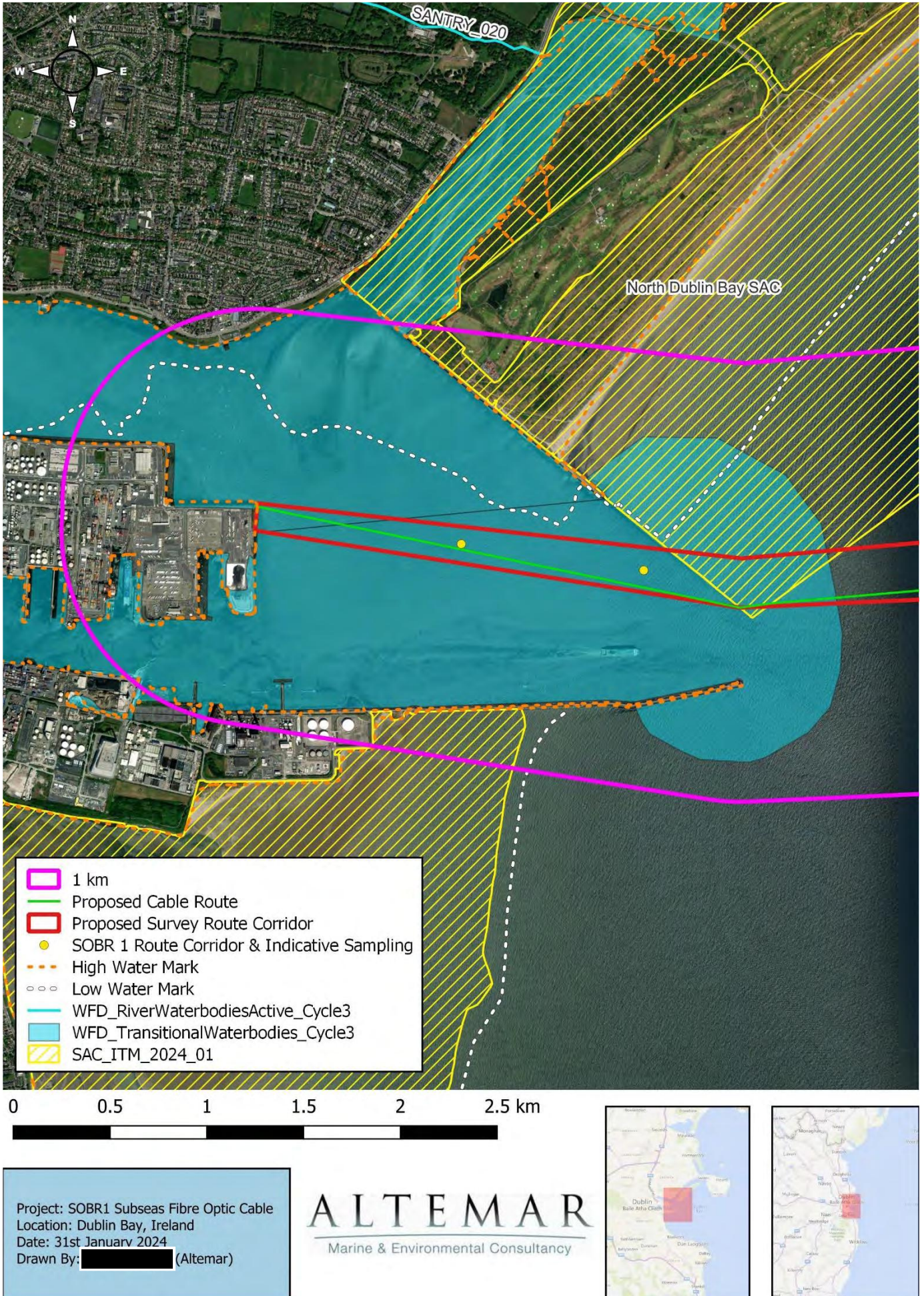


Figure 23: Special Areas of Conservation and Waterbodies proximate to the proposed Cable Route and Survey Route Corridor within Dublin Bay.

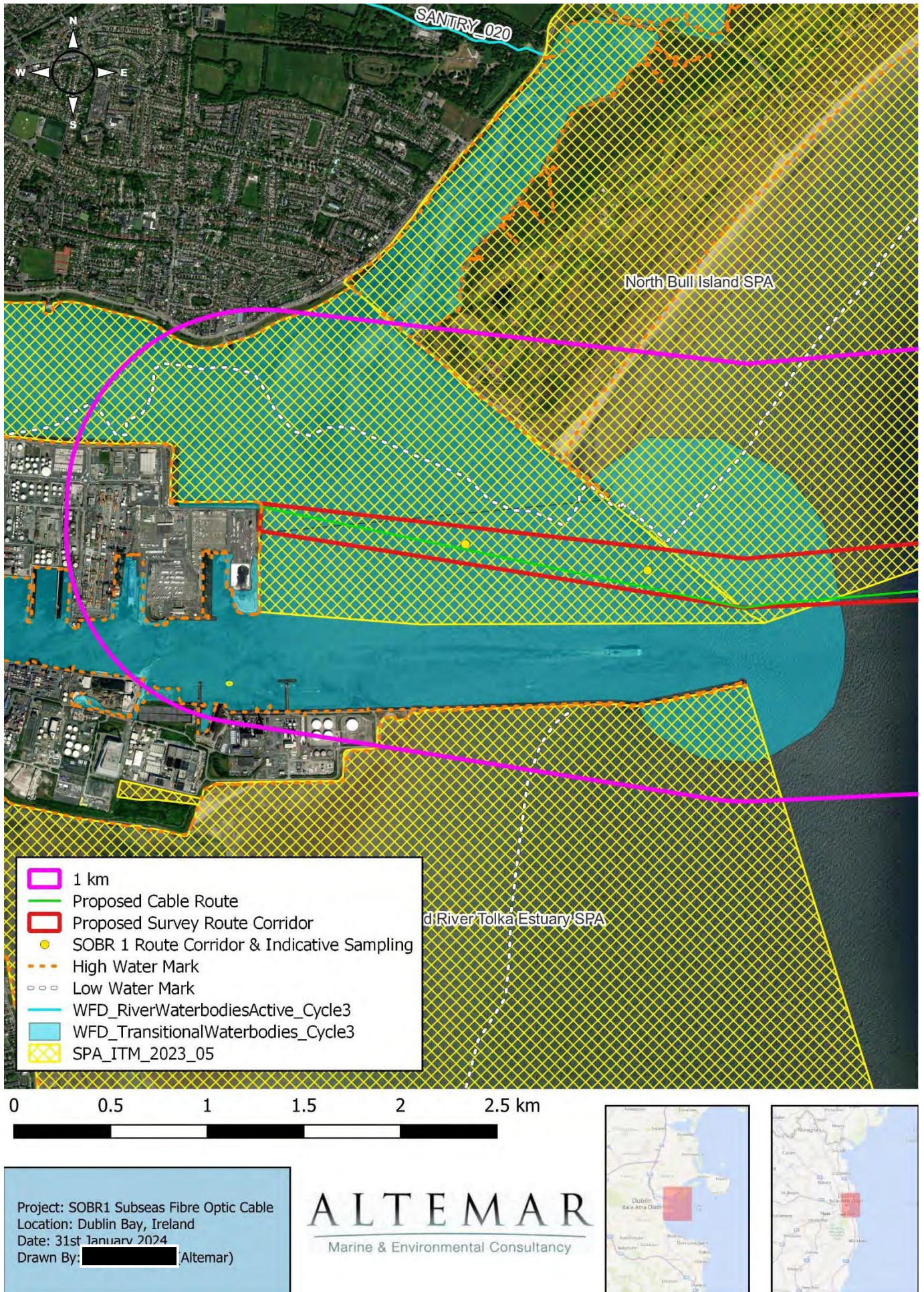


Figure 24: Special Protection Areas and Waterbodies proximate to the proposed Cable Route and Survey Route Corridor within Dublin Bay.

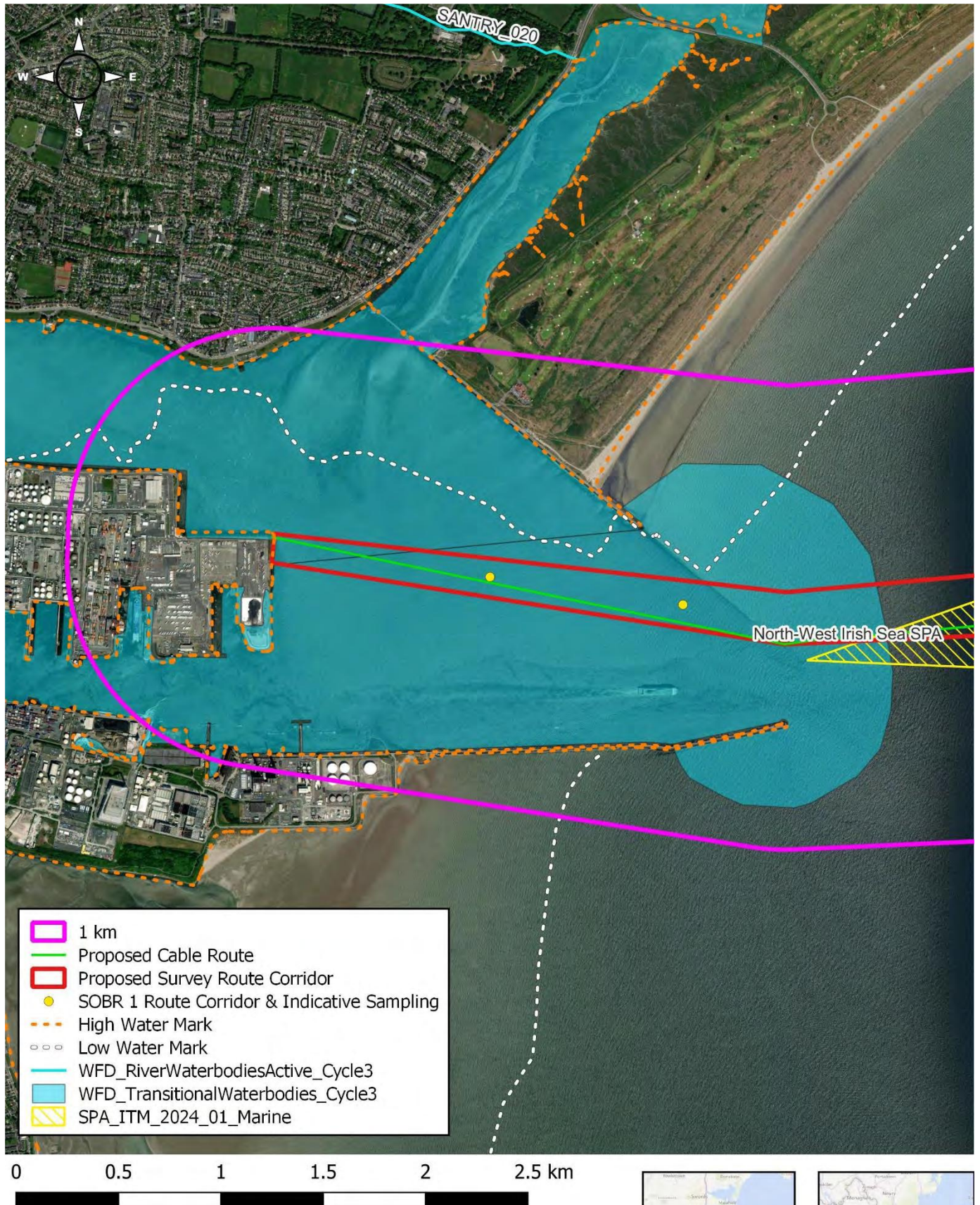
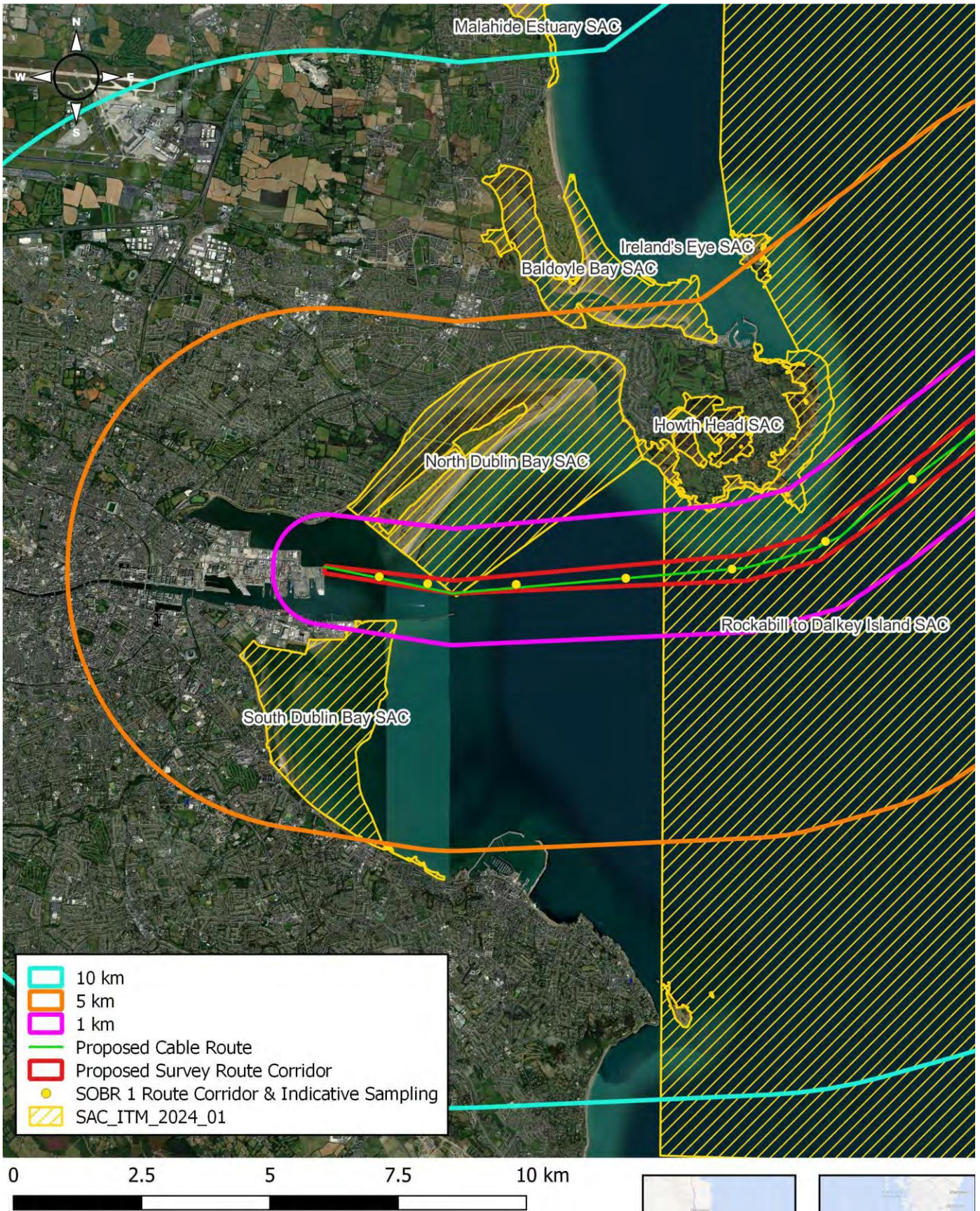


Figure 25: Marine SPAs and EPA Waterbodies proximate to the proposed Cable Route and Survey Route Corridor within Dublin Bay.

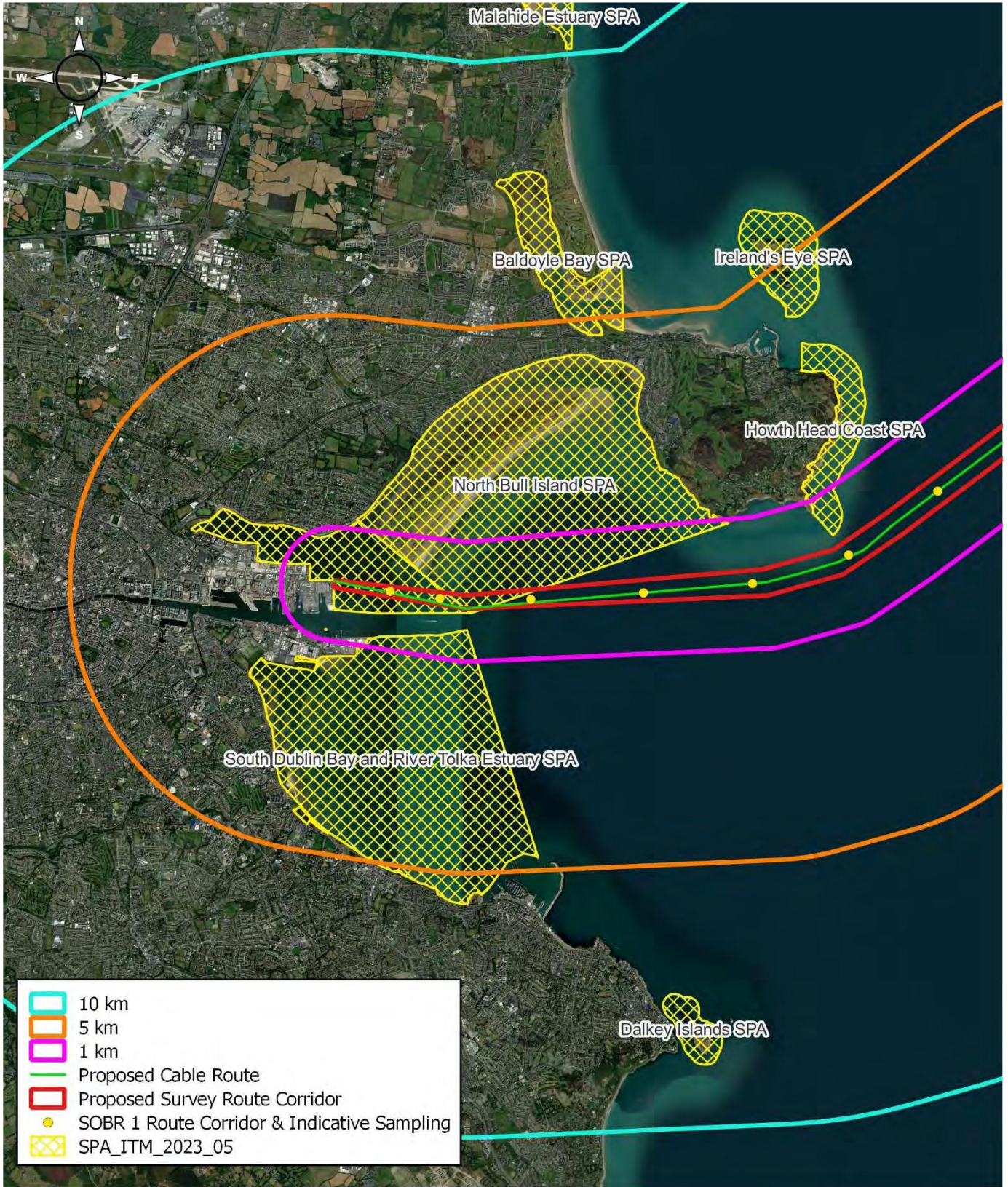


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Figure 26: Special Areas of Conservation within 10km of the proposed Cable Route and Survey Route Corridor within Dublin Bay.



0 2.5 5 7.5 10 km

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

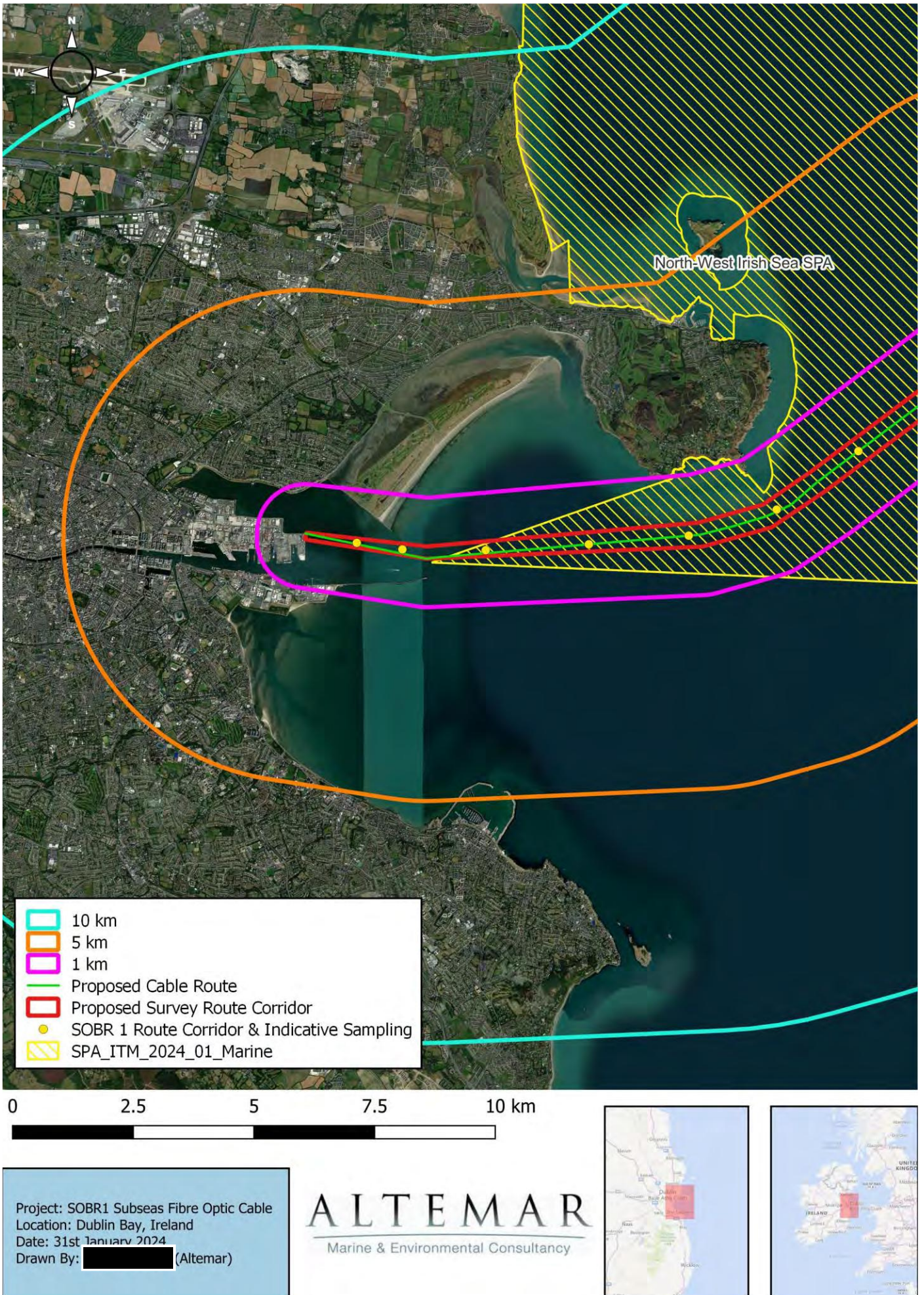


Figure 28: Marine SPAs within 10km of the proposed Cable Route and Survey Route Corridor within Dublin Bay

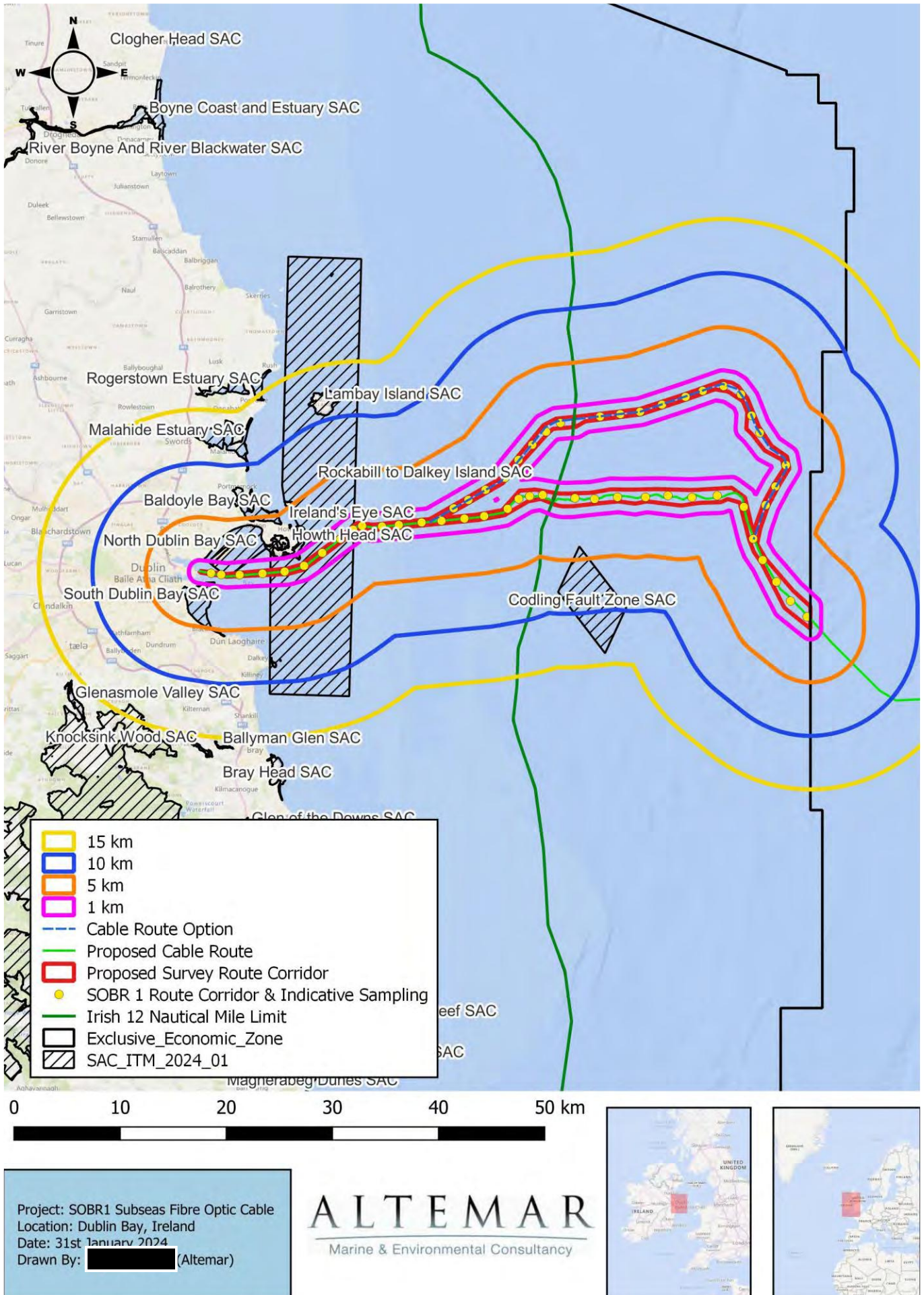


Figure 29: Special Protection Areas within 15 km of the proposed Cable Route and Survey Route Corridor.

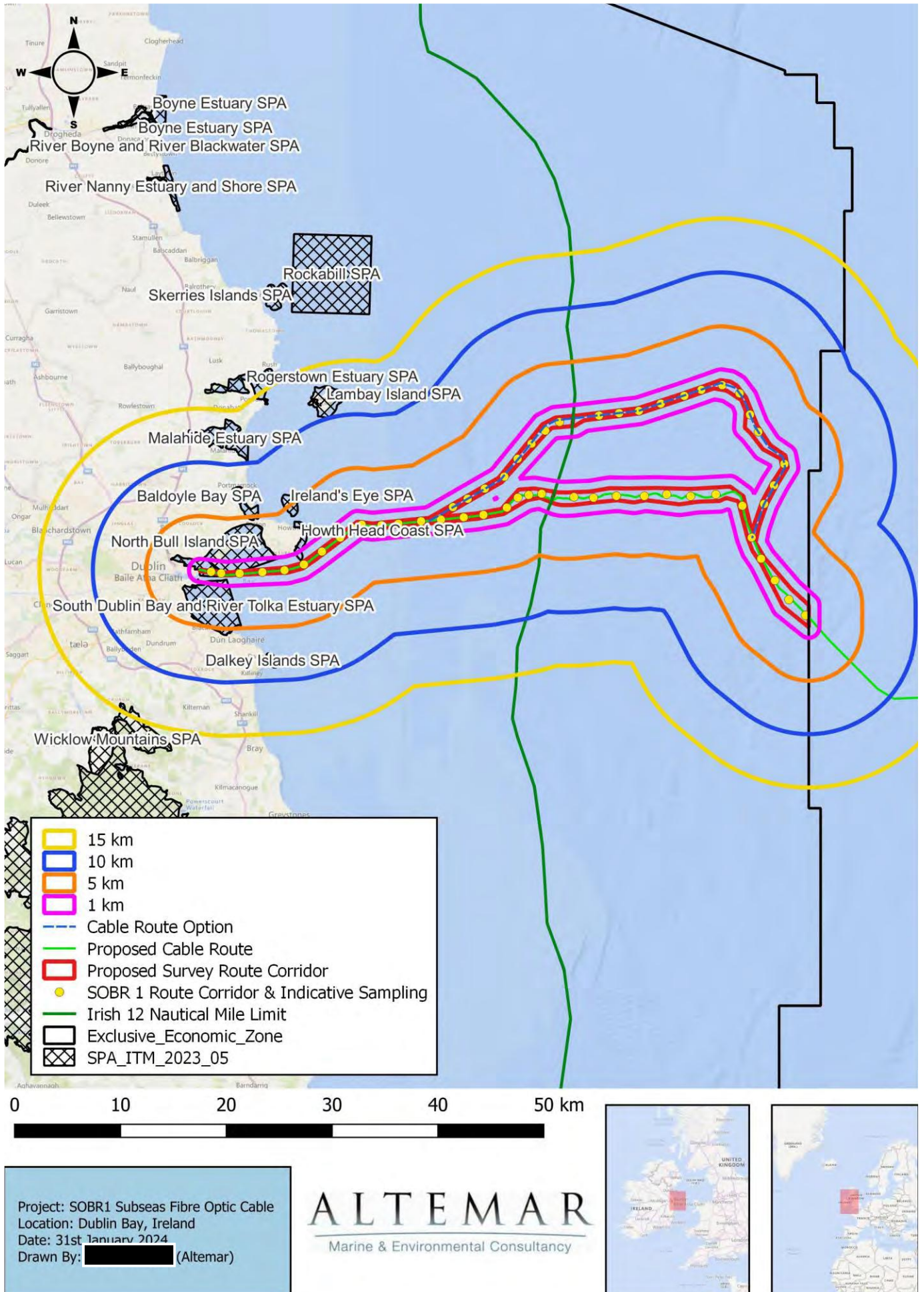
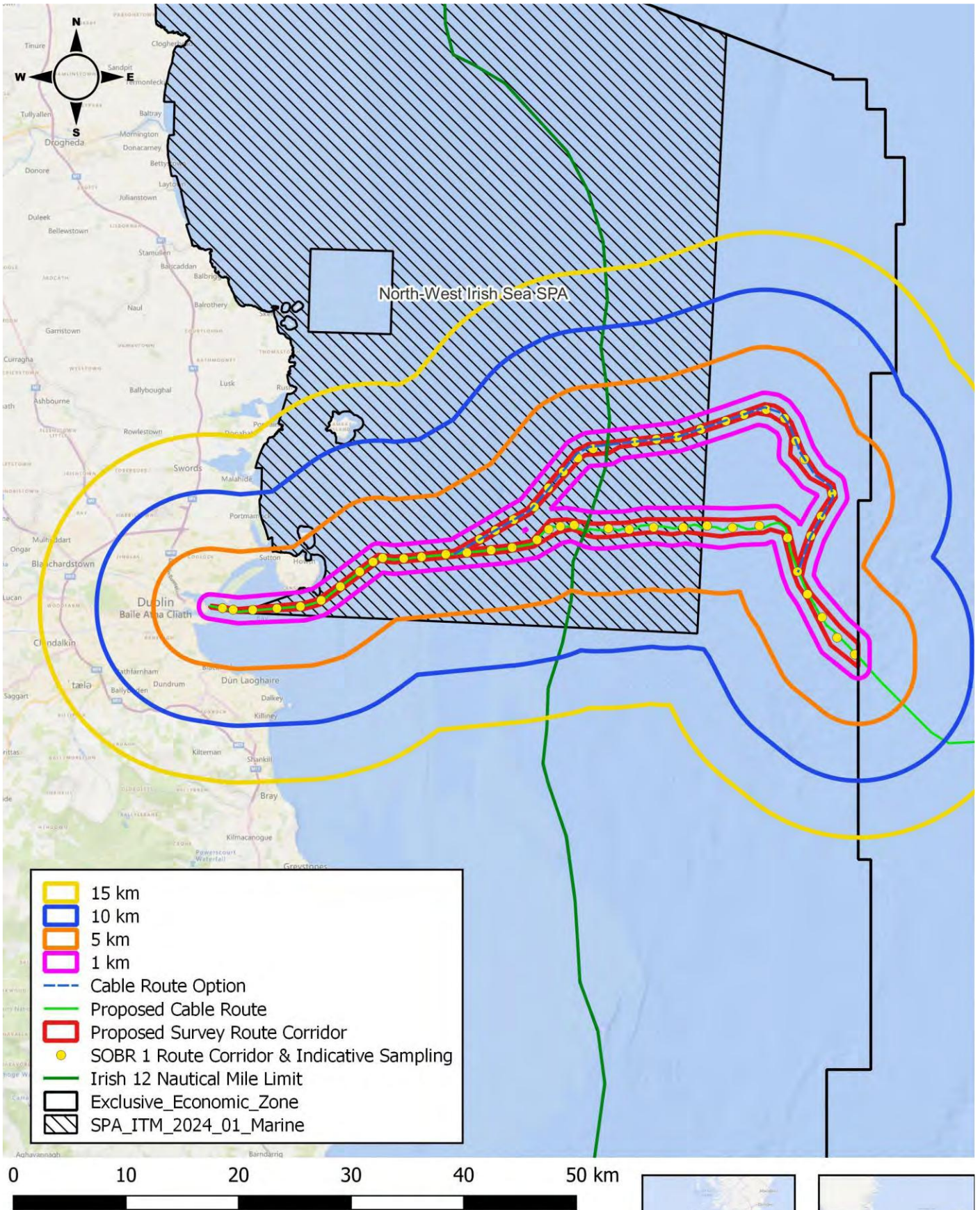


Figure 30: Special Areas of Conservation within 15 km of the proposed Cable Route and Survey Route Corridor .



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

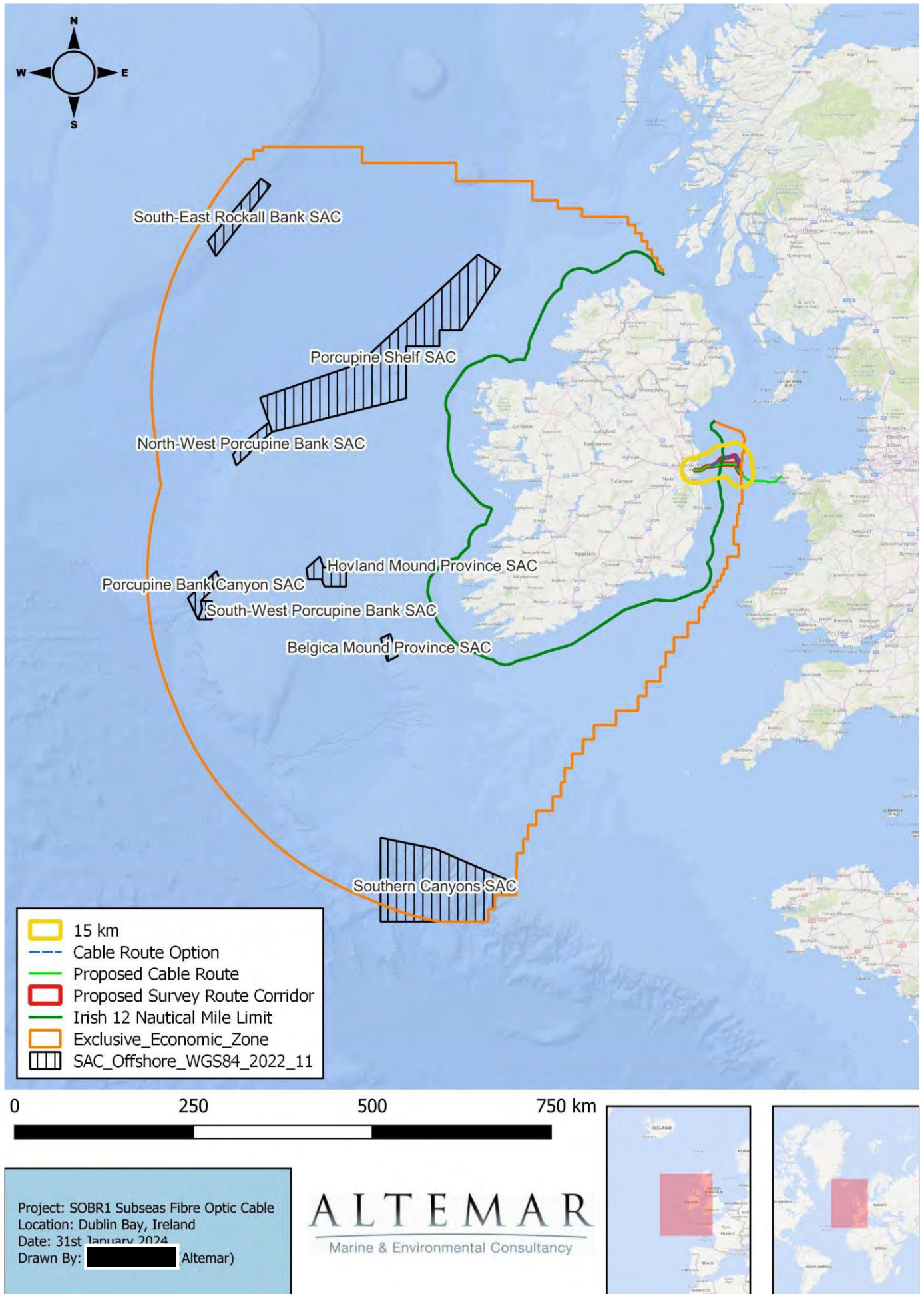


Figure 32: Fibre optic survey route in relation to the 12 nm limit, Designated Irish Continental shelf and Offshore SAC's (no offshore SAC's in the area).

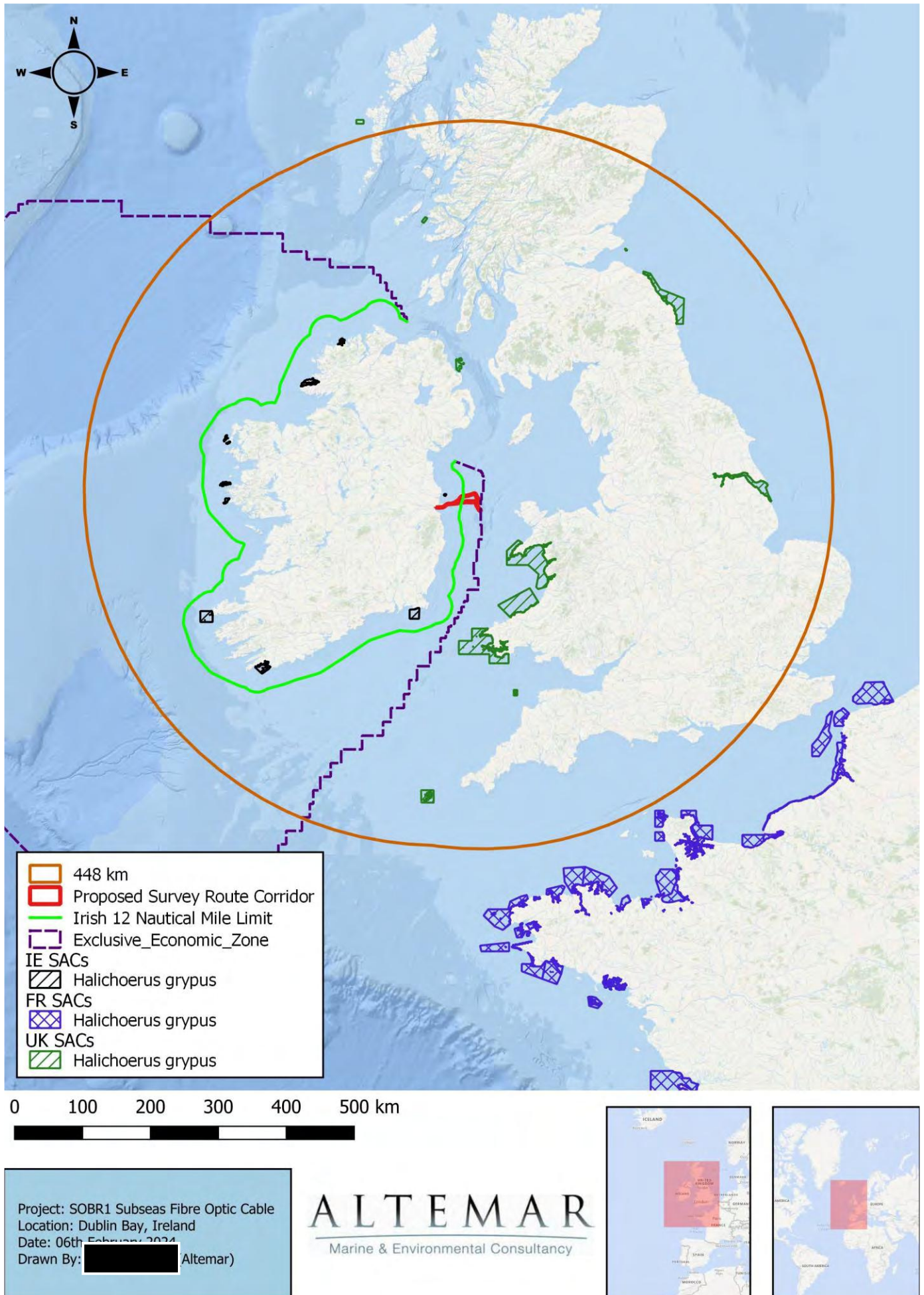


Figure 33: IE, FR, & UK SACs designated for Grey Seals (*Halichoerus grypus*) within 448km of the Proposed Survey Route Corridor.

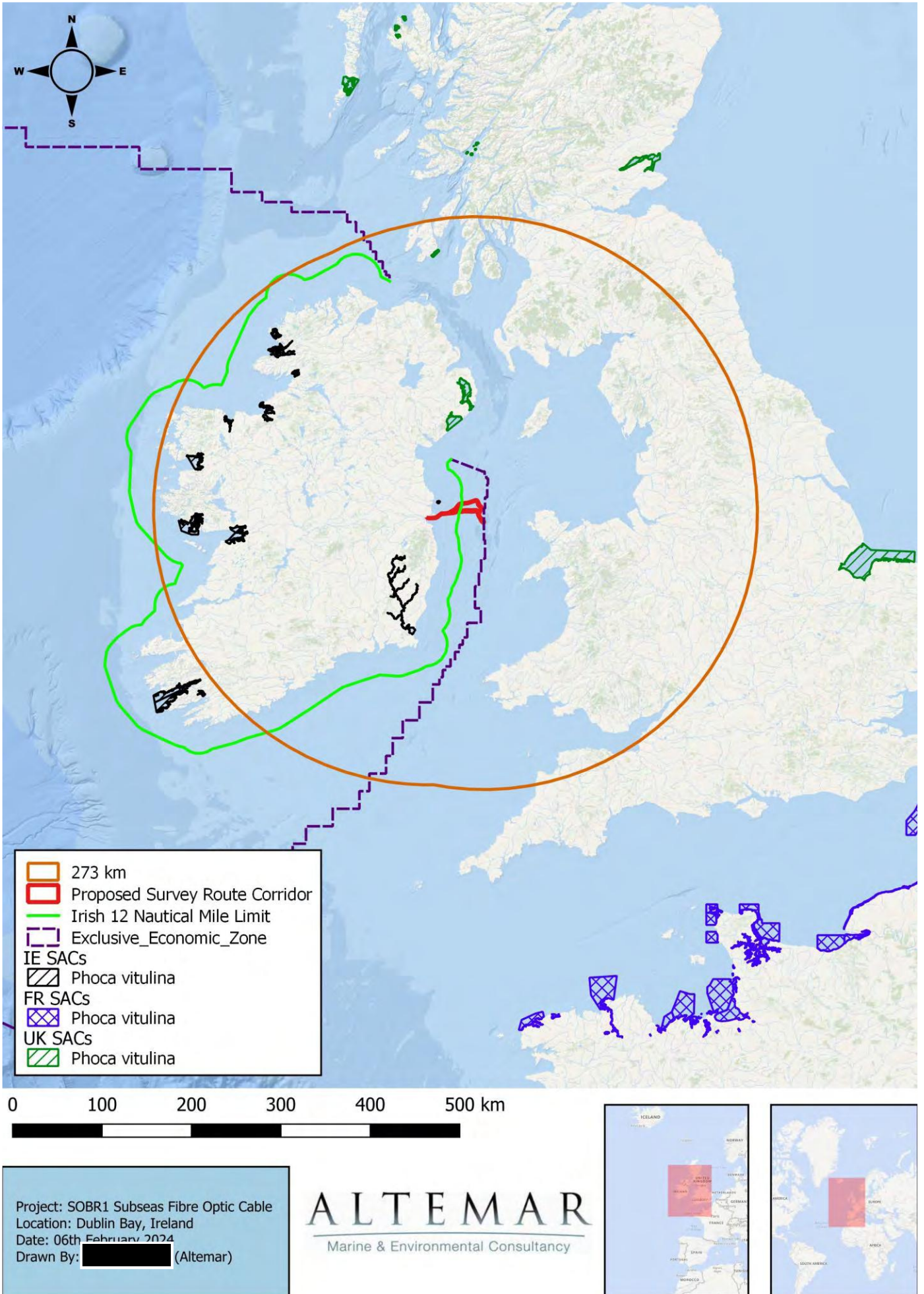


Figure 34: IE, FR, & UK SACs designated for Harbour Seals (*Phoca vitulina*) within 273km of the Proposed Survey Route Corridor.

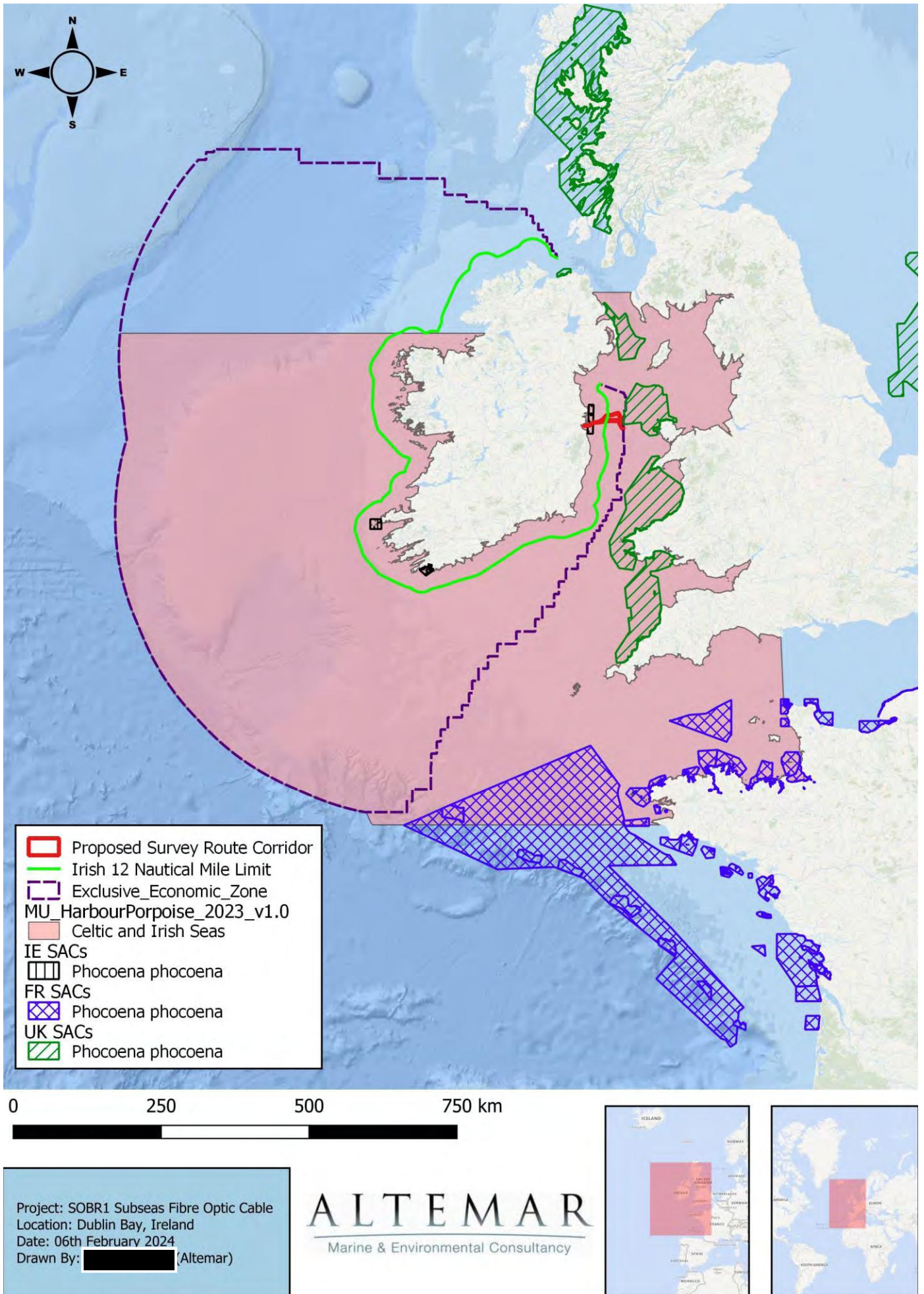
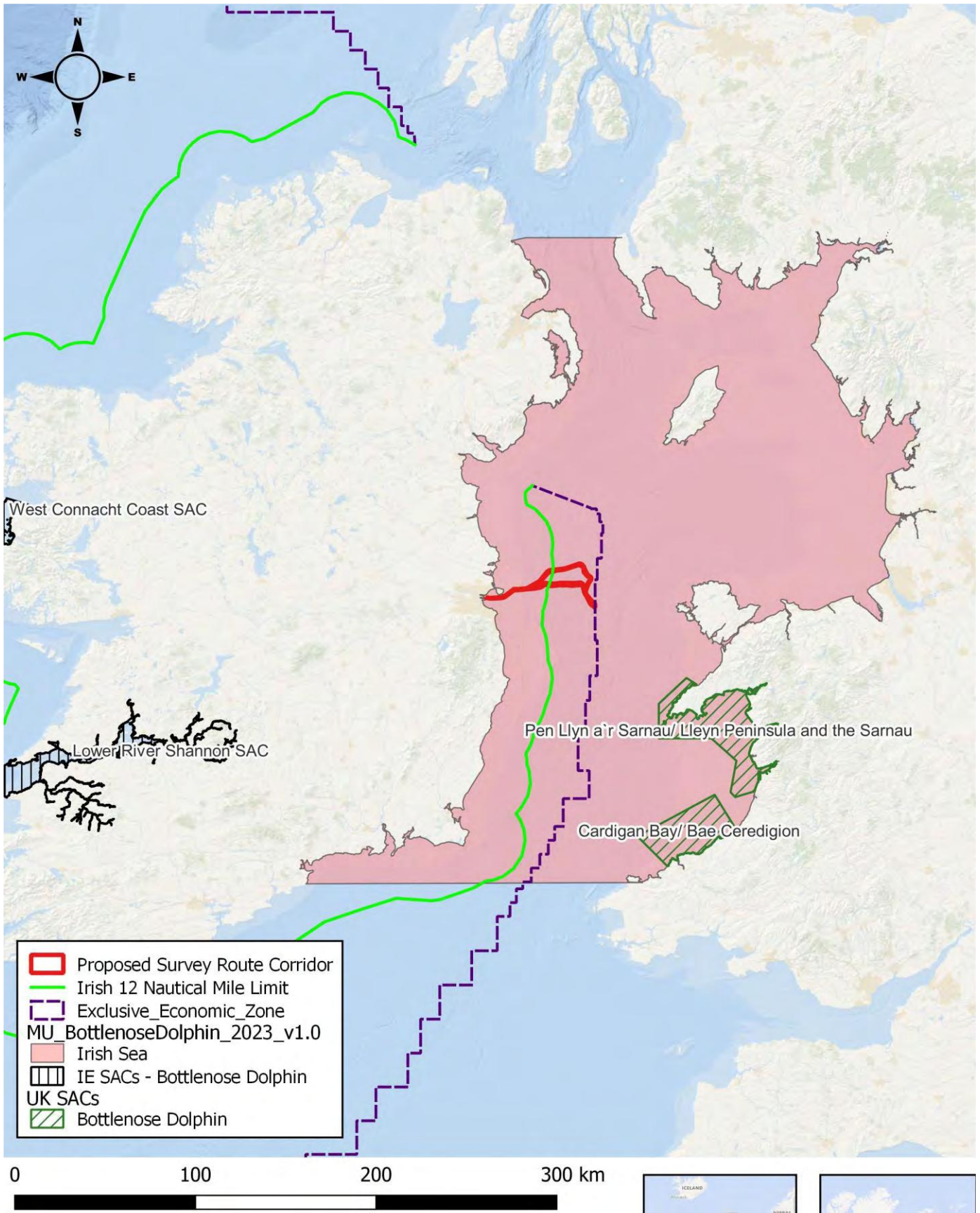


Figure 35: IE, FR, & UK SACs designated for Harbour Porpoise (*Phocoena phocoena*) within the Celtic and Irish Seas MU for Harbour Porpoise.



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 Date: 06th February 2024
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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	<p>Conservation Objective</p> <p>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.</p> <p>Features of Interest</p> <p>Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046] Shelduck (<i>Tadorna tadorna</i>) [A048] Teal (<i>Anas crecca</i>) [A052] Pintail (<i>Anas acuta</i>) [A054] Shoveler (<i>Anas clypeata</i>) [A056] Oystercatcher (<i>Haematopus ostralegus</i>) [A130] Golden Plover (<i>Pluvialis apricaria</i>) [A140] Grey Plover (<i>Pluvialis squatarola</i>) [A141] Knot (<i>Calidris canutus</i>) [A143] Sanderling (<i>Calidris alba</i>) [A144] Dunlin (<i>Calidris alpina</i>) [A149] Black-tailed Godwit (<i>Limosa limosa</i>) [A156] Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157] Curlew (<i>Numenius arquata</i>) [A160] Redshank (<i>Tringa totanus</i>) [A162] Turnstone (<i>Arenaria interpres</i>) [A169] Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179] Wetland and Waterbirds [A999]</p> <p>Potential Impact</p> <p>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.</p> <p>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.</p> <p>Natura Impact Statement Required.</p>
IE004024	South Dublin Bay and River Tolka SPA	In	<p>Conservation Objective</p> <p>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.</p> <p>Qualifying Interest</p> <p>Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046] Oystercatcher (<i>Haematopus ostralegus</i>) [A130]</p>

NATURA Site Code	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
			<p>Ringed Plover (<i>Charadrius hiaticula</i>) [A137] Grey Plover (<i>Pluvialis squatarola</i>) [A141] Knot (<i>Calidris canutus</i>) [A143] Sanderling (<i>Calidris alba</i>) [A144] Dunlin (<i>Calidris alpina</i>) [A149] Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157] Redshank (<i>Tringa totanus</i>) [A162] Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179] Roseate Tern (<i>Sterna dougallii</i>) [A192] Common Tern (<i>Sterna hirundo</i>) [A193] Arctic Tern (<i>Sterna paradisaea</i>) [A194] Wetland and Waterbirds [A999]</p> <p>Potential Impact</p> <p>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.</p> <p>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.</p> <p>Natura Impact Statement Required</p>
IE004236	North-West Irish Sea SPA	In	<p>Conservation Objectives</p> <p>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.</p> <p>Qualifying Interests</p> <p>Common Scoter (<i>Melanitta nigra</i>) [A065] Red-throated Diver (<i>Gavia stellata</i>) [A001] Great Northern Diver (<i>Gavia immer</i>) [A003] Fulmar (<i>Fulmarus glacialis</i>) [A009] Manx Shearwater (<i>Puffinus puffinus</i>) [A013] Cormorant (<i>Phalacrocorax carbo</i>) [A017] Little Tern (<i>Sterna albifrons</i>) [A195] Kittiwake (<i>Rissa tridactyla</i>) [A188] Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179] Common Gull (<i>Larus canus</i>) [A182] Lesser Black-backed Gull (<i>Larus fuscus</i>) [A183] Herring Gull (<i>Larus argentatus</i>) [A184] Roseate Tern (<i>Sterna dougallii</i>) [A192] Arctic Tern (<i>Sterna paradisaea</i>) [A194] Puffin (<i>Fratercula arctica</i>) [A204] Razorbill (<i>Alca torda</i>) [A200] Guillemot (<i>Uria aalge</i>) [A199] Little Gull (<i>Hydrocoloeus minutus</i>) (A862) Common Tern (<i>Sterna hirundo</i>) (A193)</p>

NATURA Site Code	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
			<p>Potential Impact</p> <p>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.</p> <p>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.</p> <p>Natura Impact Statement Required.</p>
Special Areas of Conservation (IE)			
IE000206	North Dublin Bay SAC	In	<p>Conservation Objective</p> <p>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.</p> <p>Qualifying Interests</p> <p>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 (<i>Glauco-Puccinellietalia maritimae</i>) [1330] Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Humid dune slacks [2190] <i>Petalophyllum ralfsii</i> (Petalwort) [1395]</p> <p>Potential Impact</p> <p>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.</p> <p>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</p>

NATURA Site Code	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
			<p>Interest of this SAC. Mitigation measures are required to protect the SAC from significant effects.</p> <p>Natura Impact Statement Required</p>
IE003000	Rockabill to Dalkey Island SAC	In	<p>Conservation Objective</p> <p>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.</p> <p>Qualifying Interests</p> <p>Reefs [1170] <i>Phocoena phocoena</i> (Harbour Porpoise) [1351]</p> <p>Potential Impact</p> <p>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.</p> <p>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.</p> <p>Natura Impact Statement Required</p>
IE000204	Lambay Island SAC	In	<p>Conservation Objective</p> <p>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.</p> <p>Features of Interest</p> <p>Reefs [1170] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] <i>Halichoerus grypus</i> (Grey Seal) [1364] <i>Phoca vitulina</i> (Harbour Seal) [1365]</p> <p>Potential Impact</p> <p>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</p>

NATURA Site Code	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
			<p>impact, there is no possibility of significant effects on the other features of interest of this SAC.</p> <p>Mitigation measures are required for grey seals and harbour seals. Further information is required to determine the potential for adverse effects on this SAC.</p> <p>NIS is Required.</p>
IE000781	Slaney River Valley SAC	In	<p>Conservation Objective</p> <p>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.</p> <p>Features of Interest</p> <p>Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) [1330] Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410] Water courses of plain to montane levels with the Ranunculion fluitantis and Callitriche-Batrachion vegetation [3260] Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>) [91E0] <i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel) [1029] <i>Petromyzon marinus</i> (Sea Lamprey) [1095] <i>Lampetra planeri</i> (Brook Lamprey) [1096] <i>Lampetra fluviatilis</i> (River Lamprey) [1099] <i>Alosa fallax fallax</i> (Twaite Shad) [1103] <i>Salmo salar</i> (Salmon) [1106] <i>Lutra lutra</i> (Otter) [1355] <i>Phoca vitulina</i> (Harbour Seal) [1365]</p> <p>Potential Impact</p> <p>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).</p> <p>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.</p> <p>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</p>

NATURA Site Code	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
			<p>of this SAC are foreseen from the proposed works associated with this survey license application.</p> <p>In relation to Salmon, it has been found that salmon from southeast Ireland appear 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 Dublin Bay (outside of the recorded areas of significant 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.</p> <p>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.</p> <p>Further, no significant impacts on otter are foreseen. As detailed by Reid et al. (2013), female otter have territories of $7.5 \pm 1.5\text{km}$ in length along a riverine environment and $6.5 \pm 1.0\text{km}$ in coastal environments, while male otter territory along rivers is approximately $13.2 \pm 5.3\text{km}$ 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.</p> <p>The proposed project has the potential to introduce noise into the marine environment and mitigation measures are required to protect harbour seals.</p> <p>Natura Impact Statement Required</p>
IE000707	Saltee Islands SAC	In	<p>Conservation Objective</p> <p>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.</p> <p>Features of Interest</p> <p>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] <i>Halichoerus grypus</i> (Grey Seal) [1364]</p> <p>Potential Impact</p> <p>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).</p> <p>Initial assessment identifies that, in the absence of mitigation measures, there may be potential for impact on grey seal</p>

NATURA Site Code	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
			<p>(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.</p> <p>The survey area is located 131 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.</p> <p>The proposed project has the potential to introduce noise into the marine environment and mitigation measures are required to protect grey seals.</p> <p>Natura Impact Statement Required</p>
IE000101	Roaringwater Bay and Islands SAC	In	<p>Conservation Objective</p> <p>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.</p> <p>Features of Interest</p> <p>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] <i>Phocoena phocoena</i> (Harbour Porpoise) [1351] <i>Lutra lutra</i> (Otter) [1355] <i>Halichoerus grypus</i> (Grey Seal) [1364]</p> <p>Potential Impact</p> <p>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).</p> <p>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. Mitigation measures are required to protect the SAC from significant effects.</p> <p>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</p>

NATURA Site Code	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
			<p>foreseen from the proposed works associated with this survey license application.</p> <p>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.</p> <p>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.</p> <p>Natura Impact Statement Required</p>
IE002172	Blasket Islands SAC	In	<p>Conservation Objective</p> <p>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.</p> <p>Features of Interest</p> <p>Reefs [1170] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] European dry heaths [4030] Submerged or partially submerged sea caves [8330] <i>Phocoena phocoena</i> (Harbour Porpoise) [1351] <i>Halichoerus grypus</i> (Grey Seal) [1364]</p> <p>Potential Impact</p> <p>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).</p> <p>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. Mitigation measures are required to protect the SAC from significant effects.</p> <p>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</p>

NATURA Site Code	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
			<p>foreseen from the proposed works associated with this survey license application.</p> <p>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.</p> <p>Natura Impact Statement Required</p>

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	<p>Conservation Objective</p> <p>Maintain site integrity by ensuring:</p> <ol style="list-style-type: none"> 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. <p>Qualifying Interest</p> <p>Harbour Porpoise (<i>Phocoena phocoena</i>) [1351]</p> <p>Potential Impact</p> <p>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).</p> <p>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.</p> <p>The proposed project has the potential to introduce noise into the marine environment and mitigation measures are required to protect harbour porpoise.</p> <p>Natura Impact Statement Required</p>
UK0030397	West Wales Marine / Gorllewin Cymru Forol	In	<p>Conservation Objective</p> <p>Maintain site integrity by ensuring:</p> <ol style="list-style-type: none"> 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. <p>Qualifying Interest</p> <p>Harbour Porpoise (<i>Phocoena phocoena</i>) [1351]</p> <p>Potential Impact</p>

NATURA Site Code	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
			<p>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).</p> <p>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.</p> <p>The proposed project has the potential to introduce noise into the marine environment and mitigation measures are required to protect harbour porpoise.</p> <p>Natura Impact Statement Required</p>
UK0013117	Pen Llyn a'r Sarnau/Lleyn Peninsula and the Sarnau	In	<p>Conservation Objective</p> <p>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.</p> <p>Qualifying Interest</p> <p>Mudflats and sandflats not covered by seawater at low tide [1140] Salicornia and other annuals colonizing mud and sand [1310] Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>) [1330] Submerged or partially submerged sea caves [8330] <i>Lutra lutra</i> (Otter) [1355] <i>Tursiops truncatus</i> (Common Bottlenose Dolphin) [1349] <i>Halichoerus grypus</i> (Grey Seal) [1364]</p> <p>Potential Impact</p> <p>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).</p> <p>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.</p> <p>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</p>

NATURA Site Code	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
			<p>foreseen from the proposed works associated with this survey license application.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>Natura Impact Statement Required</p>
UK0016612	Murlough	In	<p>Conservation Objective</p> <p>To maintain (or restore where appropriate) the qualifying interests to favourable condition.</p> <p>Qualifying Interest</p> <p>Fixed coastal dunes with herbaceous vegetation (“grey dunes”) [2130] *priority habitat. Atlantic decalcified fixed dunes (<i>Calluno-Ulicetea</i>) [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 (<i>Glauco-Puccinellietalia maritimae</i>) [1330] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (“white dunes”) [2120] Dunes with <i>Salix repens</i> ssp. <i>argentea</i> (<i>Salicion arenariae</i>) [2170] Marsh fritillary butterfly (<i>Euphydryas (Eurodryas, Hypodryas) aurinia</i>) [1065] Harbour Seal (<i>Phoca vitulina</i>) [1365]</p> <p>Potential Impact</p> <p>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).</p>

NATURA Site Code	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
			<p>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.</p> <p>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 qualifying interest of this SAC are foreseen from the proposed works associated with this survey license application.</p> <p>The proposed project has the potential to introduce noise into the marine environment and mitigation measures are required to protect harbour seals.</p> <p>Natura Impact Statement Required</p>
UK0030399	North Channel	In	<p>Conservation Objective</p> <p>Maintain site integrity by ensuring:</p> <ol style="list-style-type: none"> 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. <p>Qualifying Interest</p> <p>Harbour Porpoise (<i>Phocoena phocoena</i>) [1351]</p> <p>Potential Impact</p> <p>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).</p> <p>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.</p> <p>The proposed project has the potential to introduce noise into the marine environment and mitigation measures are required to protect harbour porpoise.</p> <p>Natura Impact Statement Required</p>
UK0016618	Strangford Lough	In	<p>Conservation Objective</p> <p>To maintain (or restore where appropriate) the qualifying interests to favourable condition.</p> <p>Qualifying Interest</p> <p>Large shallow inlet and bay [1160]</p>

NATURA Site Code	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
			<p>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 (<i>Glauco-Puccinellietalia maritima</i>) [1330] Perennial vegetation of stony banks [1220] Salicornia and other annuals colonising mud and sand [1310] Harbour (Common) Seal (<i>Phoca vitulina</i>) [1351]</p> <p>Potential Impact</p> <p>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).</p> <p>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.</p> <p>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.</p> <p>The proposed project has the potential to introduce noise into the marine environment and mitigation measures are required to protect harbour seals.</p> <p>Natura Impact Statement Required</p>
UK0012712	Cardigan Bay / Bae Ceredigion	In	<p>Conservation Objective</p> <p>To maintain (or restore where appropriate) the qualifying interests to favourable condition.</p> <p>Qualifying Interest</p> <p>Bottlenose dolphin (<i>Tursiops truncatus</i>) [1349]</p> <p>Potential Impact</p> <p>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).</p> <p>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</p>

NATURA Site Code	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
			<p>SAC. Mitigation measures are required to protect the SAC from significant effects.</p> <p>The proposed project has the potential to introduce noise into the marine environment and mitigation measures are required to protect bottlenose dolphin.</p> <p>Natura Impact Statement Required</p>
UK0013116	Pembrokeshire Marine / Sir Benfro Forol	In	<p>Conservation Objective</p> <p>To maintain (or restore where appropriate) the qualifying interests to favourable condition.</p> <p>Qualifying Interests</p> <p>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 (<i>Glauco-Puccinellietalia maritima</i>) [1330] Grey Seal (<i>Halichoerus grypus</i>) [1364] Otter (<i>Lutra lutra</i>) [1355] Allis shad (<i>Alosa alosa</i>) [1102] Twaite shad (<i>Alosa fallax</i>) [1103] River lamprey (<i>Lampetra fluviatilis</i>) [1099] Sea lamprey (<i>Petromyzon marinus</i>) [1095] Shore dock (<i>Rumex rupestris</i>) [1441]</p> <p>Potential Impact</p> <p>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).</p> <p>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.</p> <p>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.</p>

NATURA Site Code	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
			<p>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.</p> <p>Further, no significant impacts on otter are foreseen. As detailed by Reid et al. (2013), female otters have territories of $7.5 \pm 1.5\text{km}$ in length along a riverine environment and $6.5 \pm 1.0\text{km}$ in coastal environments, while male otter territory along rivers is approximately $13.2 \pm 5.3\text{km}$ 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 significant effects on otter species are likely as a result of the proposed project.</p> <p>The proposed project has the potential to introduce noise into the marine environment and mitigation measures are required to protect harbour seals.</p> <p>Natura Impact Statement Required</p>
UK0030384	The Maidens	In	<p>Conservation Objective</p> <p>To maintain (or restore where appropriate) the qualifying interests to favourable condition.</p> <p>Qualifying Interest</p> <p>Sandbanks which are slightly covered by seawater all the time [1110] Reefs [1170] Grey Seal (<i>Halichoerus grypus</i>) [1364]</p> <p>Potential Impact</p> <p>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).</p> <p>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.</p> <p>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.</p> <p>The proposed project has the potential to introduce noise into the marine environment and mitigation measures are required to protect grey seals.</p> <p>Natura Impact Statement Required</p>

NATURA Site Code	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
UK0030396	Bristol Channel Approaches/Dynesfeydd Môr Hafren	In	<p>Conservation Objective</p> <p>To maintain (or restore where appropriate) the qualifying interests to favourable condition.</p> <p>Qualifying Interest</p> <p>Harbour porpoise (<i>Phocoena phocoena</i>) [1351]</p> <p>Potential Impact</p> <p>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).</p> <p>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.</p> <p>The proposed project has the potential to introduce noise into the marine environment and mitigation measures are required to protect harbour porpoise.</p> <p>Natura Impact Statement Required</p>
UK0013114	Lundy	In	<p>Conservation Objective</p> <p>To maintain (or restore where appropriate) the qualifying interests to favourable condition.</p> <p>Qualifying Interest</p> <p>Sandbanks which are slightly covered by seawater all the time [1110] Reefs [1170] Submerged or partially submerged sea caves [8330] Grey Seal (<i>Halichoerus grypus</i>) [1364]</p> <p>Potential Impact</p> <p>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).</p> <p>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.</p> <p>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</p>

NATURA Site Code	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
			<p>foreseen from the proposed works associated with this survey license application.</p> <p>The proposed project has the potential to introduce noise into the marine environment and mitigation measures are required to protect grey seals.</p> <p>Natura Impact Statement Required</p>
UK0013694	Isles of Scilly Complex	In	<p>Conservation Objective</p> <p>To maintain (or restore where appropriate) the qualifying interests to favourable condition.</p> <p>Qualifying Interest</p> <p>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 (<i>Rumex rupestris</i>) [1441] Grey Seal (<i>Halichoerus grypus</i>) [1364]</p> <p>Potential Impact</p> <p>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).</p> <p>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.</p> <p>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.</p> <p>The proposed project has the potential to introduce noise into the marine environment and mitigation measures are required to protect grey seals.</p> <p>Natura Impact Statement Required</p>

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

NATURA Site Code	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
			<p>To maintain (or restore where appropriate) the qualifying interests to favourable condition.</p> <p>Qualifying Interests</p> <p><i>Phocoena phocoena</i> (Harbour Porpoise) [1351]</p> <p>Potential Impact</p> <p>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).</p> <p>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.</p> <p>The proposed project has the potential to introduce noise into the marine environment and mitigation measures are required to protect harbour porpoise.</p> <p>Natura Impact Statement Required</p>
FR2500084	Récifs et landes de la Hague	In	<p>Conservation Objective</p> <p>To maintain (or restore where appropriate) the qualifying interests to favourable condition.</p> <p>Qualifying Interests</p> <p><i>Phocoena phocoena</i> (Harbour Porpoise) [1351]</p> <p>Potential Impact</p> <p>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).</p> <p>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.</p> <p>The proposed project has the potential to introduce noise into the marine environment and mitigation measures are required to protect harbour porpoise.</p> <p>Natura Impact Statement Required</p>
FR2502019	Anse de Vauville	In	<p>Conservation Objective</p> <p>To maintain (or restore where appropriate) the qualifying interests to favourable condition.</p> <p>Qualifying Interests</p>

NATURA Site Code	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
			<p><i>Phocoena phocoena</i> (Harbour Porpoise) [1351]</p> <p>Potential Impact</p> <p>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).</p> <p>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.</p> <p>The proposed project has the potential to introduce noise into the marine environment and mitigation measures are required to protect harbour porpoise.</p> <p>Natura Impact Statement Required</p>
FR5302015	Mers Celtiques – Talus du golfe de Gascogne	In	<p>Conservation Objective</p> <p>To maintain (or restore where appropriate) the qualifying interests to favourable condition.</p> <p>Qualifying Interests</p> <p><i>Phocoena phocoena</i> (Harbour Porpoise) [1351]</p> <p>Potential Impact</p> <p>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).</p> <p>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.</p> <p>The proposed project has the potential to introduce noise into the marine environment and mitigation measures are required to protect harbour porpoise.</p> <p>Natura Impact Statement Required</p>
FR2502018	Banc et récifs de Surtainville	In	<p>Conservation Objective</p> <p>To maintain (or restore where appropriate) the qualifying interests to favourable condition.</p> <p>Qualifying Interests</p> <p><i>Phocoena phocoena</i> (Harbour Porpoise) [1351]</p> <p>Potential Impact</p>

NATURA Site Code	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
			<p>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).</p> <p>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.</p> <p>The proposed project has the potential to introduce noise into the marine environment and mitigation measures are required to protect harbour porpoise.</p> <p>Natura Impact Statement Required</p>
FR5300009	Côte de Granit rose-Sept-Iles	In	<p>Conservation Objective</p> <p>To maintain (or restore where appropriate) the qualifying interests to favourable condition.</p> <p>Qualifying Interests</p> <p><i>Phocoena phocoena</i> (Harbour Porpoise) [1351]</p> <p>Potential Impact</p> <p>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).</p> <p>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.</p> <p>The proposed project has the potential to introduce noise into the marine environment and mitigation measures are required to protect harbour porpoise.</p> <p>Natura Impact Statement Required</p>
FR5300010	Trégor – Goëlo	In	<p>Conservation Objective</p> <p>To maintain (or restore where appropriate) the qualifying interests to favourable condition.</p> <p>Qualifying Interests</p> <p><i>Phocoena phocoena</i> (Harbour Porpoise) [1351]</p> <p>Potential Impact</p> <p>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).</p>

NATURA Site Code	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
			<p>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.</p> <p>The proposed project has the potential to introduce noise into the marine environment and mitigation measures are required to protect harbour porpoise.</p> <p>Natura Impact Statement Required</p>
FR5300015	Baie de Morlaix	In	<p>Conservation Objective</p> <p>To maintain (or restore where appropriate) the qualifying interests to favourable condition.</p> <p>Qualifying Interests</p> <p><i>Phocoena phocoena</i> (Harbour Porpoise) [1351]</p> <p>Potential Impact</p> <p>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).</p> <p>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.</p> <p>The proposed project has the potential to introduce noise into the marine environment and mitigation measures are required to protect harbour porpoise.</p> <p>Natura Impact Statement Required</p>
FR5300017	Abers – Côtes des légendes	In	<p>Conservation Objective</p> <p>To maintain (or restore where appropriate) the qualifying interests to favourable condition.</p> <p>Qualifying Interests</p> <p><i>Phocoena phocoena</i> (Harbour Porpoise) [1351]</p> <p>Potential Impact</p> <p>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).</p> <p>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</p>

NATURA Site Code	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
			<p>SAC. Mitigation measures are required to protect the SAC from significant effects.</p> <p>The proposed project has the potential to introduce noise into the marine environment and mitigation measures are required to protect harbour porpoise.</p> <p>Natura Impact Statement Required</p>
FR5300008	Rivière Leguer, forêts de Beffou, Coat an Noz et Coat an Hay	In	<p>Conservation Objective</p> <p>To maintain (or restore where appropriate) the qualifying interests to favourable condition.</p> <p>Qualifying Interests</p> <p><i>Phocoena phocoena</i> (Harbour Porpoise) [1351]</p> <p>Potential Impact</p> <p>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).</p> <p>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.</p> <p>The proposed project has the potential to introduce noise into the marine environment and mitigation measures are required to protect harbour porpoise.</p> <p>Natura Impact Statement Required</p>
FR5300011	Cap d'Erquy-Cap Fréhel	In	<p>Conservation Objective</p> <p>To maintain (or restore where appropriate) the qualifying interests to favourable condition.</p> <p>Qualifying Interests</p> <p><i>Phocoena phocoena</i> (Harbour Porpoise) [1351]</p> <p>Potential Impact</p> <p>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).</p> <p>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.</p>

NATURA Site Code	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
			<p>The proposed project has the potential to introduce noise into the marine environment and mitigation measures are required to protect harbour porpoise.</p> <p>Natura Impact Statement Required</p>
FR5300018	Ouessant-Molène	In	<p>Conservation Objective</p> <p>To maintain (or restore where appropriate) the qualifying interests to favourable condition.</p> <p>Qualifying Interests</p> <p><i>Phocoena phocoena</i> (Harbour Porpoise) [1351]</p> <p>Potential Impact</p> <p>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).</p> <p>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.</p> <p>The proposed project has the potential to introduce noise into the marine environment and mitigation measures are required to protect harbour porpoise.</p> <p>Natura Impact Statement Required</p>
FR2500079	Chausey	In	<p>Conservation Objective</p> <p>To maintain (or restore where appropriate) the qualifying interests to favourable condition.</p> <p>Qualifying Interests</p> <p><i>Phocoena phocoena</i> (Harbour Porpoise) [1351]</p> <p>Potential Impact</p> <p>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).</p> <p>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.</p> <p>The proposed project has the potential to introduce noise into the marine environment and mitigation measures are required to protect harbour porpoise.</p>

NATURA Site Code	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
			Natura Impact Statement Required
FR5300066	Baie de Saint-Brieuc - Est	In	<p>Conservation Objective</p> <p>To maintain (or restore where appropriate) the qualifying interests to favourable condition.</p> <p>Qualifying Interests</p> <p><i>Phocoena phocoena</i> (Harbour Porpoise) [1351]</p> <p>Potential Impact</p> <p>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).</p> <p>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.</p> <p>The proposed project has the potential to introduce noise into the marine environment and mitigation measures are required to protect harbour porpoise.</p> <p>Natura Impact Statement Required</p>
FR5302006	Côtes de Crozon	In	<p>Conservation Objective</p> <p>To maintain (or restore where appropriate) the qualifying interests to favourable condition.</p> <p>Qualifying Interests</p> <p><i>Phocoena phocoena</i> (Harbour Porpoise) [1351]</p> <p>Potential Impact</p> <p>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).</p> <p>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.</p> <p>The proposed project has the potential to introduce noise into the marine environment and mitigation measures are required to protect harbour porpoise.</p> <p>Natura Impact Statement Required</p>
FR2500077	Baie du Mont Saint-Michel	In	<p>Conservation Objective</p> <p>To maintain (or restore where appropriate) the qualifying interests to favourable condition.</p>

NATURA Site Code	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
			<p>Qualifying Interests</p> <p><i>Phocoena phocoena</i> (Harbour Porpoise) [1351]</p> <p>Potential Impact</p> <p>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).</p> <p>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.</p> <p>The proposed project has the potential to introduce noise into the marine environment and mitigation measures are required to protect harbour porpoise.</p> <p>Natura Impact Statement Required</p>
FR5300012	Baie de Lancieux, Baie de l'Arguenon, Archipel de Saint Malo et Dinard	In	<p>Conservation Objective</p> <p>To maintain (or restore where appropriate) the qualifying interests to favourable condition.</p> <p>Qualifying Interests</p> <p><i>Phocoena phocoena</i> (Harbour Porpoise) [1351]</p> <p>Potential Impact</p> <p>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).</p> <p>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.</p> <p>The proposed project has the potential to introduce noise into the marine environment and mitigation measures are required to protect harbour porpoise.</p> <p>Natura Impact Statement Required</p>
FR5300061	Estuaire de la Rance	In	<p>Conservation Objective</p> <p>To maintain (or restore where appropriate) the qualifying interests to favourable condition.</p> <p>Qualifying Interests</p> <p><i>Phocoena phocoena</i> (Harbour Porpoise) [1351]</p> <p>Potential Impact</p>

NATURA Site Code	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
			<p>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).</p> <p>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.</p> <p>The proposed project has the potential to introduce noise into the marine environment and mitigation measures are required to protect harbour porpoise.</p> <p>Natura Impact Statement Required</p>
FR5302007	Chaussée de Sein	In	<p>Conservation Objective</p> <p>To maintain (or restore where appropriate) the qualifying interests to favourable condition.</p> <p>Qualifying Interests</p> <p><i>Phocoena phocoena</i> (Harbour Porpoise) [1351]</p> <p>Potential Impact</p> <p>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).</p> <p>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.</p> <p>The proposed project has the potential to introduce noise into the marine environment and mitigation measures are required to protect harbour porpoise.</p> <p>Natura Impact Statement Required</p>
FR5302016	Récifs du talus du golfe de Gascogne	In	<p>Conservation Objective</p> <p>To maintain (or restore where appropriate) the qualifying interests to favourable condition.</p> <p>Qualifying Interests</p> <p><i>Phocoena phocoena</i> (Harbour Porpoise) [1351]</p> <p>Potential Impact</p> <p>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).</p>

NATURA Site Code	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
			<p>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.</p> <p>The proposed project has the potential to introduce noise into the marine environment and mitigation measures are required to protect harbour porpoise.</p> <p>Natura Impact Statement Required</p>

4.5 In Combination Effects

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 3,105m ³ , 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 8,275m ³ and installation of a pump platform.
3625/20	Poolbeg Generating Station, Pigeon House Road, Dublin 4	<p>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:</p> <p>(a) The demolition of three existing disused modern buildings with a combined floor area of 3,240 sq.m. comprising:</p> <p>(1) a single storey [up to 3.6 m high], c. 166 sq.m. Safety Centre (Pavilion) building;</p> <p>(2) a single storey [up to 4.5 m high], c. 463 sq. m. Store building;</p> <p>(3) a multi-storey [up to 20 m high], c. 2,611 sq.m. Store / Workshop building;</p> <p>(b) Works including:</p> <p>(1) remediation and cladding of exposed northern façade of 5-storey [up to 20.4 m high], redundant former Administration building;</p> <p>(2) cladding of exposed western façade of turbine hall building on eastern boundary of development site;</p> <p>(3) ancillary site clearance, grading and surfacing;</p> <p>(c) Construction and operation of a 75 MW capacity battery energy storage system (BESS) facility within a secured compound including the following elements:</p> <p>(1) Up to 24 battery container unit arrangements comprising: 24 Concrete plinths (c. 110 sq. m. , c. 0.5 m high) typically supporting battery</p>

^d [Official Journal C 437/2021 \(europa.eu\)](https://eur-lex.europa.eu/eli/reg/2021/1056/oj)

Ref. No.	Address	Proposal
		<p>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);</p> <p>(2) a c. 126 sq. m., c. 4.7 m high control building;</p> <p>(3) industrial/ electrical plant including:</p> <p>(i) 3 lightning monopoles (c. 20 m high);</p> <p>(ii) SCADA communication mast (c. 18 m high);</p> <p>(iii) VAR support unit on concrete plinth (c. 24 sq. m., c. 3.4 m high);</p> <p>(iv) 2 banded house transformers (c. 19.8 sq. m., c. 3.2 m high);</p> <p>(v) spare parts storage container (c. 36 sq. m., c. 2.6 m high);</p> <p>(vi) fenced transformer compound (c. 1,309 sq. m., c. 5.6 m high);</p> <p>(vii) cable trays (and associated service connections);</p> <p>(viii) pole mounted security cameras (c. 8.3 m high);</p> <p>(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);</p> <p>(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.</p> <p>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.</p>
3711/18	Lands at Berth 47A, adjacent to Pigeon House Road, Dublin 4, north of the Ringsend Wastewater Treatment Works.	<p>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.</p>
3638/18	Former Calor Yard and Ferry Terminals 1 and 2, Dublin Port, Dublin 1	<p>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.</p>

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 licence applications proximate to the proposed survey corridor

Reference	Title	Year	Location	Activity	Status
FS007635	MaresConnect Electricity 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

Reference	Title	Year	Location	Activity	Status
FS007180	Tech Works Marine Ltd. Data Buoy Deployment	2022	Scotsman's Bay, Dun Laoghaire, Co. Dublin	Deployment of a small Data Buoy with multiple environmental (non-acoustic) sensors to test communications technology for data acquisition	Applied
FS006984	Rush Sailing Club Landing Pontoon	2022	Rush Sailing Club, Rogerstown, Rush, Co. Dublin	Construction of a new disability access landing pontoon to include new floating pontoon, access gangway, landing area, and alterations to existing boundary sea wall, boundary wall, and footpath to accommodate same, and associated site works	Applied
FS007605	Irish Water Benthic Survey	2022	Survey area commences at the R106 Coast Road (at Maynetown), north of Baldoyle and terminates 1km north-east of Ireland's Eye	Benthic survey of the proposed outfall pipeline (marine section) area and its environs associated with the Greater Dublin Drainage Project.	Consultation
FS007472	Mac Lir Offshore Wind Limited Site Investigations for proposed Offshore Wind Farm, 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: <ul style="list-style-type: none"> • 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 	Determination

Reference	Title	Year	Location	Activity	Status
				and AA for the Codling Wind Park project.	
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	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
	within the 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 an 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 & 13 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 foreseen 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.

5. Further Information on European Sites Screened in for NIS

5.1 North Dublin Bay SAC (Site code: 000206)

As outlined in the North Dublin Bay SAC Site Synopsis⁵ (NPWS, version date 12.08.2013):

'This site covers the inner part of north Dublin Bay, the seaward boundary extending from the Bull Wall lighthouse across to the Martello Tower at Howth Head. The North Bull Island is the focal point of this site.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (= priority; numbers in brackets are Natura 2000 codes):*

- [1140] Tidal Mudflats and Sandflats*
- [1210] Annual Vegetation of Drift Lines*
- [1310] Salicornia Mud*
- [1330] Atlantic Salt Meadows*
- [1410] Mediterranean Salt Meadows*
- [2110] Embryonic Shifting Dunes*
- [2120] Marram Dunes (White Dunes)*
- [2130] Fixed Dunes (Grey Dunes)**
- [2190] Humid Dune Slacks*
- [1395] Petalwort (*Petalophyllum ralfsii*)*

*North Bull Island is a sandy spit which formed after the building of the South Wall and Bull Wall in the 18th and 19th centuries. It now extends for about 5 km in length and is up to 1 km wide in places. A well-developed and dynamic dune system stretches along the seaward side of the island. Various types of dunes occur, from fixed dune grassland to pioneer communities on foredunes. Marram Grass (*Ammophila arenaria*) is dominant on the outer dune ridges, with Lyme-grass (*Leymus arenarius*) and Sand Couch (*Elymus farctus*) on the foredunes. Behind the first dune ridge, plant diversity increases with the appearance of such species as Wild Pansy (*Viola tricolor*), Kidney Vetch (*Anthyllis vulneraria*), Common Bird's-foot-trefoil (*Lotus corniculatus*), Common Restharrow (*Ononis repens*), Yellow-rattle (*Rhinanthus minor*) and Pyramidal Orchid (*Anacamptis pyramidalis*). In these grassy areas and slacks, the scarce Bee Orchid (*Ophrys apifera*) occurs.*

*About 1 km from the tip of the island, a large dune slack with a rich flora occurs, usually referred to as the 'Alder Marsh' because of the presence of Alder trees (*Alnus glutinosa*). The water table is very near the surface and is only slightly brackish. Saltmarsh Rush (*Juncus maritimus*) is the dominant species, with Meadowsweet (*Filipendula ulmaria*) and Devil's-bit Scabious (*Succisa pratensis*) being frequent. The orchid flora is notable and includes Marsh Helleborine (*Epipactis palustris*), Common Twayblade (*Listera ovata*), Autumn Lady's-tresses (*Spiranthes spiralis*) and Marsh Orchids (*Dactylorhiza* spp.).*

*Saltmarsh extends along the length of the landward side of the island. The edge of the marsh is marked by an eroding edge which varies from 20 cm to 60 cm high. The marsh can be zoned into different levels according to the vegetation types present. On the lower marsh, Glasswort (*Salicornia europaea*), Common Saltmarsh-grass (*Puccinellia maritima*), Annual Sea-blite (*Suaeda maritima*) and Greater Sea-spurrey (*Spergularia media*) are the main species. Higher up in the middle marsh Sea Plantain (*Plantago maritima*), Sea Aster (*Aster tripolium*), Sea Arrowgrass (*Triglochin maritima*) and Thrift (*Armeria maritima*) appear. Above the mark of the normal high tide, species such as Common Scurvygrass (*Cochlearia officinalis*) and Sea Milkwort (*Glaux maritima*) are found, while on the extreme upper marsh, the rushes *Juncus maritimus* and *J. gerardi* are dominant. Towards the tip of the island, the saltmarsh grades naturally into fixed dune vegetation.*

*The habitat 'annual vegetation of drift lines' is found in places, along the length of Dollymount Strand, with species such as Sea Rocket (*Cakile maritima*), Oraches (*Atriplex* spp.) and Prickly Saltwort (*Salsola kali*).*

⁵ <https://www.npws.ie/sites/default/files/protected-sites/synopsis/SY000206.pdf>

The island shelters two intertidal lagoons which are divided by a solid causeway. The sediments of the lagoons are mainly sands with a small and varying mixture of silt and clay. The north lagoon has an area known as the "Salicornia flat", which is dominated by *Salicornia dolichostachya*, a pioneer glasswort species, and covers about 25 ha. Beaked Tasselweed (*Ruppia maritima*) occurs in this area, along with some Narrow-leaved Eelgrass (*Zostera angustifolia*). Dwarf Eelgrass (*Z. noltii*) also occurs in Sutton Creek. Common Cordgrass (*Spartina anglica*) occurs in places but its growth is controlled by management. Green algal mats (*Enteromorpha* spp., *Ulva lactuca*) cover large areas of the flats during summer. These sediments have a rich macrofauna, with high densities of Lugworms (*Arenicola marina*) in parts of the north lagoon. Mussels (*Mytilus edulis*) occur in places, along with bivalves such as *Cerastoderma edule*, *Macoma balthica* and *Scrobicularia plana*. The small gastropod *Hydrobia ulvae* occurs in high densities in places, while the crustaceans *Corophium volutator* and *Carcinus maenas* are common. The sediments on the seaward side of North Bull Island are mostly sands. The site extends below the low spring tide mark to include an area of the sublittoral zone.

Three rare plant species which are legally protected under the Flora (Protection) Order, 1999 have been recorded on the North Bull Island. These are Lesser Centaury (*Centaureum pulchellum*), Red Hemp-nettle (*Galeopsis angustifolia*) and Meadow Saxifrage (*Saxifraga granulata*). Two further species listed as threatened in the Red Data Book, Wild Clary/Sage (*Salvia verbenaca*) and Spring Vetch (*Vicia lathyroides*), have also been recorded. A rare liverwort, *Petalophyllum ralfsii*, was first recorded from the North Bull Island in 1874 and has recently been confirmed as still present. This species is of high conservation value as it is listed on Annex II of the E.U. Habitats Directive. The North Bull is the only known extant site for the species in Ireland away from the western seaboard.

North Dublin Bay is of international importance for waterfowl. During the 1994/95 to 1996/97 period the following species occurred in internationally important numbers (figures are average maxima): Brent Goose 2,333; Knot 4,423; Bar-tailed Godwit 1,586. A further 14 species occurred in nationally important concentrations - Shelduck 1505; Wigeon 1,166; Teal 1,512; Pintail 334; Shoveler 239; Oystercatcher 2,190; Ringed Plover 346; Grey Plover 816; Sanderling 357; Dunlin 6,238; Black-tailed Godwit 156; Curlew 1,193; Turnstone 197 and Redshank 1,175. Some of these species frequent South Dublin Bay and the River Tolka Estuary for feeding and/or roosting purposes (mostly Brent Goose, Oystercatcher, Ringed Plover, Sanderling and Dunlin).

The tip of the North Bull Island is a traditional nesting site for Little Tern. A high total of 88 pairs nested in 1987. However, nesting attempts have not been successful since the early 1990s. Ringed Plover, Shelduck, Mallard, Skylark, Meadow Pipit and Stonechat also nest. A well-known population of Irish Hare is resident on the island

The invertebrates of the North Bull Island have been studied and the island has been shown to contain at least seven species of regional or national importance in Ireland (from the Orders Diptera, Hymenoptera and Hemiptera).

The main land uses of this site are amenity activities and nature conservation. The North Bull Island is the main recreational beach in Co. Dublin and is used throughout the year. Much of the land surface of the island is taken up by two golf courses. Two separate Statutory Nature Reserves cover much of the island east of the Bull Wall and the surrounding intertidal flats. The site is used regularly for educational purposes. North Bull Island has been designated a Special Protection Area under the E.U. Birds Directive and it is also a statutory Wildfowl Sanctuary, a Ramsar Convention site, a Biogenetic Reserve, a Biosphere Reserve and a Special Area Amenity Order site.

This site is an excellent example of a coastal site with all the main habitats represented. The site holds good examples of nine habitats that are listed on Annex I of the E.U. Habitats Directive; one of these is listed with priority status. Several of the wintering bird species have populations of international importance, while some of the invertebrates are of national importance. The site contains a numbers of rare and scarce plants including some which are legally protected. Its proximity to the capital city makes North Dublin Bay an excellent site for educational studies and research.'

The Natura 2000 Standard Data Form (2020)⁶ states that:

⁶ <https://www.npws.ie/sites/default/files/protected-sites/natura2000/NF000206.pdf>

'The North Bull Island sand spit is a relatively recent depositional feature, formed as a result of improvements to Dublin Port during the 18th and 19th centuries. It is almost 5km long and 1km wide and runs parallel to the coast between Clontarf and Sutton. The sediment which forms the island is predominantly glacial in origin and siliceous in nature. Between the island and the mainland there occurs two sheltered intertidal areas which are separated by a solid causeway constructed in 1964. The seaward side of the island has a fine sandy beach. A substantial area of shallow marine water is included in the site. The interior of the island is excluded from the site as it has been converted to golf courses. The proximity of the North Bull Island to Dublin City results in it being a very popular recreational area. It is also very important for educational and research purposes. Nature conservation is a main landuse within the site.'

*Site possesses an excellent diversity of coastal habitats. The North Bull Island dune system is one of the most important systems on the east coast and is one of the few in Ireland that is actively accreting. It possesses extensive and mostly good quality examples of embryonic, shifting marram and fixed dunes, as well as excellent examples of humid dune slacks. Both Atlantic and Mediterranean salt marshes are well represented and a particularly good marsh zonation is shown. The salt marshes grade into mudflats and sandflats, some of which are dominated by annual *Salicornia* species. *Petalophyllum ralfsii* occurs at its only known station away from the western seaboard. The site has five Red Data Book vascular plant species and four Red Data Book bryophyte species. This is one of the most important sites for wintering waterfowl in Ireland, with internationally important populations of *Branta bernicla horta*, *Calidris canutus* and *Limosa lapponica*, plus nationally important numbers of a further 14 species. 20% of the national total of *Pluvialis squatarola* occurs here. Formerly it had important colony of *Sterna albifrons*. North Dublin Bay is nationally important for three insect species. The scientific interests of the site have been well documented and future prospects are good owing to the various designations assigned to site.'*

As outlined in the Conservation objectives supporting document (NPWS, 2013):

'North Dublin Bay SAC (site code: 206) is designated for a range of coastal habitats, including mudflats and salt flats, saltmarsh and sand dunes. The following eight coastal habitats are included in the qualifying interests for the site (denotes a priority habitat):*

- *Salicornia and other annuals colonising mud and sand (1310)*
- *Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) (ASM) (1330)*
- *Mediterranean salt meadows (*Juncetaliaea maritimi*) (MSM) (1410)*
- *Annual vegetation of drift lines (1210)*
- *Embryonic shifting dunes (2110)*
- *Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) (2120)*
- *Fixed coastal dunes with herbaceous vegetation (grey dunes) (2130)**
- *Humid dune slacks (2190)*

The first three are saltmarsh habitats and the last five are associated with sand dune systems, although all eight of these habitats are found in close association with each other (McCorry, 2007; Ryle et al., 2009; Delaney et al., 2013).

This backing document sets out the conservation objectives for the eight coastal habitats listed above in North Dublin Bay SAC, which are defined by a list of parameters, attributes and targets. The main parameters are (a) Range (b) Area and (c) Structure and Functions, the last of which is broken down into a number of attributes, including physical structure, vegetation structure and vegetation composition.

The targets set for the saltmarsh habitats are based primarily on the results of the Saltmarsh Monitoring Project (SMP) (McCorry, 2007; McCorry & Ryle, 2009) and this document should be read in conjunction with those reports.'

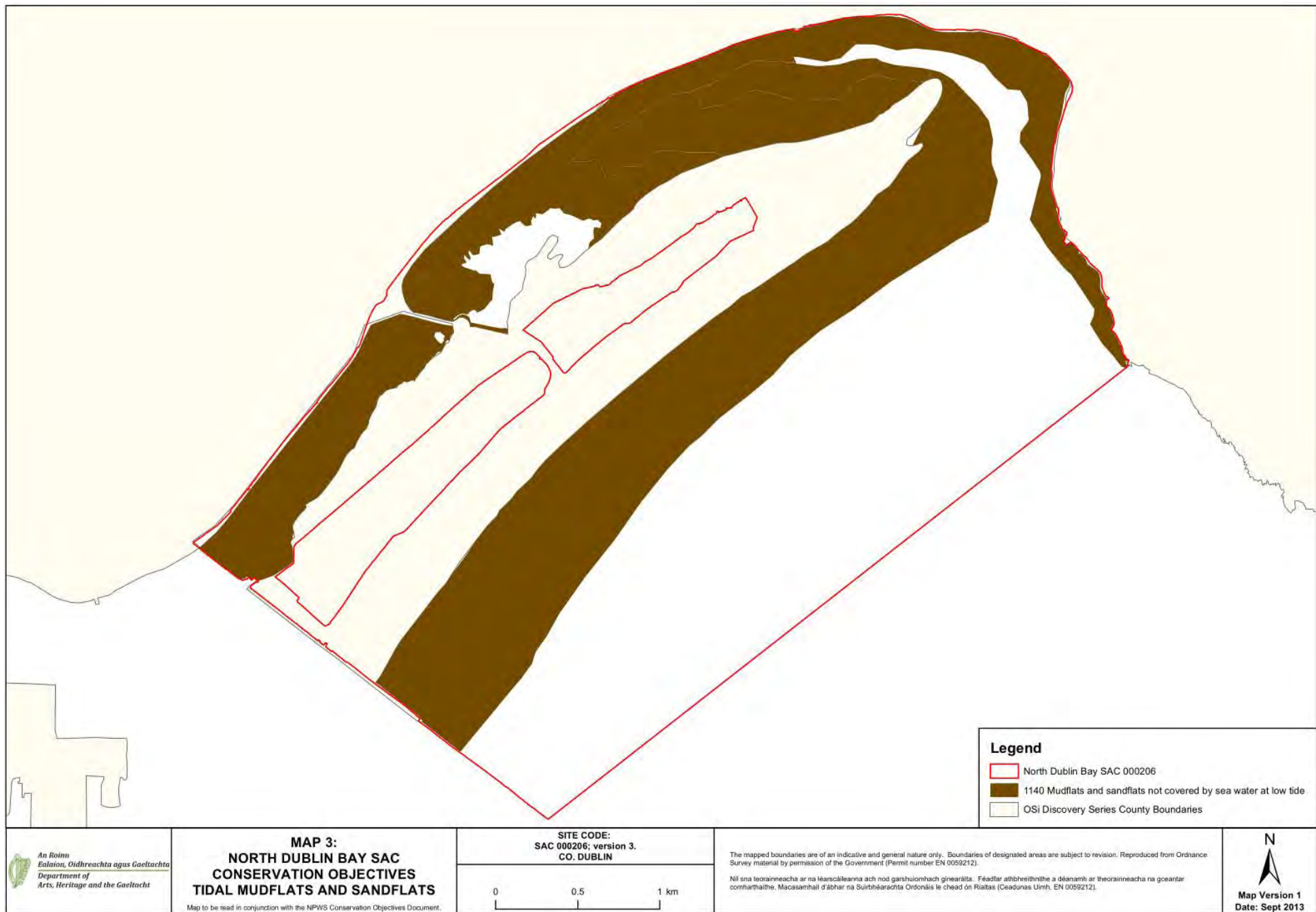


Figure 37. Tidal Mudflats and Sandflats – North Dublin Bay SAC

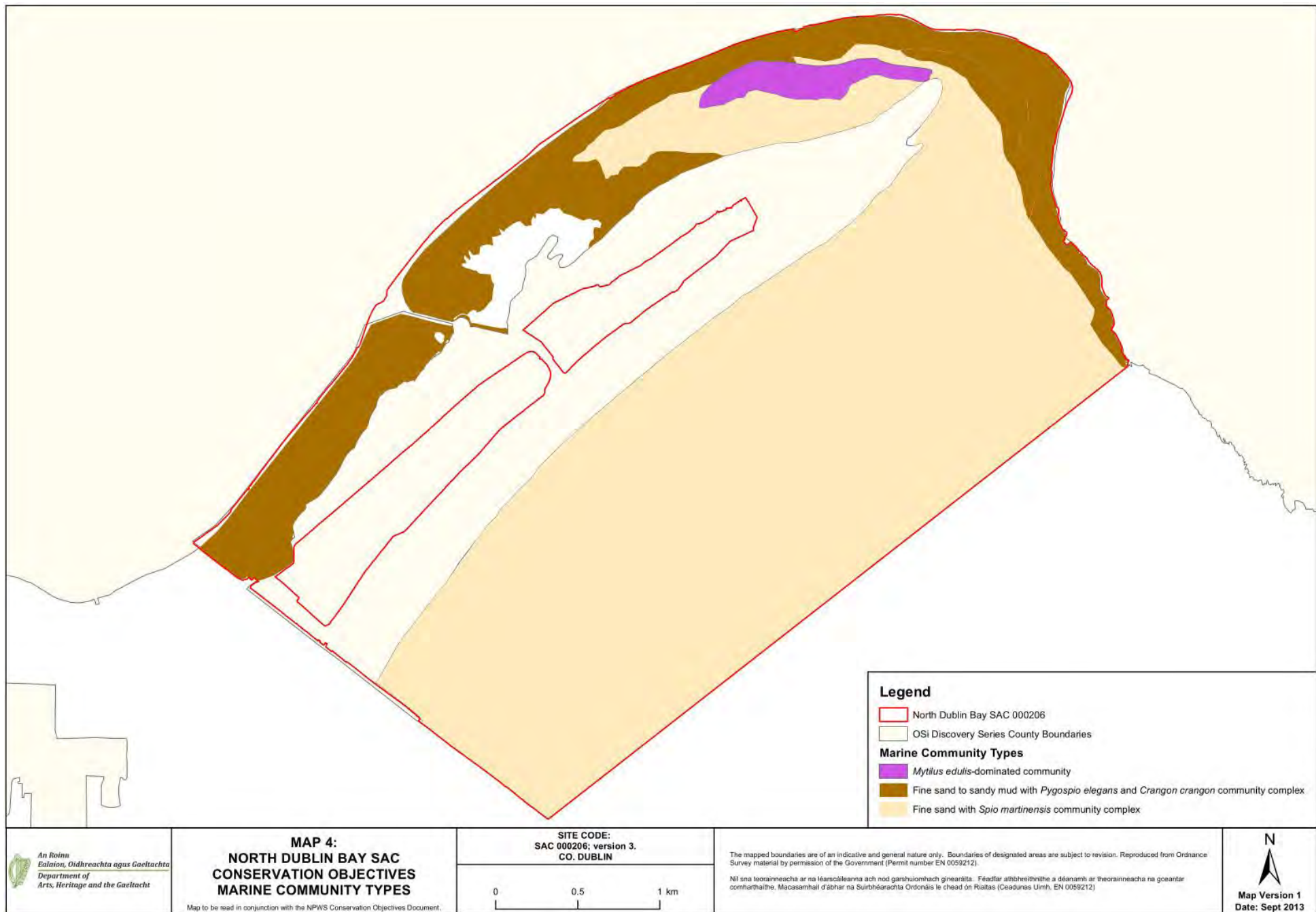


Figure 38. Marine Community Types – North Dublin Bay SAC

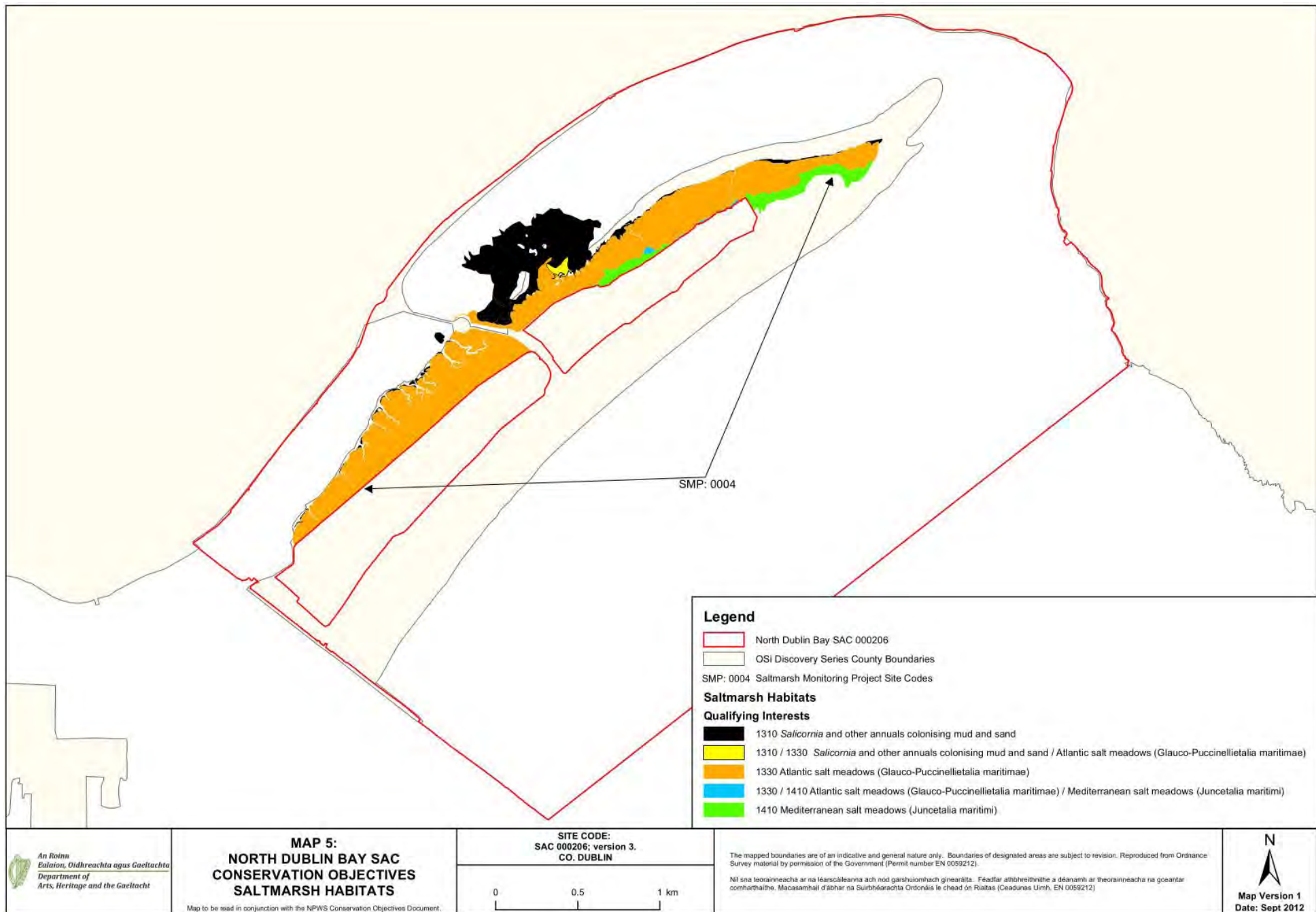


Figure 39. Saltmarsh Habitats – North Dublin Bay SAC

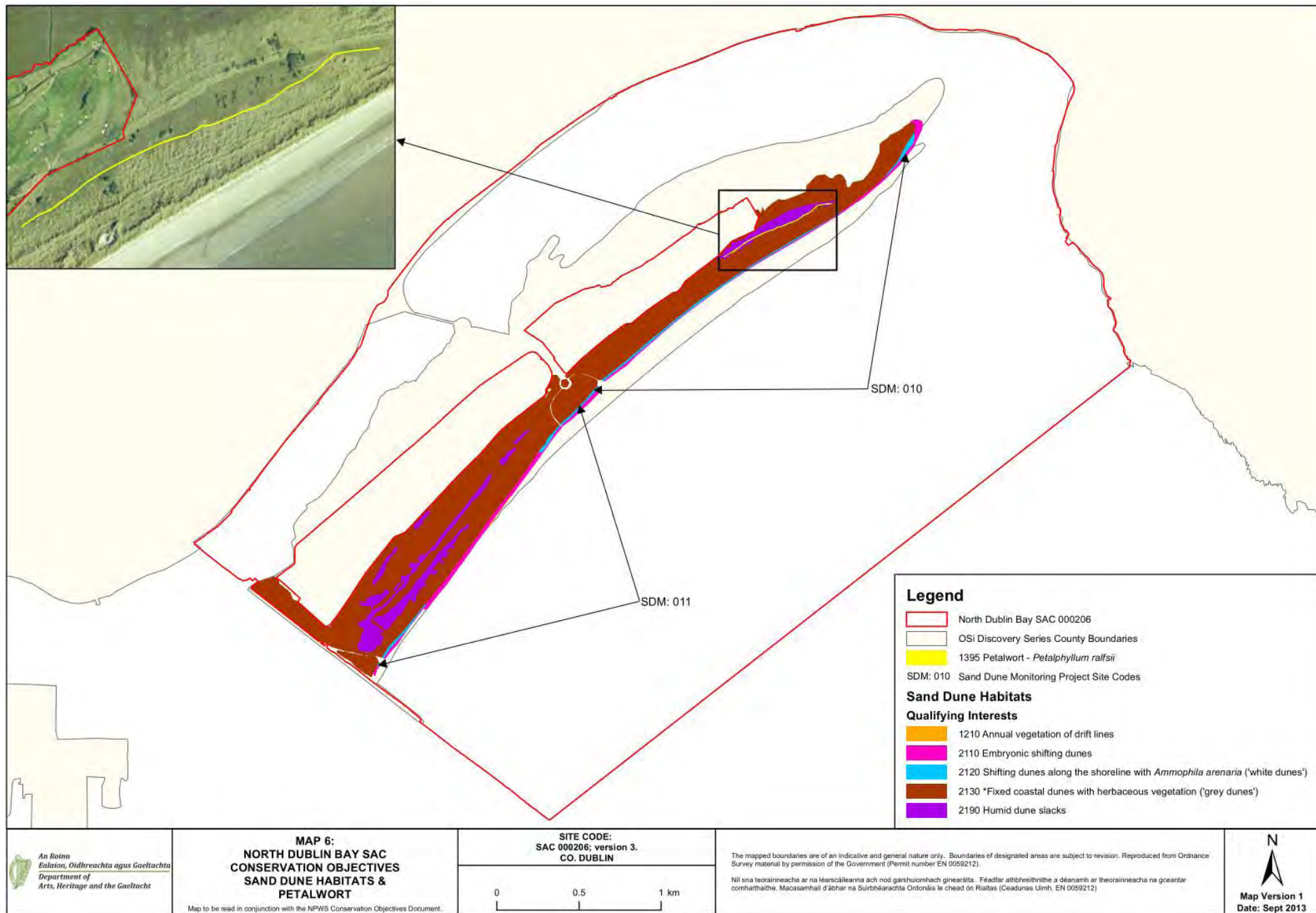


Figure 40. Sand Dune Habitats & Petalwort – North Dublin Bay SAC

5.1.1 Conservation Objectives of North Dublin Bay SAC 000206 (All Habitats and Species)

The qualifying interests, their attributes, targets and the potential impact of the proposed fibre-optic cable survey on each of the features of interest of North Dublin Bay SAC are seen in Table 15.

Table 15. The site-specific Conservation Objectives, overall status of species and habitats and the potential impact of the proposed works on the features of interest and conservation objectives of North Dublin Bay SAC.

Annex Species/Habitats- Qualifying Interest	Overall Conservation Status	<i>Site Specific Conservation Objectives</i> , attributes, targets and perceived impacts.
[1140] Mudflats and sandflats not covered by seawater at low tide	Inadequate	<p>To maintain the favourable conservation condition of Mudflats and sandflats not covered by seawater at low tide in North Dublin Bay SAC, which is defined by the following list of attributes and targets:</p> <p><i>(Attribute. Target)</i></p> <p><i>Habitat area.</i> The permanent habitat area is stable or increasing, subject to natural processes.</p> <p><i>Community extent.</i> Maintain the extent of the <i>Mytilus edulis</i>-dominated community, subject to natural processes.</p> <p><i>Community Structure: Mytilus edulis density:</i> Conserve the high quality of the <i>Mytilus edulis</i> -dominated community, subject to natural processes</p> <p><i>Community Distribution.</i> Conserve the following community types in a natural condition: Fine sand to sandy mud with <i>Pygospio elegans</i> and <i>Crangon crangon</i> community complex; Fine sand with <i>Spio martinensis</i> community complex</p> <p>Potential Effect</p> <p>The cable survey route is subtidal and not within or proximal to Mudflats and sandflats not covered by seawater at low tide. No significant impacts are foreseen on Mudflats and sandflats not covered by seawater at low tide. However, out of an abundance of caution there is potential for pollution e.g. from vessel activities to impact on habitat.</p>
[1210] Annual vegetation of drift lines	Inadequate	<p>To restore the favourable conservation condition of Annual vegetation of drift lines in North Dublin Bay SAC, which is defined by the following list of attributes and targets:</p> <p><i>(Attribute. Target)</i></p> <p><i>Habitat area:</i> Area increasing, subject to natural processes, including erosion and succession.</p> <p><i>Habitat distribution:</i> No decline, or change in habitat distribution, subject to natural processes.</p> <p><i>Physical structure: functionality and sediment supply:</i> Maintain the natural circulation of sediment and organic matter, without any physical obstructions</p>

Annex Species/Habitats- Qualifying Interest	Overall Conservation Status	<i>Site Specific Conservation Objectives</i> , attributes, targets and perceived impacts.
		<p><i>Vegetation structure: zonation:</i> Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession</p> <p><i>Vegetation composition: typical species and subcommunities:</i> Maintain the presence of species-poor communities with typical species: sea rocket (<i>Cakile maritima</i>), sea sandwort (<i>Honckenya peploides</i>), prickly saltwort (<i>Salsola kali</i>) and oraches (<i>Atriplex</i> spp.)</p> <p><i>Vegetation composition: negative indicator species:</i> Negative indicator species (including non-natives) to represent less than 5% cover</p> <p>Potential Effect</p> <p>The cable survey route is subtidal and not within or proximal to Mudflats and sandflats not covered by seawater at low tide. No significant impacts are foreseen on Annual vegetation of drift lines. However, out of an abundance of caution there is potential for pollution e.g. from vessel activities to impact on habitat.</p>
[1310] <i>Salicornia</i> and other annuals colonising mud and sand	Favourable	<p>To restore the favourable conservation condition of <i>Salicornia</i> and other annuals colonizing mud and sand in North Dublin Bay SAC, which is defined by the following list of attributes and targets:</p> <p><i>(Attribute. Target)</i></p> <p><i>Habitat area:</i> Area stable or increasing, subject to natural processes, including erosion and succession. For sub-site mapped: North Bull Island - 29.10ha.</p> <p><i>Habitat distribution:</i> No decline, or change in habitat distribution, subject to natural processes.</p> <p><i>Physical structure: sediment supply:</i> Maintain, or where necessary restore, natural circulation of sediments and organic matter, without any physical obstructions.</p> <p><i>Physical structure: creeks and pans:</i> Maintain creek and pan structure, subject to natural processes, including erosion and succession.</p> <p><i>Physical structure: flooding regime:</i> Maintain natural tidal regime.</p> <p><i>Vegetation structure: zonation:</i> Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession.</p> <p><i>Vegetation structure: vegetation height.</i> Maintain structural variation within sward.</p> <p><i>Vegetation structure: vegetation cover.</i> Maintain more than 90% of area outside creeks vegetated.</p>

Annex Species/Habitats- Qualifying Interest	Overall Conservation Status	Site Specific Conservation Objectives, attributes, targets and perceived impacts.
		<p><i>Vegetation composition: typical species and subcommunities:</i> Maintain the presence of species-poor communities listed in SMP (McCorry and Ryle, 2009).</p> <p><i>Vegetation structure: negative indicator species – Spartina anglica.</i> No significant expansion of common cordgrass (<i>Spartina anglica</i>), with an annual spread of less than 1%.</p> <p>Potential Effect</p> <p>The cable survey route is subtidal and not within or proximal to Mudflats and sandflats not covered by seawater at low tide. No significant impacts are foreseen on Annual vegetation of drift lines. However, out of an abundance of caution there is potential for pollution e.g. from vessel activities to impact on habitat.</p>
[1330] Atlantic salt meadows (<i>Glaucopuccinellietalia maritimae</i>)	Inadequate	<p>To maintain the favourable conservation condition of Atlantic salt meadows (<i>Glaucopuccinellietalia maritimae</i>) in North Dublin Bay SAC, which is defined by the following list of attributes and targets:</p> <p><i>(Attribute. Target)</i></p> <p><i>Habitat area:</i> Area stable or increasing, subject to natural processes, including erosion and succession. For sub-site mapped: North Bull Island - 81.84ha.</p> <p><i>Habitat distribution:</i> No decline or change in habitat distribution, subject to natural processes.</p> <p><i>Physical structure: sediment supply:</i> Maintain, or where necessary restore, natural circulation of sediments and organic matter, without any physical obstructions.</p> <p><i>Physical structure: creeks and pans:</i> Maintain creek and pan structure, subject to natural processes, including erosion and succession.</p> <p><i>Physical structure: flooding regime:</i> Maintain natural tidal regime.</p> <p><i>Vegetation structure: zonation:</i> Maintain range of coastal habitats including transitional zones, subject to natural processes including erosion and succession.</p> <p><i>Vegetation structure: vegetation height.</i> Maintain structural variation within sward.</p> <p><i>Vegetation structure: vegetation cover.</i> Maintain more than 90% area outside creeks vegetated.</p> <p><i>Vegetation composition: typical species and subcommunities:</i> Maintain range of subcommunities with typical species listed in SMP (McCorry and Ryle, 2009).</p>

Annex Species/Habitats- Qualifying Interest	Overall Conservation Status	<i>Site Specific Conservation Objectives</i> , attributes, targets and perceived impacts.
		<p><i>Vegetation structure: negative indicator species – Spartina anglica.</i> No significant expansion of common cordgrass (<i>Spartina anglica</i>), with an annual spread of less than 1%.</p> <p>Potential Effect</p> <p>The cable survey route is subtidal and not within or proximal to Mudflats and sandflats not covered by seawater at low tide. No significant impacts are foreseen on Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>). However, out of an abundance of caution there is potential for pollution e.g. from vessel activities to impact on habitat.</p>
[1410] Mediterranean salt meadows (<i>Juncetalia maritimi</i>)	Inadequate	<p>To maintain the favourable conservation condition of Mediterranean salt meadows (<i>Juncetalia maritimi</i>) in North Dublin Bay SAC, which is defined by the following list of attributes and targets:</p> <p><i>(Attribute. Target)</i></p> <p><i>Habitat area:</i> Area stable or increasing, subject to natural processes, including erosion and succession. For sub-site mapped: North Bull Island - 7.98ha.</p> <p><i>Habitat distribution:</i> No decline or change in habitat distribution, subject to natural processes.</p> <p><i>Physical structure: sediment supply:</i> Maintain/restore natural circulation of sediments and organic matter, without any physical obstructions.</p> <p><i>Physical structure: creeks and pans:</i> Maintain creek and pan structure, subject to natural processes, including erosion and succession.</p> <p><i>Physical structure: flooding regime:</i> Maintain natural tidal regime.</p> <p><i>Vegetation structure: zonation:</i> Maintain range of coastal habitats including transitional zones, subject to natural processes including erosion and succession.</p> <p><i>Vegetation structure: vegetation height.</i> Maintain structural variation within sward.</p> <p><i>Vegetation structure: vegetation cover.</i> Maintain more than 90% of area outside creeks vegetated.</p> <p><i>Vegetation composition: typical species and subcommunities:</i> Maintain range of subcommunities with characteristic species listed in SMP (McCorry and Ryle, 2009).</p> <p><i>Vegetation structure: negative indicator species – Spartina anglica.</i> No significant expansion of common cordgrass (<i>Spartina anglica</i>), with an annual spread of less than 1%.</p>

Annex Species/Habitats- Qualifying Interest	Overall Conservation Status	<i>Site Specific Conservation Objectives</i> , attributes, targets and perceived impacts.
		<p>Potential Effect</p> <p>The cable survey route is subtidal and not within or proximal to Mudflats and sandflats not covered by seawater at low tide. No significant impacts are foreseen on Mediterranean salt meadows (<i>Juncetalia maritimi</i>). However, out of an abundance of caution there is potential for pollution e.g. from vessel activities to impact on habitat.</p>
[2110] Embryonic shifting dunes	Inadequate	<p>To restore the favourable conservation condition of Embryonic shifting dunes in North Dublin Bay SAC, which is defined by the following list of attributes and targets:</p> <p><i>(Attribute. Target)</i></p> <p><i>Habitat area:</i> Area stable or increasing, subject to natural processes, including erosion and succession. For sub-sites mapped: North Bull - 2.64ha; South Bull - 3.43ha.</p> <p><i>Habitat distribution:</i> No decline or change in habitat distribution, subject to natural processes.</p> <p><i>Physical structure: functionality and sediment supply:</i> Maintain the natural circulation of sediment and organic matter, without any physical obstructions.</p> <p><i>Vegetation structure: zonation:</i> Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession.</p> <p><i>Vegetation composition: plant health of foredune grasses.</i> More than 95% of sand couch (<i>Elytrigia juncea</i>) and/or lyme-grass (<i>Leymus arenarius</i>) should be healthy (i.e. green plant parts above ground and flowering heads present).</p> <p><i>Vegetation composition: typical species and subcommunities:</i> Maintain the presence of species-poor communities with typical species: sand couch (<i>Elytrigia juncea</i>) and/or lyme-grass (<i>Leymus arenarius</i>).</p> <p><i>Vegetation structure: negative indicator species.</i> Negative indicator species (including non-native species) to represent less than 5% cover.</p> <p>Potential Effect</p> <p>The cable survey route is subtidal and not within or proximal to Mudflats and sandflats not covered by seawater at low tide. No significant impacts are foreseen on Embryonic shifting dunes. However, out of an abundance of caution there is potential for pollution e.g. from vessel activities to impact on habitat.</p>
[2120] Shifting dunes along the shoreline with	Inadequate	To restore the favourable conservation condition of Shifting dunes along the shoreline with <i>Ammophila arenaria</i> ('white dunes') in

Annex Species/Habitats- Qualifying Interest	Overall Conservation Status	Site Specific Conservation Objectives, attributes, targets and perceived impacts.
Ammophila arenaria (white dunes)		<p>North Dublin Bay SAC, which is defined by the following list of attributes and targets:</p> <p><i>(Attribute. Target)</i></p> <p><i>Habitat area:</i> Area stable or increasing, subject to natural processes including erosion and succession. North Bull - 2.20ha; South Bull - 0.97ha.</p> <p><i>Habitat distribution:</i> No decline, or change in habitat distribution, subject to natural processes.</p> <p><i>Physical structure: functionality and sediment supply:</i> Maintain the natural circulation of sediment and organic matter, without any physical obstructions</p> <p><i>Vegetation structure: zonation:</i> Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession</p> <p><i>Vegetation composition: plant health of dune grasses:</i> 95% of marram grass (<i>Ammophila arenaria</i>) and/or lyme-grass (<i>Leymus arenarius</i>) should be healthy (i.e. green plant parts above ground and flowering heads present)</p> <p><i>Vegetation composition: typical species and subcommunities:</i> Maintain the presence of species-poor communities dominated by marram grass (<i>Ammophila arenaria</i>) and/or lymegrass (<i>Leymus arenarius</i>)</p> <p><i>Vegetation composition: negative indicator species:</i> Negative indicator species (including non-natives) to represent less than 5% cover</p> <p>Potential Impact</p> <p>The cable survey route is subtidal and not within or proximal to Mudflats and sandflats not covered by seawater at low tide. No significant impacts are foreseen on Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes). However, out of an abundance of caution there is potential for pollution e.g. from vessel activities to impact on habitat.</p>
[2130] Fixed coastal dunes with herbaceous vegetation (grey dunes)	Bad	<p>To restore the favourable conservation condition of Fixed coastal dunes with herbaceous vegetation ('grey dunes') in North Dublin Bay SAC, which is defined by the following list of attributes and targets:</p> <p><i>(Attribute. Target)</i></p> <p><i>Habitat area.</i> Area stable or increasing, subject to natural processes including erosion and succession. For subsites mapped: North Bull - 40.29ha; South Bull - 64.56ha</p>

Annex Species/Habitats- Qualifying Interest	Overall Conservation Status	<i>Site Specific Conservation Objectives</i> , attributes, targets and perceived impacts.
		<p><i>Habitat distribution.</i> No decline, or change in habitat distribution, subject to natural processes.</p> <p><i>Physical structure: functionality and sediment supply:</i> Maintain the natural circulation of sediment and organic matter, without any physical obstructions</p> <p><i>Vegetation structure: zonation:</i> Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession</p> <p><i>Vegetation structure: bare ground:</i> Bare ground should not exceed 10% of fixed dune habitat, subject to natural processes</p> <p><i>Vegetation structure: sward height:</i> Maintain structural variation within sward</p> <p><i>Vegetation composition: typical species and subcommunities:</i> Maintain range of subcommunities with typical species listed in Delaney et al. (2013)</p> <p><i>Vegetation composition: negative indicator species (including Hippophae rhamnoides):</i> Negative indicator species (including non-natives) to represent less than 5% cover</p> <p><i>Vegetation composition: scrub/trees:</i> No more than 5% cover or under control</p> <p>Potential Impact</p> <p>The cable survey route is subtidal and not within or proximal to Mudflats and sandflats not covered by seawater at low tide. No significant impacts are foreseen on Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes). However, out of an abundance of caution there is potential for pollution e.g. from vessel activities to impact on habitat.</p>
[2190] Humid dune slacks		<p>To restore the favourable conservation condition of Humid dune slacks in North Dublin Bay SAC, which is defined by the following list of attributes and targets:</p> <p><i>(Attribute. Target)</i></p> <p><i>Habitat area.</i> Area stable or increasing, subject to natural processes including erosion and succession. For subsites mapped: North Bull - 40.29ha; South Bull - 64.56ha</p> <p><i>Habitat distribution.</i> No decline, or change in habitat distribution, subject to natural processes.</p> <p><i>Physical structure: functionality and sediment supply:</i> Maintain the natural circulation of sediment and organic matter, without any physical obstructions</p>

Annex Species/Habitats- Qualifying Interest	Overall Conservation Status	<i>Site Specific Conservation Objectives</i> , attributes, targets and perceived impacts.
		<p><i>Vegetation structure: zonation:</i> Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession</p> <p><i>Vegetation structure: bare ground:</i> Bare ground should not exceed 10% of fixed dune habitat, subject to natural processes</p> <p><i>Vegetation structure: sward height:</i> Maintain structural variation within sward</p> <p><i>Vegetation composition: typical species and subcommunities:</i> Maintain range of subcommunities with typical species listed in Delaney et al. (2013)</p> <p><i>Vegetation composition: negative indicator species (including Hippophae rhamnoides):</i> Negative indicator species (including non-natives) to represent less than 5% cover</p> <p><i>Vegetation composition: scrub/trees:</i> No more than 5% cover or under control</p> <p>Potential Impact</p> <p>The cable survey route is subtidal and not within or proximal to Mudflats and sandflats not covered by seawater at low tide. No significant impacts are foreseen on Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes). However, out of an abundance of caution there is potential for pollution e.g. from vessel activities to impact on habitat.</p>

5.2 Rockabill to Dalkey Island SAC (Site code: 003000)

***Phocoena phocoena* (Harbour porpoise)**

As stated in NPWS (2013b) “this small toothed cetacean species (from the mammal Order Cetacea - whales, dolphins and porpoises) occurs in estuarine, coastal and offshore waters in which it carries out breeding, foraging, resting, social activity and other life history functions. Its distribution extends predominantly throughout continental shelf waters and the species may range over many hundreds or thousands of kilometres. As air-breathing mammals, harbour porpoises must return to the water surface to breathe but they are otherwise wholly aquatic. Individual porpoises of all ages use sound as their primary sensory tool in order to navigate, communicate, avoid predators, or locate and facilitate the capture of prey under water. Group sizes tend to be small (i.e. in single figures, more commonly 2 to 3 individuals) although larger aggregations may occasionally be recorded, particularly in the summer months.

Harbour porpoise breed annually in Ireland, predominantly during the months of May to September. The principal calving period in Irish waters is thought to occur in the months of May and June, although it may extend throughout the summer months and into early autumn. Newborn calves are weaned before they are one year old. Mating commonly occurs several weeks after the calving season.

The occurrence of harbour porpoises within a prescribed marine area can be estimated using visual observation and passive acoustic methods in order to deliver an assessment of community or population size (i.e. relative abundance or absolute abundance), density and distribution. The size, community structure and distribution or habitat use of harbour porpoise inhabiting Rockabill to Dalkey Island SAC are not fully understood. In acknowledging limitations in the understanding of aquatic habitat use by the species within the site, it should be noted that all suitable aquatic habitat (Figure 15) is considered relevant to the species range and ecological requirements at the site and is therefore of potential use by harbour porpoises.

Survey effort targeting the 2008 summer-autumn season delivered initial estimates of 0.54-6.93 animals per km² within the northern half of the site (overall estimate across four surveys: 2.03 individuals per km², N=211±47 individuals, 95% Confidence Intervals: 137-327, Coefficient of Variation=0.23) and 0.48-2.05 animals per km² within the southern half of the site, including outer Dublin Bay (overall estimate across four surveys: 1.19 individuals per km², N=138±33 individuals, 95% Confidence Intervals: 86-221, Coefficient of Variation=0.24). While the numbers of harbour porpoise encountered during any survey within the site are variable, additional acoustic data plus casual and effort-related sighting rates from coastal observation stations are significant for the east coast of Ireland and, comparatively high group sizes (>5 individuals) have been recorded from this area. The species is present at the site in all seasons, while important cohorts within the harbour porpoise community such as adults juveniles and newborn calves have also been recorded within the site, including during the calving/breeding season.

Harbour porpoise is a successful aquatic predator that feeds on a wide variety of fish, cephalopod and crustacean species occurring in the water column or close to the seabed. Dive depths in excess of 200m have been recorded for the species. Foraging areas for harbour porpoise are often associated with areas of strong tidal current and associated eddies; therefore the occurrence of porpoises close to shore or adjacent to islands and prominent headlands is commonly reported. However gaps remain in the knowledge of the species foraging ecology within Rockabill to Dalkey Island SAC and the available data may be biased toward particular locations due to the nature of survey effort and opportunistic reports from a range of sources. No detailed information is currently available on individual or group movements by harbour porpoise within or into and out of the site, nor is it known whether individuals or groups of the species demonstrate any faithfulness to the site (i.e. site fidelity or residency). Nevertheless, the consistent annual and seasonal occurrence of the species at the site, its occurrence during the calving/breeding period and density/population estimates available to date all indicate the importance of this coastal site for the species.”

According to Berrow & O’Brien (2013) who carried out six surveys in Rockabill to Dalkey Island SAC between July and September 2013, estimates in Rockabill to Dalkey Island SAC ranged from 1.13 porpoises per km² to a maximum of 2.61, with an overall density of 1.44±0.09 porpoises per km² with a very low CV of 0.06. Harbour porpoise abundance for Rockabill to Dalkey Island SAC was around 400 individuals (391±25 with 95% CI of 344-445). The proportion of young harbour porpoises (i.e., juveniles +calves) recorded on survey days ranged from c. 4-19% of all animals seen and was c. 7% overall using the combined dataset. The proportion of calves recorded on each survey ranged from 0 to c. 8% of all animals seen and was c. 2% overall using the combined dataset.

The following technical clarification is provided in relation to specific conservation objectives and targets for Annex II species to facilitate the appropriate assessment process (NPWS, 2013b):

Harbour Porpoise

Objective: To maintain the favourable conservation condition of harbour porpoise in Rockabill to Dalkey Island SAC, which is defined by the following list of attributes and targets

Target 1 *Species range within the site should not be restricted by artificial barriers to site use.*

This target may be considered relevant to proposed activities or operations that will result in the permanent exclusion of harbour porpoise from part of its range within the site, or will permanently prevent access for the species to suitable habitat therein. It does not refer to short-term or temporary restriction of access or range. Early consultation or scoping with the Department in advance of formal application is advisable for proposals that are likely to result in permanent exclusion.

Target 2 *Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site.*

Proposed activities or operations should not introduce man-made energy (e.g. aerial or underwater noise, light or thermal energy) at levels that could result in a significant negative impact on individuals and/or the community of harbour porpoise within the site. This refers to the aquatic habitats used by the species in addition to important natural behaviours during the species annual cycle. This target also relates to proposed activities or operations that may result in the deterioration of key resources (e.g. water quality, feeding, etc) upon which harbour porpoises depend. In the absence of complete knowledge on the species ecological requirements in this site, such considerations should be assessed where appropriate on a case-by-case basis. Proposed activities or operations should not cause death or injury to individuals to an extent that may ultimately affect the harbour porpoise community at the site.

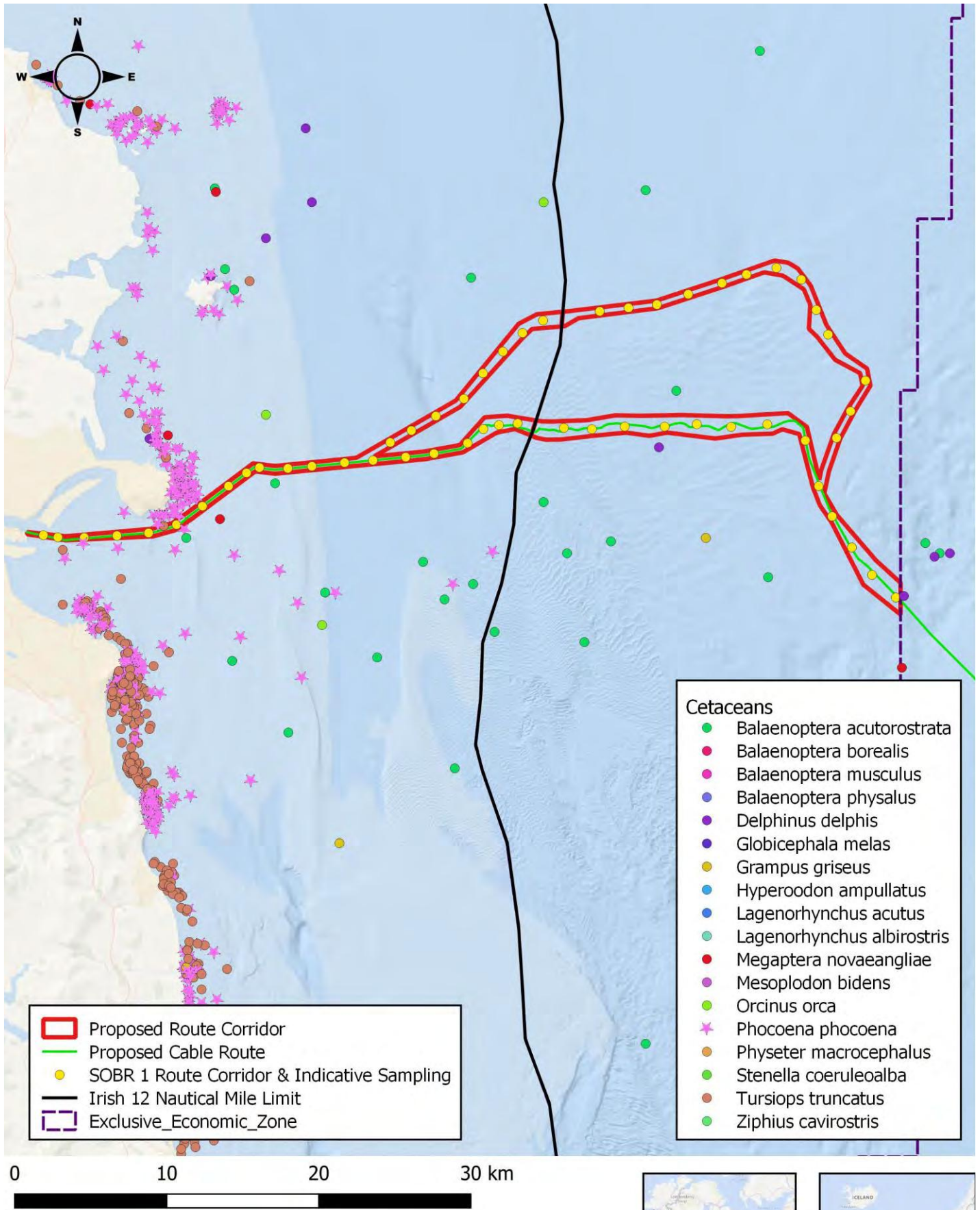
Cetaceans have been located in the vicinity of the proposed marine survey (IWDG sightings). Records of Cetacean activity in the vicinity of the survey route are seen in Figures 37-40. This includes numerous sightings of Harbour Porpoise in the vicinity of Howth Head.

The length of the cable route within the SAC is 9.4 km (5.2 nautical miles). As seen from Table 8 based on a vessel speed of 4kn the time within the SAC carrying out acoustic surveys would be approximately 390 minutes, excluding any groundtruthing time.

Table 16: Approximate length of time the proposed survey will be within the Rockabill to Dalkey SAC (excluding groundtruthing).

	Cable Route in SAC (Km)	Cable Route in SAC (nm)	Speed of Survey (kn)	No. of passes (>15m water depth)	Time in SAC (=5.2x5/4) hr	Time in SAC (min)
Survey	9.4	5.2	4	5	6.5	390

The potential impact of the proposed works on Harbour Porpoise is discussed further in the NIS (impacts section).



Project: SOBR1 Subseas Fibre Optic Cable
 Location: Dublin Bay, Ireland
 Date: 06th February 2024
 Drawn By: [REDACTED] (Altamar)



Figure 41. Recorded Cetacean species sightings (Source NBDC sightings data) within the Irish EEZ

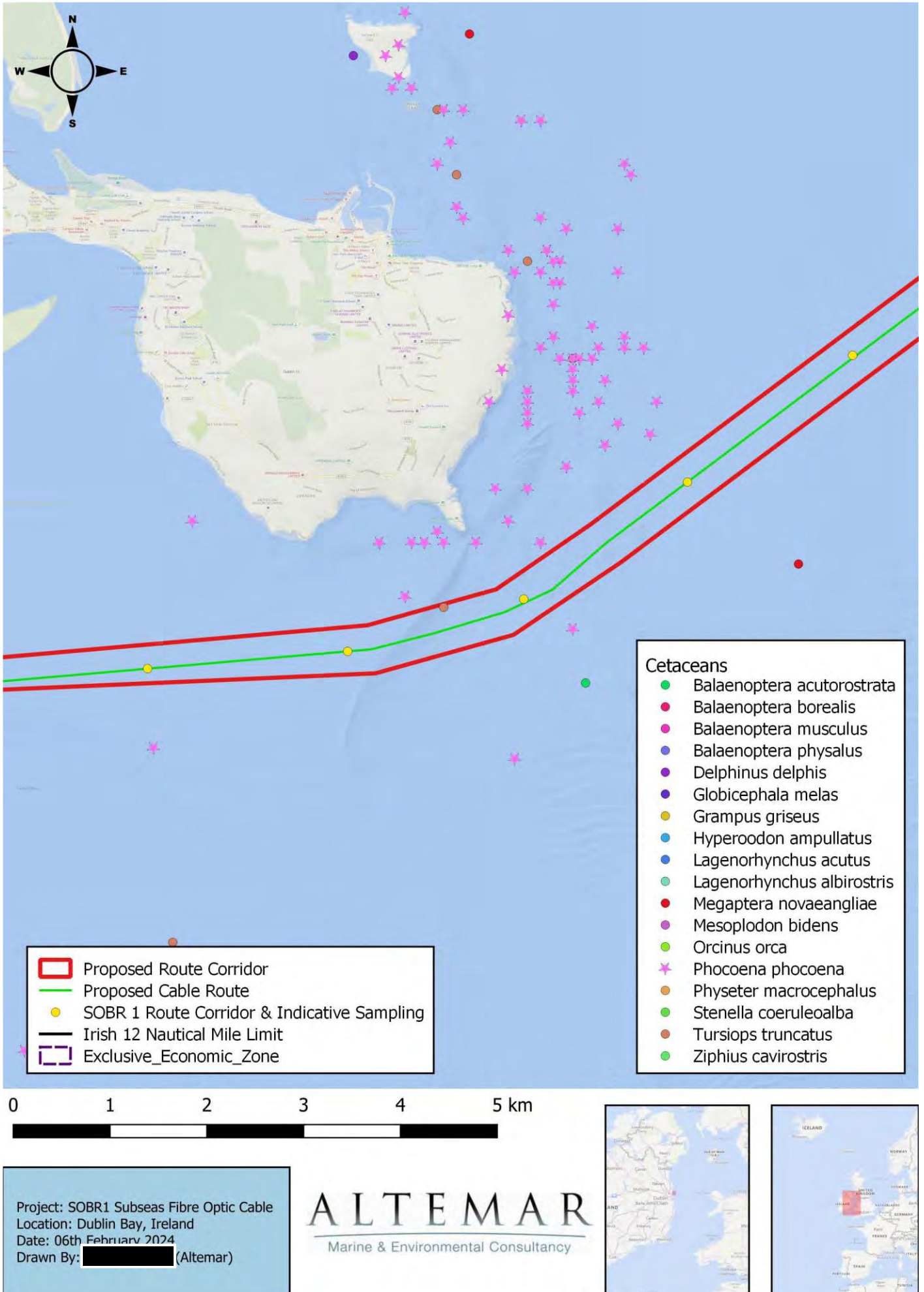
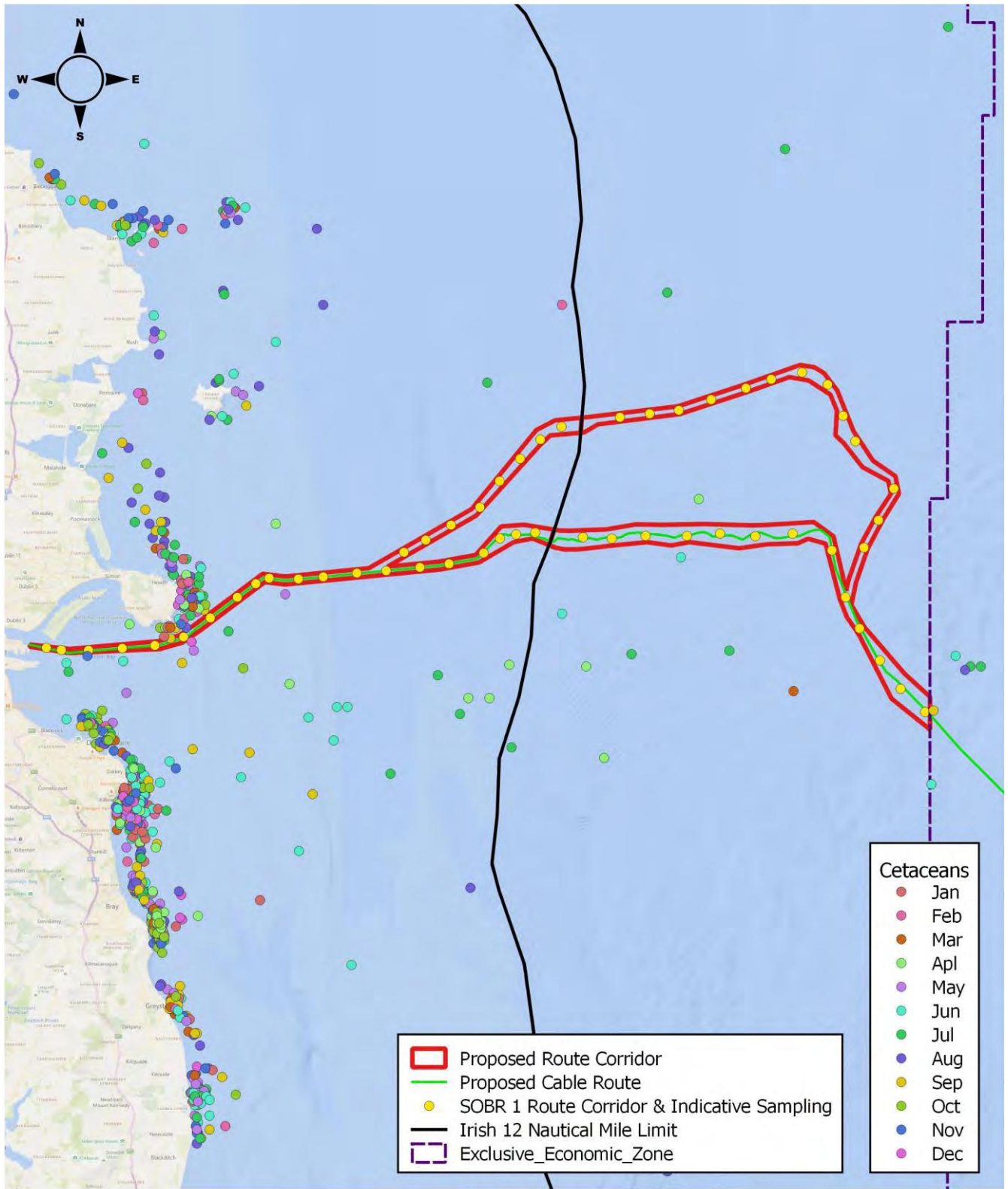


Figure 42. Recorded Cetacean species sightings (Source NBDC sightings data) proximate to Howth Head

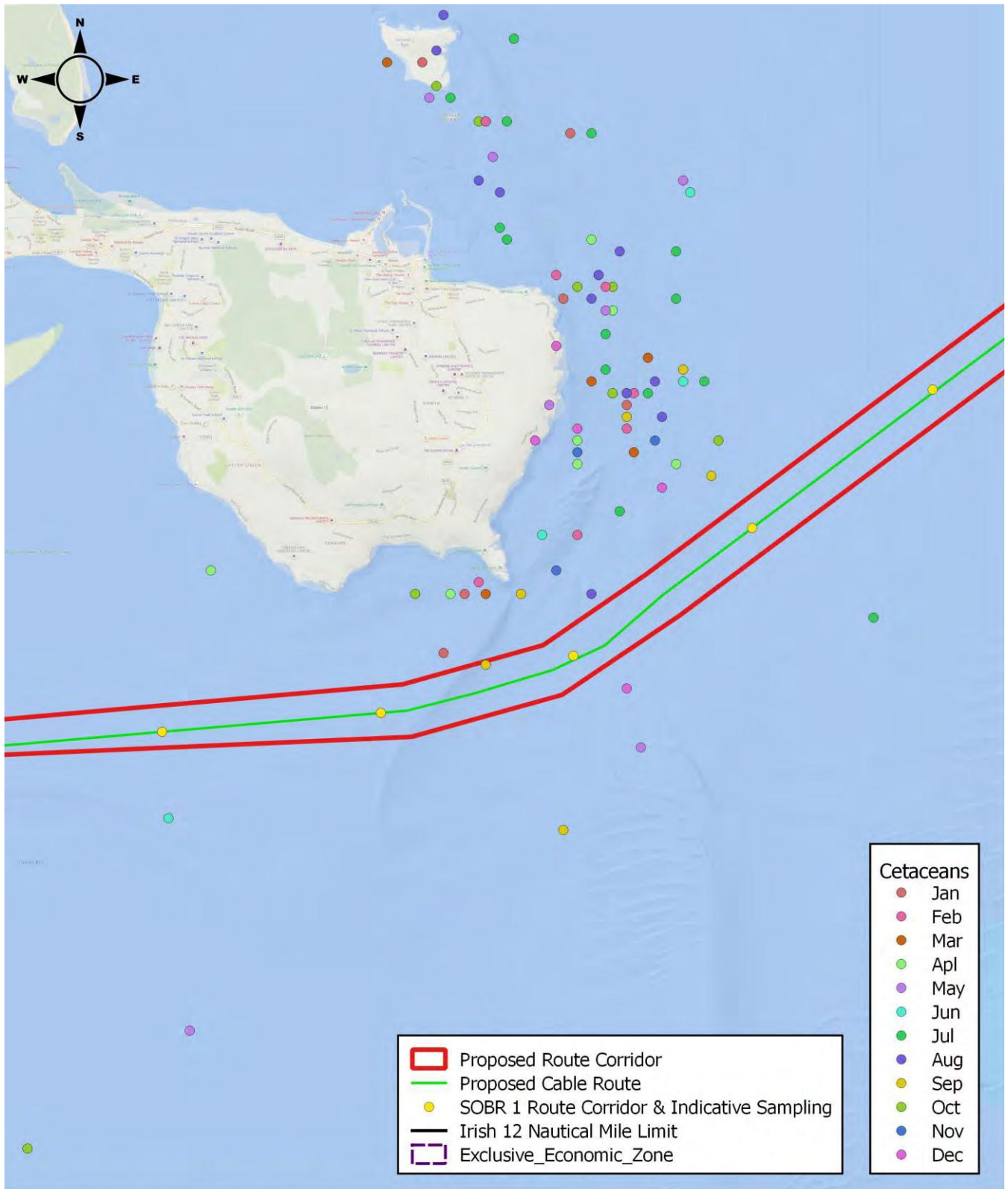


0 10 20 30 km

Project: SOBR1 Subseas Fibre Optic Cable
 Location: Dublin Bay, Ireland
 Date: 06th February 2024
 Drawn By: [Redacted] (Altemar)

ALTEMAR
 Marine & Environmental Consultancy

Figure 43. Recorded Cetacean sightings (Source NBDC Sightings Data) recorded during the 12 months of the year within the Irish EEZ



0 1 2 3 4 5 km

Project: SOBR1 Subseas Fibre Optic Cable
 Location: Dublin Bay, Ireland
 Date: 06th February 2024
 Drawn By: [Redacted] (Altamar)

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 Marine & Environmental Consultancy



Figure 44. Recorded Cetacean sightings (Source NBDC Sightings Data) recorded during the 12 months of the year proximate to Howth Head

Reef

This site is of conservation importance for reefs, listed on Annex I, and Harbour Porpoise, listed on Annex II, of the E.U. Habitats Directive.’

As outlined in the Conservation objectives supporting document – Marine Habitats and Species⁷ (NPWS, 2013):

‘INTERTIDAL REEF COMMUNITY COMPLEX

This reef community complex is recorded on the islands within this site and on the south coast of Howth. The exposure regime of the complex ranges from exposed to moderately exposed reef (Figure 2). Exposed reef is recorded on the east side of Dalkey Island, on the east and southern shores of Ireland’s Eye and on all shores of Rockabill and the Muglins. Moderately exposed reef occurs on the western shores of Dalkey and at Howth and Ireland’s Eye.

The substrate here is that of flat and sloping bedrock; around Rockabill cobbles and boulders occur on bedrock. Vertical cliff faces are found on the north and northeast shores of Ireland’s Eye; steep shorelines are a feature of Rockabill, Muglins and the eastern shore of Dalkey Island.

The species associated with this community complex include the furoids *Fucus serratus*, *F. vesiculosus*, *F. spiralis*, *Ascophyllum nodosum* and *Pelvetia canaliculata*, the barnacle *Semibalanus balanoides* and the bivalve *Mytilus edulis* (Table 2). In the more exposed areas *Semibalanus balanoides* and *Mytilus edulis* dominate while in the more moderately exposed areas it is the furoid species that are more abundant. The gastropods *Patella vulgata* and *Littorina sp.* are also recorded here. In all area the kelp species *Laminaria digitata* is recorded at the low water mark.

Species associated with the Intertidal reef community complex	
<i>Fucus serratus</i>	<i>Fucus spiralis</i>
<i>Fucus vesiculosus</i>	<i>Semibalanus balanoides</i>
<i>Ascophyllum nodosum</i>	<i>Mytilus edulis</i>
<i>Pelvetia canaliculata</i>	<i>Patella vulgata</i>
<i>Laminaria digitata</i>	<i>Littorina sp.</i>

Table 2 Species associated with the Intertidal reef community complex.

SUBTIDAL REEF COMMUNITY COMPLEX

This community complex is recorded off the islands within the site and also off the coast between Lambay Island and Rush Village (Figure 2). The exposure regime here ranges from moderately exposed reef at the Muglins to exposed reef over the remainder of the site.

The substrate ranges from that of flat and sloping bedrock, to bedrock with boulders and also a mosaic of cobbles and boulders. Vertical rock walls occur on the north and east of Ireland’s Eye and to the east of Lambay Island where they give way to sloping bedrock at c.20m. In the northern reaches of the site, at Rockabill and Ireland’s Eye, areas of both sediment scouring and a thin veneer of silt were observed on the reefs; the veneer of silt was also recorded at Lambay Island. In the south of the site, strong currents were experienced in the channel between Dalkey Island and the Muglins.

In the shallow reaches of this community complex (10m) the anemone *Alcyonium digitatum* occurs in moderate abundances and *Metridium senile* also being recorded here (Table 3). Faunal crusts of bryozoans such as *Flustra foliacea* and *Chartella papyracea* and hydroids including *Nemertesia antennina* are recorded in deeper water (>20m) along with the ascidian *Aplidium punctum*. The asteroid *Asterias rubens* is recorded throughout the site while the barnacle *Balanus crenatus*, the echinoderms *Echinus esculentus* and *Antedon bifida* also occur here.

⁷https://www.npws.ie/sites/default/files/publications/pdf/003000_Rockabill%20to%20Dalkey%20Island%20SAC%20Marine%20Supporting%20Doc_V1.pdf

In general, it was noted that where the reef was subjected to the effects of sediment, either through scouring or settlement of silt, low numbers of species and individuals occurred.

Species associated with the Subtidal reef community complex	
<i>Alcyonium digitatum</i>	<i>Echinus esculentus</i>
<i>Asterias rubens</i>	<i>Brongniartella byssoides</i>
<i>Metridium senile</i>	<i>Pomatoceros triqueter</i>
<i>Necora puber</i>	<i>Chartella papyracea</i>
<i>Laminaria hyperborea</i>	<i>Antedon bifida</i>
<i>Nemertesia antennina</i>	<i>Flustra foliacea</i>
<i>Balanus crenatus</i>	<i>Membranoptera alata</i>
<i>Aplidium punctum</i>	<i>Phycodrys rubens</i>
<i>Hypoglossum hypoglossoides</i>	<i>Delesseria sanguinea</i>
<i>Sagartia elegans</i>	

Table 3 Species associated with the Subtidal reef community complex.

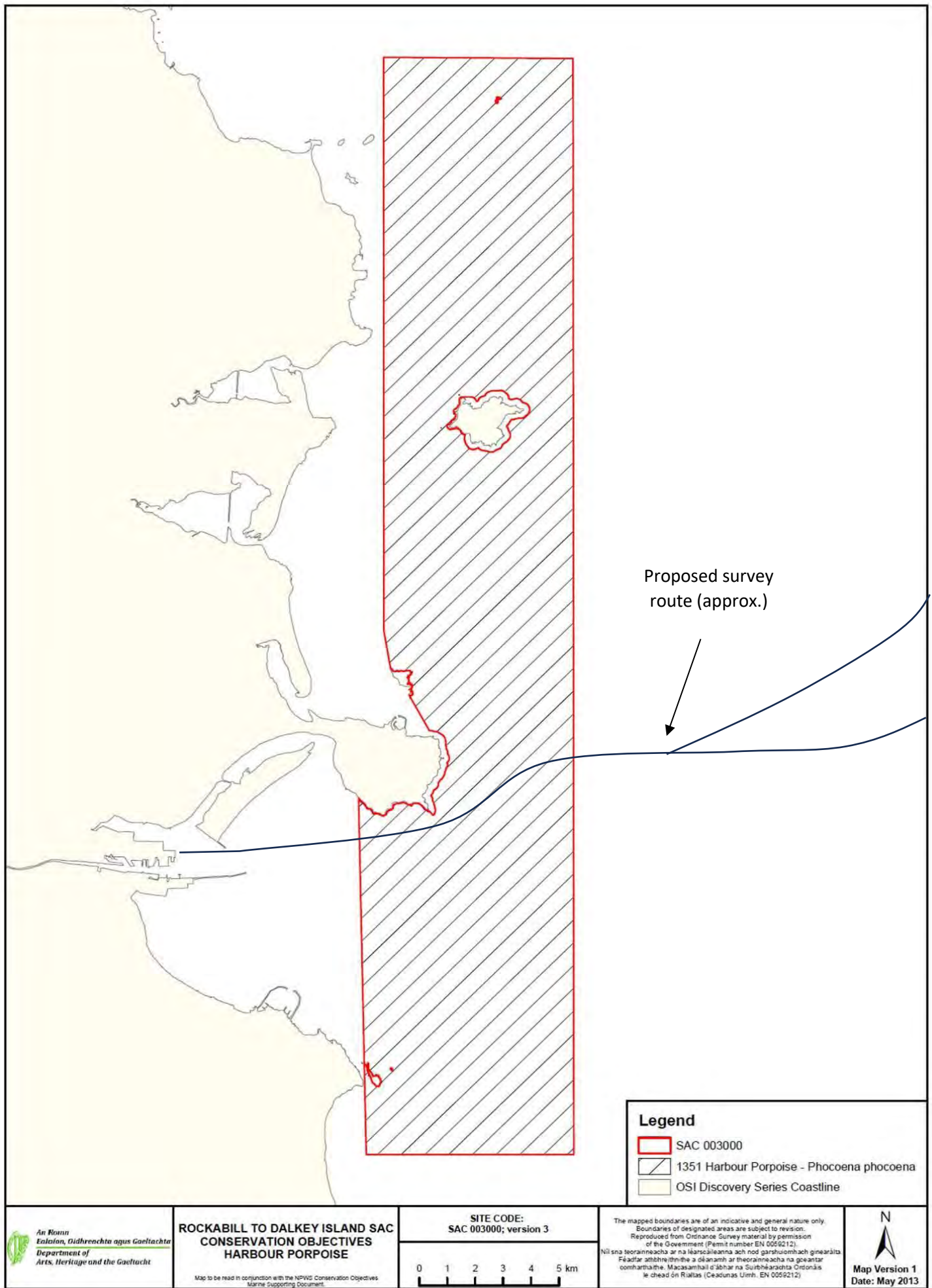


Figure 45. Harbour Porpoise – Rockabill to Dalkey Island SAC

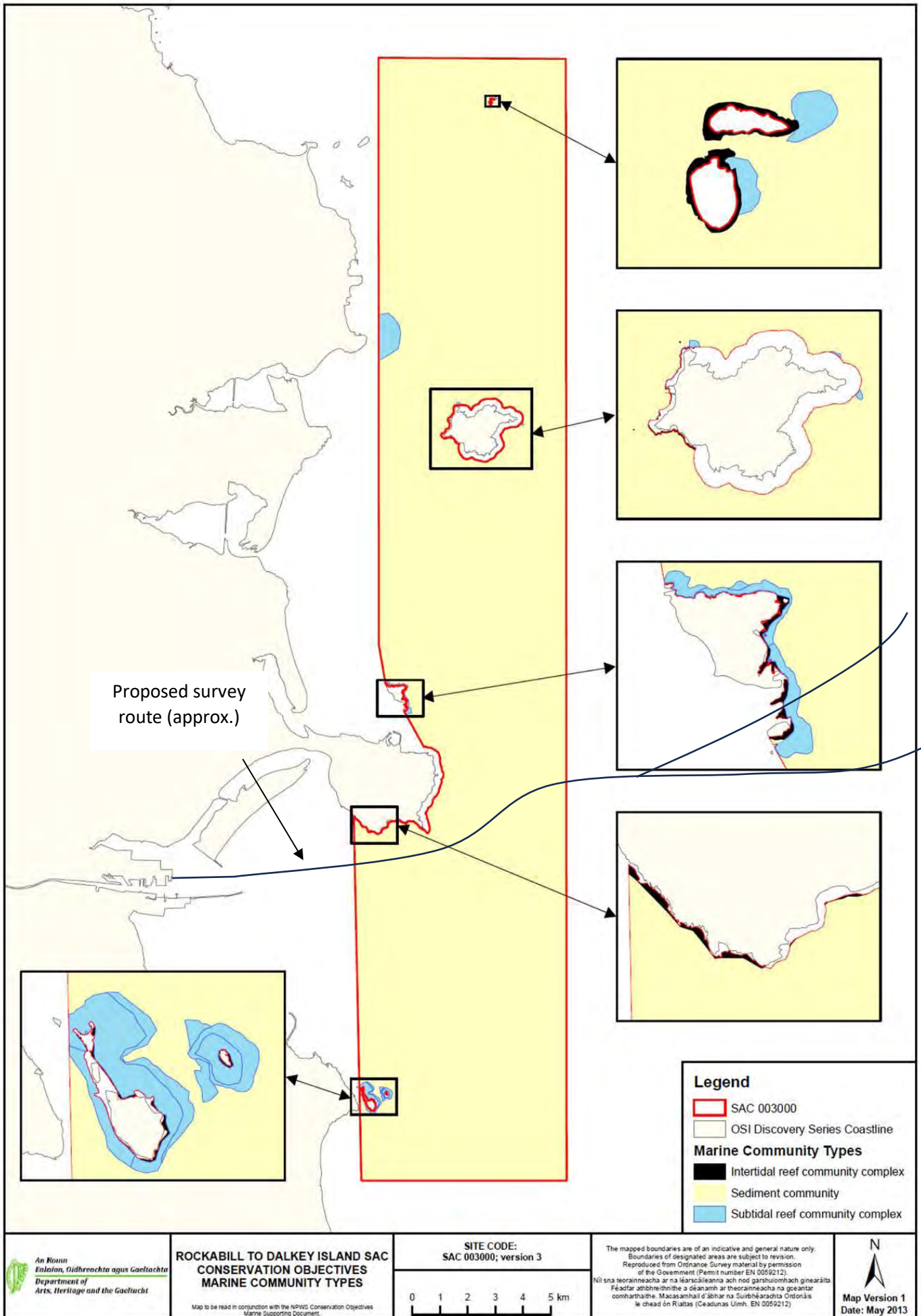


Figure 46. Marine Community Types – Rockabill to Dalkey Island SAC

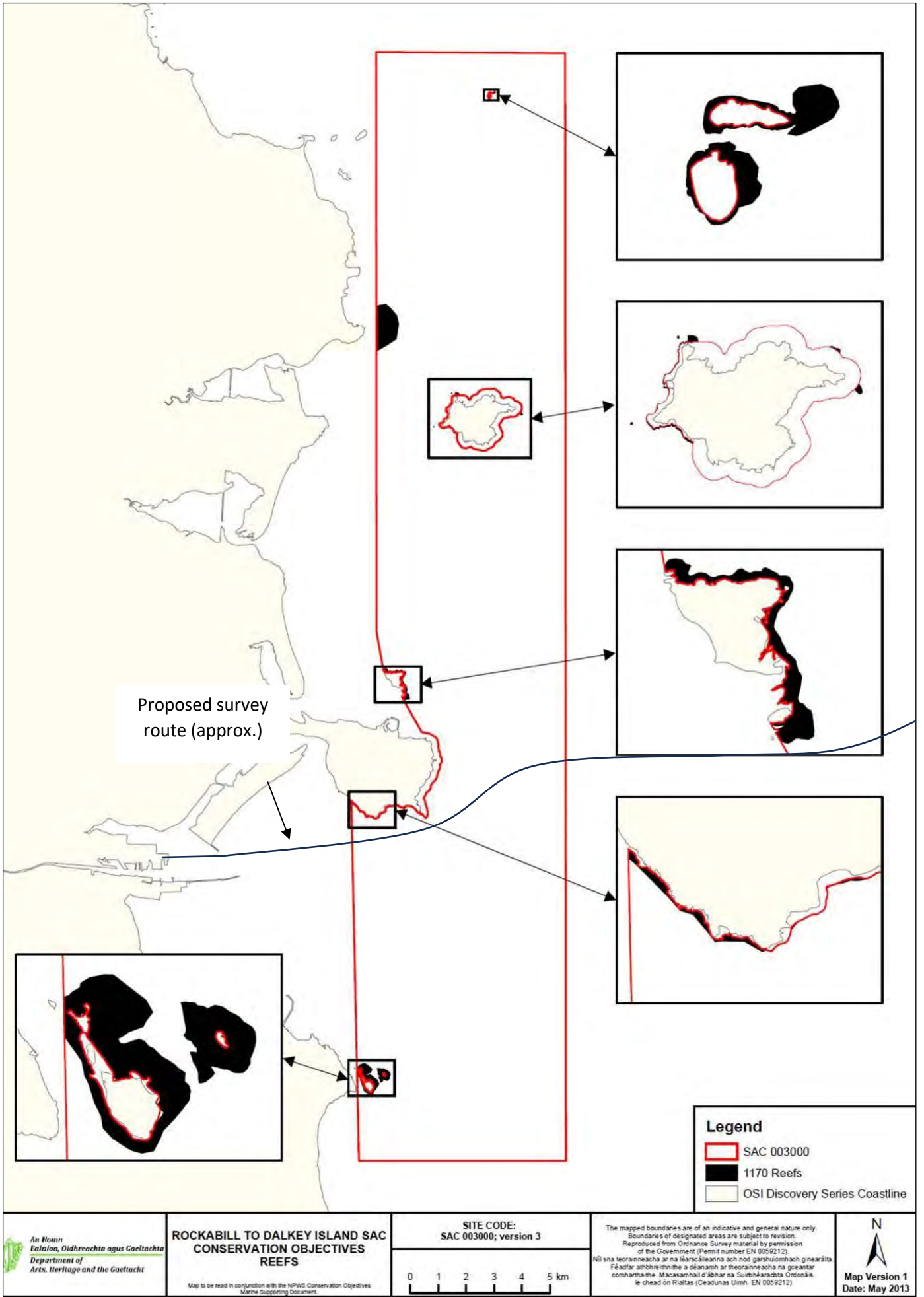


Figure 47. Reefs – Rockabill to Dalkey Island SAC

5.2.1 Conservation Objectives of Rockabill to Dalkey Island SAC 003000 (All Habitats and Species)

The qualifying interests, their attributes, targets and the potential impact of the proposed fibre-optic cable survey on each of the features of interest of Rockabill to Dalkey Island SAC are seen in Table 17.

Table 17. The site-specific Conservation Objectives, overall status of species and habitats and the potential impact of the proposed works on the features of interest and conservation objectives of Rockabill to Dalkey Island SAC.

Annex Species/Habitats- Qualifying Interest	Overall Conservation Status	Site Specific Conservation Objectives, attributes, targets and perceived impacts.
[1170] Reefs	Inadequate	<p>To maintain the favourable conservation condition of Reefs in Rockabill to Dalkey Island SAC, which is defined by the following list of attributes and targets: <i>(Attribute. Target)</i> <i>Habitat area.</i> The permanent area is stable or increasing, subject to natural processes. <i>Habitat distribution.</i> Distribution is stable or increasing, subject to natural processes. <i>Community Structure:</i> Conserve the following community types in a natural condition: Intertidal reef community complex; and Subtidal reef community complex.</p> <p>Potential Effect The cable survey route has been provisionally assessed and optimised in consultation with Altemar though the use of existing multibeam and backscatter from the Irish National Seabed Survey is addition to examination of habitat maps, Admiralty Charts, existing buried cables, so select a route that allows for burial throughout the cable length. As a result, it is the intention to avoid areas of reef. In addition, subtidal SI have been chosen to take place in areas of sediment and to avoid areas of reef where burial to 1.5m would not be possible. Further information is seen in Figures 48 & 49 in relation to the habitats within the SAC, as observed in the backscatter and sea substrate maps based on Informar data. No reef is located within the proposed sampling areas. As a result, reef habitat within the SAC will not be impacted by the proposed marine survey.</p>
[1351] Harbour Porpoise (<i>Phocoena phocoena</i>)	Favourable	<p>To maintain the favourable conservation condition of Harbour porpoise in Rockabill to Dalkey Island SAC, which is defined by the following list of attributes and targets: <i>(Attribute. Target)</i> <i>Access to suitable habitat:</i> Species range within the site should not be restricted by artificial barriers to site use. <i>Disturbance:</i> Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site.</p> <p>Potential Effect The proposed survey will introduce underwater noise into the marine environment. Detailed assessment is required in relation to the potential effects on Harbour Porpoise. Mitigation measures are required.</p>

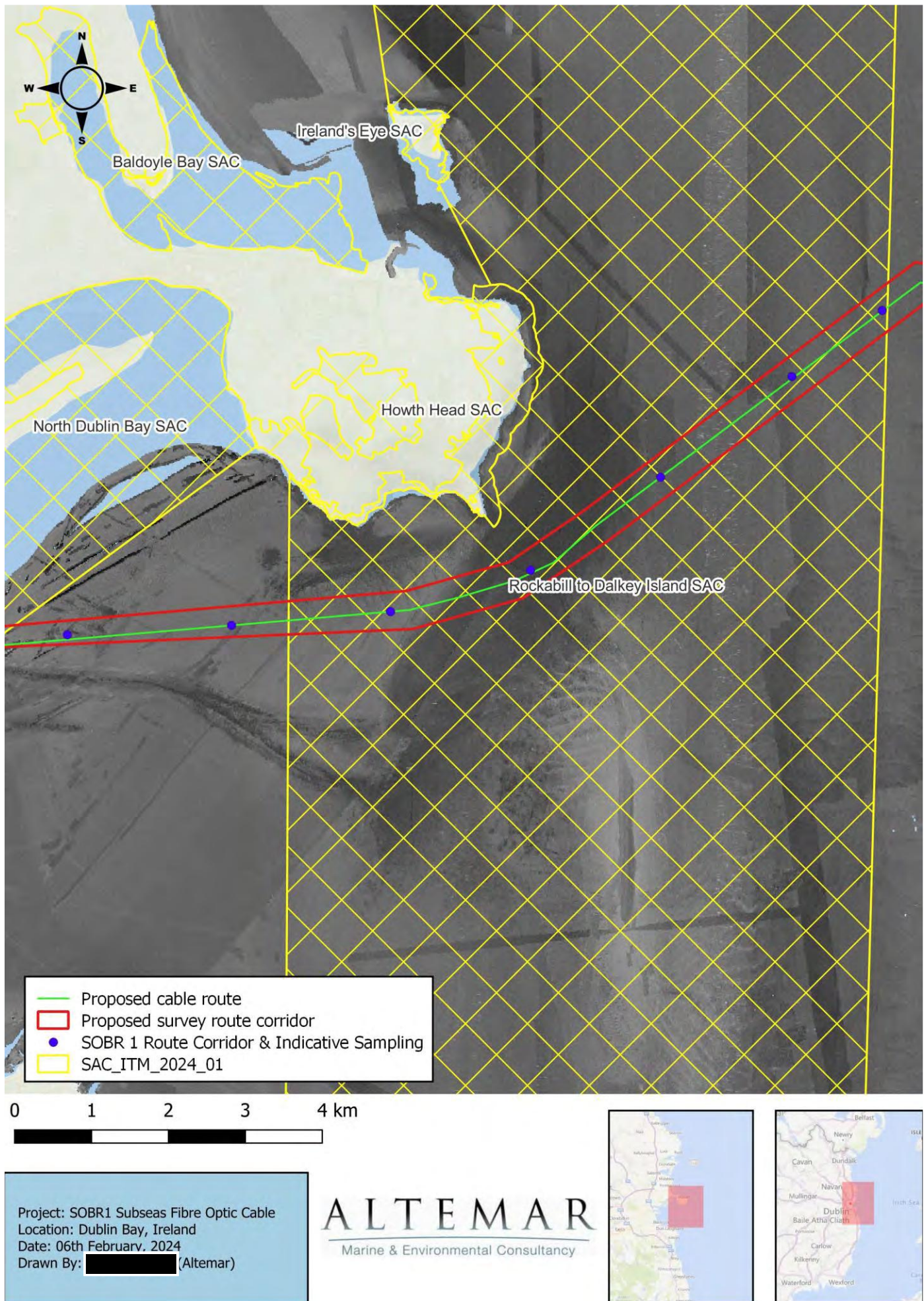


Figure 48. Proposed sampling within Rockabill to Dalkey SAC (Infomar backscatter)

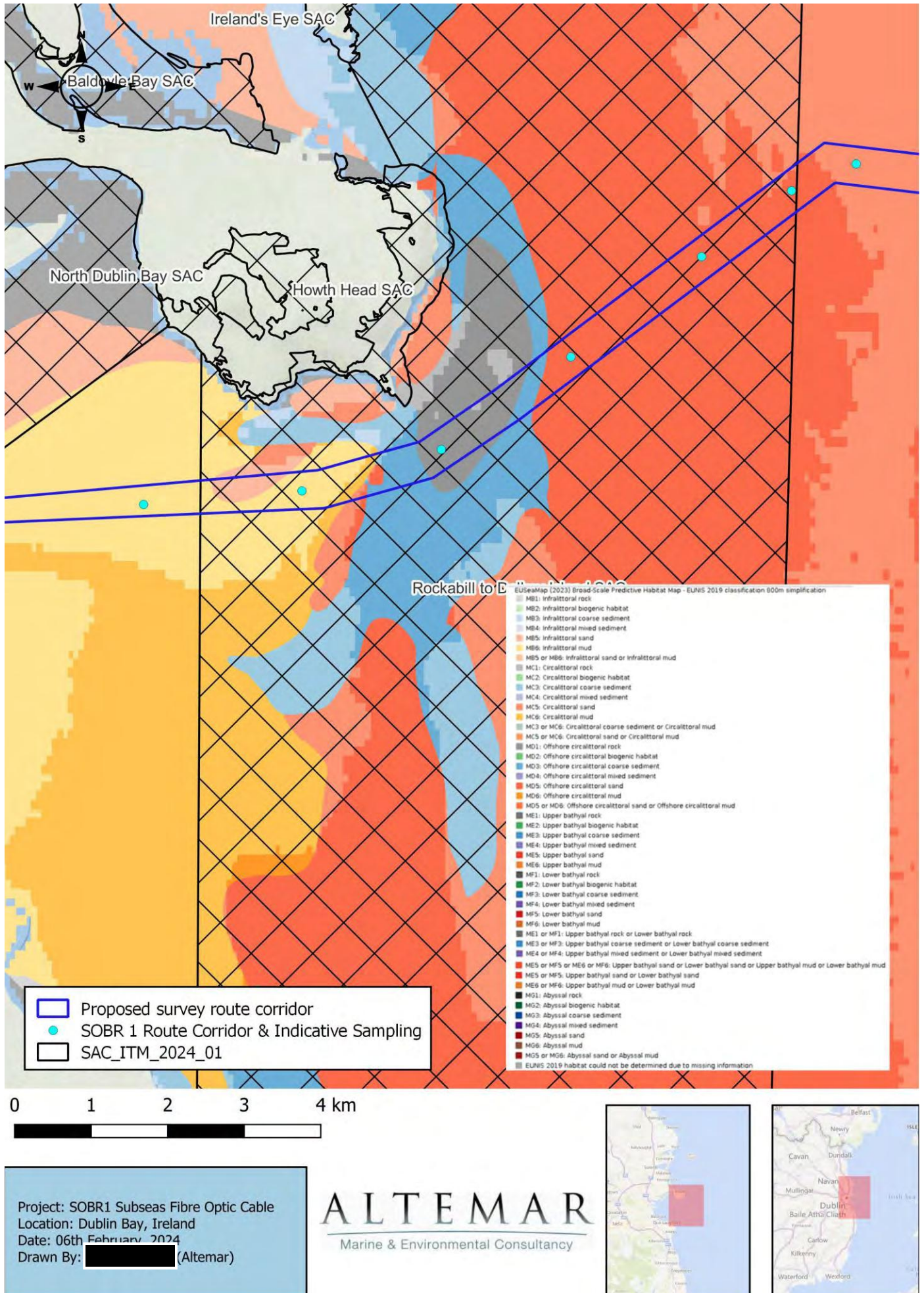


Figure 49. Proposed sampling within Rockabill to Dalkey SAC (EUSeaMap 2023 Predictive Habitat Map)

5.3 Lambay Island SAC (Site code: 000204)

As outlined in the Lambay Island SAC Site Synopsis⁸ (NPWS, version date 31.01.2014):

'Lambay Island is a large (250 ha) inhabited island lying 4 km off Portrane on the north Co. Dublin coast. It is privately owned and is accessible by boat from Rogerstown Quay. The island rises to 127 m and is surrounded by steep cliffs on the north, east and south slopes. These cliffs contain good diversity in height, slope and aspect. The west shore is low-lying and the land slopes gently eastwards to the summit in the centre of the island. The underlying geology is varied, but is dominated by igneous rocks (of andesitic type) and ash. Also present are shales and limestones of Silurian origin, limestone conglomerates, and shales from the Old Red Sandstone era. The bedrock is exposed on the fringing cliffs and in rocky outcrops; elsewhere it is overlain by varying depths of glacial drift.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (= priority; numbers in brackets are Natura 2000 codes):*

*[1170] Reefs [1230] Vegetated Sea Cliffs [1364] Grey Seal (*Halichoerus grypus*) [1365] Common (Harbour) Seal (*Phoca vitulina*)*

*Much of the western third of the island is intensively farmed (mostly pasture), and there are small areas of parkland, deciduous and coniferous woodland, buildings, walled gardens and the harbour. The rest of the island is a mixture of less intensively grazed land, rocky outcrops, patches of Bracken (*Pteridium aquilinum*) and Bramble (*Rubus fruticosus* agg.), and cliff slopes with typical maritime vegetation e.g. Thrift (*Armeria maritima*), Sea Campion (*Silene vulgaris* subsp. *maritima*), Rock Sea-spurrey (*Spergularia rupicola*) and Spring Squill (*Scilla verna*). Some sheltered gullies have small areas of scrub woodland dominated by Elder (*Sambucus nigra*).*

*Lambay Island is flanked by extensive areas of reef habitat. Typical species in the intertidal include *Ascophyllum nodosum*, *Fucus* spp., *Laminaria* spp., *Dynamena pumila*, *Actinia equina*, *Littorina littorea*, *L. saxatilis*, *Patella vulgata* and *Semibalanus balanoides*. In the subtidal reef the following algal species are frequently encountered - *Palmaria palmata*, *Cystoclonium purpureum*, *Delesseria sanguinea*, *Membranoptera alata*, *Hypoglossum hypoglossoides*, *Chorda filum*, *Laminaria saccharina* and *Halidrys siliquosa*. Invertebrate species commonly recorded include the typical shallow reef species *Obelia geniculata*, *Alcyonium digitatum*, *Caryophyllia smithii*, *Pomatoceros triqueter*, *Helcion pellucidum*, *Balanus crenatus*, *Echinus esculentus* and *Asterias rubens*.*

Lambay supports the principal breeding colony of Grey Seal on the east coast of Ireland, numbering 196-252 seals, across all ages. It also contains regionally significant numbers of Common Seal, of which up to 47 individuals have been counted at the site. Grey Seals and Common Seals occur year-round and the island's intertidal shorelines, coves and caves are used by resting and moulting seals.

A herd of Fallow Deer (approx. 80) roams the higher parts of the island, and a small number of wallabies (approx. 10) survive in a feral state. This island may also hold the last Irish population of the Ship Rat, a species listed in the vertebrate Red Data Book.

Lambay Island is internationally important for its breeding seabirds. The most numerous species is the Guillemot, with almost 52,000 individuals on the cliffs. Razorbills (3,646 individuals), Kittiwakes (5,102 individuals), Herring Gulls (2,500 pairs), Cormorants (605 pairs), Shags (1,164 pairs), Puffins (235 pairs), and small numbers of Great and Lesser Black-backed Gulls also breed (all figures from 1995). Between 1991 and 1995 Fulmar numbers varied between 573-737 pairs. There is a small colony (<100 pairs) of the nocturnal Manx Shearwater on the island and up to 20 pairs of Common Terns have bred in recent years. A few Black Guillemots have been recorded on Lambay, but it is not clear if they breed. A pair of Peregrines are known to breed on the island.

In winter the most notable bird species on Lambay Island is the Greylag Goose with numbers peaking at 1,000, though in recent winters there has been a decline to 400- 700 individuals. There is also a small wintering flock of Barnacle Goose (up to 50), and recently Brent Goose (up to 100) have started to occur regularly. Small numbers of Great Northern Diver and Red-throated Diver are also present in winter.

An intensive survey of the natural history of Lambay Island was carried out in 1906 and published in the Irish Naturalist. A similar, comparative survey has been carried out in the early 1990s. With this background, Lambay

⁸<https://www.npws.ie/sites/default/files/protected-sites/synopsis/SY000204.pdf>

Island is an excellent site for studies of marine biology, terrestrial fauna and flora, geology, geomorphology and ecology.

The island has been maintained as a wildlife sanctuary by its owners and no threats are envisaged should the present land use continue. Rodents may be causing some damage to the populations of burrow-nesting seabirds. Lambay Island has good examples of vegetated sea cliffs, a habitat listed on Annex I of the E.U. Habitats Directive, and these cliffs hold internationally important populations of seabirds. The site is also of conservation importance for the populations of Grey Seal and Common Seal, species listed on Annex II of this Directive, that it supports.'

As outlined in the Conservation objectives supporting document – Marine Habitats and Species⁹ (NPWS, 2013):

'INTERTIDAL REEF COMMUNITY COMPLEX

This community complex is recorded extensively on all shores of the island with the exception of the sandy beach around the quay on the western shore (Figure 2).

The substrate here is that of boulders and cobbles with some bedrock outcrops in the northwest and southwest.

The species associated with this community are the gastropods *Littorina littorea* and *Patella vulgata*, the brown alga *Ascophyllum nodosum*, the red algae *Lomentaria articulata*, *Vertebrata lanosa*, *Mastocarpus stellatus* and species of the family *Corallinaceae*.

The brown alga *Fucus serratus* and *Laminaria digitata*, the red alga *Chondrus crispus*, the hydroid *Dynamena pumila* and the barnacle *Semibalanus balanoides* are also recorded from this community complex.

Species associated with the Intertidal reef community complex	
<i>Littorina littorea</i>	<i>Vertebrata lanosa</i>
<i>Patella vulgata</i>	<i>Mastocarpus stellatus</i>
<i>Lomentaria articulata</i>	<i>Ascophyllum nodosum</i>
Corallinaceae	

Table 1 Species associated with the Intertidal reef community complex.

LAMINARIA-DOMINATED COMMUNITY COMPLEX

This community complex occurs on the broad expanse of hard substrate in the north, east and southern shores of the island and in a narrow band on its western shore. It is recorded in water depths of between 0m and 20m. The exposure regime is that of exposed to moderately exposed reef.

The substrate of this community is primarily that of bedrock. In the northeast of the site large boulders, cobble and pebbles overly the bedrock. Vertical or near vertical faces are recorded throughout the community but are more prominent in shallower water (0m to 10m). In deeper water (ca. 20m) boulders and bedrock have a veneer of silt.

The species associated with this community are the kelp *Laminaria hyperborea*, the red algae *Phycodrys rubens* and *Delesseria sanguinea*, the barnacle *Balanus crenatus*, the echinoderm *Asterias rubens*, the crustacean *Necora puber* and the cnidarian *Alcyonium digitatum*. The density of *Laminaria hyperborea* exhibits a gradation with depth becoming less dense with increasing depth.

The red algae *Hypoglossum hypoglossoides* and *Membranoptera alata*, *Palmaria palmata* and *Corallinaceae*, the bryozoan *Membranipora membranacea* and bryozoan crusts are also recorded from this community complex.

Species associated with the <i>Laminaria</i> -dominated community complex	
<i>Laminaria hyperborea</i>	<i>Delesseria sanguinea</i>
<i>Phycodrys rubens</i>	<i>Alcyonium digitatum</i>
<i>Balanus crenatus</i>	<i>Asterias rubens</i>
<i>Necora puber</i>	

Table 1 Species associated with the *Laminaria*-dominated community complex.

⁹https://www.npws.ie/sites/default/files/publications/pdf/000204_Lambay%20Island%20SAC%20Marine%20Supporting%20Doc_V1.pdf

Annex II Marine mammals

HALICHOERUS GRYPUS (GREY SEAL)

This marine mammal species occurs in estuarine, coastal and offshore waters but also utilises a range of intertidal and terrestrial habitats for important life history functions such as breeding, moulting, resting and social activity. Its aquatic range for foraging and inter-site movement extends predominantly into continental shelf and slope waters. Grey seal occupies both aquatic and terrestrial habitats in Lambay Island SAC, including intertidal shorelines and skerries that become exposed during the tidal cycle. It is present at the site throughout the year during all aspects of its annual life cycle which includes breeding (August to December approx.), moulting (December to April approx.) and non-breeding, foraging and resting phases. In acknowledging the limited understanding of aquatic habitat use by the species within the site, it should be noted that all suitable aquatic habitat is considered relevant to the species range and ecological requirements at the site and is therefore of potential use by grey seals.

Grey seals are vulnerable to disturbance during periods when time is spent ashore by individuals or groups of animals. This occurs immediately prior to and during the annual breeding season, which takes place predominantly during the months of August to December. Pups are born on land, usually on remote beaches and uninhabited islands or in sheltered caves. While there may be outliers in any year, specific established sites are used annually for breeding-associated behaviour by adult females, adult males, newborn and weaned pups. Such habitats are critical to the maintenance of the species within any site since pups are nursed there for a period of several weeks by the mother prior to weaning and abandonment. During this period, adult females also mate with adult males at, or adjacent to, breeding sites. In addition to delivering information on breeding dynamics, pup production (i.e. the number of pups born each year) can be measured or estimated in order to deliver an assessment of population size. However, the relationship between pup production and total population size is not well known. An estimated 56 pups were born in Lambay Island SAC in 2005. The corresponding minimum population estimate for the site numbered between 196 and 252 grey seals of all ages. Known and suitable habitats for the species in Lambay Island SAC during the breeding season are indicated in figure 3. Current breeding sites in Lambay Island SAC are broadly distributed around the island among its numerous gullies, caves, beaches, rock ledges and coves where access for seals to intertidal shorelines and the area above high water mark is possible.

Grey seal also occurs at the site during the annual moult (i.e. hair shedding and replacement), a protracted period during which individual animals spend significant periods of days or weeks on the shore. Moulting is considered an intensive, energetically-demanding process that all seals must undergo, incurring further vulnerability for individuals during this period. Terrestrial or intertidal sites where seals can be found ashore are known as haul-out sites. Moulting locations may be preferentially selected by the species. Those currently described in Ireland are remote from human habitation and interference, being on uninhabited islands or remote beaches, with specific established sites used annually by moulting adult females, adult males and juveniles. In Ireland the moulting phase in the annual life cycle occurs predominantly during the months of December to April. A minimum estimate of 110 grey seals was recorded at this site during the moult season in 2007. Known moult haul-out locations at this site are indicated in figure 4, broadly consisting of numerous gullies, caves, rock ledges, beaches and coves where access for seals to intertidal shorelines and the area above high water mark is possible.

Grey seal is a successful aquatic predator that feeds on a wide variety of fish and cephalopod species. For individual grey seals of all ages, intervals between foraging trips in coastal or offshore waters are spent resting ashore at terrestrial or intertidal haul-out sites, or in the water. Resting locations selected by grey seals may be more variable and dispersed than those used during the breeding or moulting seasons. While outliers may occur, there is nevertheless a tendency for recurrent selection by grey seal of particular habitats and sites for terrestrial/intertidal resting behaviour (e.g. low-lying rocks and skerries). Known and suitable habitats for resting by the species are indicated in figure 5. Current sites described in Lambay Island SAC broadly consist of its numerous gullies, caves, rock ledges, beaches and coves where access for seals to intertidal shorelines and the area above high water mark is possible.

PHOCA VITULINA (HARBOUR SEAL)

This marine mammal species occurs in estuarine, coastal and offshore waters but also utilises a range of intertidal and terrestrial habitats for important life history functions such as breeding, moulting, resting and social activity. Its aquatic range for foraging and inter-site movement extends into continental shelf waters.

When hauling out ashore, harbour seals tend to prefer comparatively sheltered locations where exposure to wind, wave action and precipitation, for example, are minimised. Thus in Ireland the species is more commonly found ashore in sheltered bays, inlets and enclosed estuaries.

Harbour seals in Lambay Island SAC occupy both aquatic habitats and intertidal shorelines that become exposed during the tidal cycle. The species is present at the site throughout the year during all aspects of its annual life cycle which includes breeding (May to July approx.), moulting (August to September approx.) and non-breeding foraging and resting phases. In particular, comparatively limited information is available from the last period in the annual cycle spanning the months of October to May. In acknowledging the limited understanding of aquatic habitat use by the species within the site it should be noted that all suitable aquatic habitat is considered relevant to the species range and ecological requirements at the site and is therefore of potential use by harbour seals.

Harbour seals are vulnerable to disturbance during periods in which time is spent ashore, or in shallow waters, by individuals or groups of animals. This occurs immediately prior to and during the annual breeding season, which takes place predominantly during the months of May to July. Pups are born on land, usually on sheltered shorelines, islets or skerries and uninhabited islands removed from the risk of predation and human interference. While there may be outliers in any year, specific established locations tend to be used annually for breeding-associated behaviour by adult males, adult females and their newborn pups. Such habitats are critical to the maintenance of the species within any site. Pups are able to swim soon after birth and may be observed accompanying their mother close to shore in the early days or weeks of life. They are nursed for a period of several weeks by the mother prior to weaning and abandonment. During this period adult females mate with adult males, an activity that takes place in the water. Current information on breeding locations selected by harbour seals in Lambay Island SAC is comparatively limited. Known and suitable habitats for the species in Lambay Island SAC during the breeding season are indicated in figure 6.

The necessity for individual seals to undergo an annual moult (i.e. hair shedding and replacement), which generally results in seals spending more time ashore during a relatively discrete season, provides an opportunity to record the minimum number of harbour seals occurring in a given area (i.e. minimum population estimate). Moulting is considered an intensive, energetically-demanding process which incurs further vulnerability for individuals during this period. Terrestrial or intertidal locations where seals can be found ashore are known as haul-out sites. The harbour seal moult season takes place predominantly during the months of August to September. A total of 31 harbour seals were recorded ashore within Lambay Island SAC in August 2003 during a national aerial survey for the species, while maximum counts of 38-47 harbour seals were recorded more recently during the moult season. Suitable habitat for the species along with known moult haul-out locations in Lambay Island SAC are indicated in figure 7.

Harbour seal is a successful aquatic predator that feeds on a wide variety of fish, cephalopod and crustacean species. For individual harbour seals of all ages, intervals between foraging trips in coastal or offshore waters are spent resting ashore at terrestrial or intertidal haul-out sites, or in the water. Outside the breeding and moulting seasons (i.e. from October to April) the location and composition of haul-out groups and individual seals may be different to those normally observed during breeding or moulting. Current information on resting locations selected by harbour seals in Lambay Island SAC outside the moulting season is comparatively limited. Known and suitable habitats for resting by the species are indicated in figure 8.'

Further, this document outlines the following conservation objectives and targets for Lambay Island SAC:

'Objective: To maintain the favourable conservation condition of Reefs in Lambay Island SAC, which is defined by the following list of attributes and targets:

Target 1 - The permanent area is stable or increasing, subject to natural processes.

- The area of this habitat represents the minimum estimated area of reef at this site and underestimates the actual area due to the many areas of sheer and steeply sloping rock within the reef habitat.
- This target refers to activities or operations that propose to permanently remove habitat from the site, thereby reducing the permanent amount of habitat area. It does not refer to long or short term disturbance of the biology of a site.
- Early consultation or scoping with the Department in advance of formal application is advisable for such proposals.

Target 2 - *The distribution of reefs is stable or increasing, subject to natural processes.*

- The likely distribution of reef habitat in this SAC is indicated in figure 1.
- This target refers to activities or operations that propose to permanently remove reef habitat, thus reducing the range over which this habitat occurs within the site. It does not refer to long or short term disturbance of the biology of reef habitats.
- Early consultation or scoping with the Department in advance of formal application is advisable for such proposals.

Target 3 - *Conserve the following community types in a natural condition: Intertidal reef community complex and Laminaria-dominated community complex.*

- A semi-quantitative description of the communities has been provided in Section 1.
- An interpolation of their likely distribution is provided in figure 2.
- The estimated areas of the communities within the Reefs habitat given below are based on spatial interpolation and therefore should be considered indicative. In addition, as this habitat contains significant areas of sheer and steeply sloping rock, the mapped community extents will be underestimated:
 - Intertidal reef community complex - 11ha
 - Laminaria-dominated community complex - 47ha
- This target relates to the structure and function of the reef and therefore it is of relevance to those activities that may cause disturbance to the ecology of the habitat.
- Significant continuous or ongoing disturbance of communities should not exceed an approximate area of 15% of the interpolated area of each community type, at which point an inter-Departmental management review is recommended prior to further licensing of such activities.
- Proposed activities or operations that cause significant disturbance to communities but may not necessarily represent a continuous or ongoing source of disturbance over time and space may be assessed in a context-specific manner giving due consideration to the proposed nature and scale of activities during the reporting cycle and the particular resilience of the receiving habitat in combination with other activities within the designated site.'

'Objective: To maintain the favourable conservation condition of grey seal in Lambay Island SAC which is defined by the following list of attributes and targets

Target 1 - *Species range within the site is not restricted by artificial barriers to site use.*

- *This target may be considered relevant to proposed activities or operations that will result in the permanent exclusion of grey seal from part of its range within the site, or will permanently prevent access for the species to suitable habitat therein.*
- *It does not refer to short-term or temporary restriction of access or range.*
- *Early consultation or scoping with the Department in advance of formal application is advisable for proposals that are likely to result in permanent exclusion.*

Target 2 - *Conserve the breeding sites in a natural condition.*

- *This target is relevant to proposed activities or operations that will result in significant interference with or disturbance of (a) breeding behaviour by grey seal within the site and/or (b) aquatic/terrestrial/intertidal habitat used during the annual breeding season.*
- *Operations or activities that cause displacement of individuals from a breeding site or alteration of natural breeding behaviour, and that may result in higher mortality or reduced reproductive success, would be regarded as significant and should therefore be avoided.*

Target 3 - *Conserve the moult haul-out sites in a natural condition.*

- *This target is relevant to proposed activities or operations that will result in significant interference with or disturbance of (a) moulting behaviour by grey seal within the site and/or (b) aquatic/terrestrial/intertidal habitat used during the annual moult.*
- *Operations or activities that cause displacement of individuals from a moult haul-out site or alteration of natural moulting behaviour to an extent that may ultimately interfere with key ecological functions would be regarded as significant and should therefore be avoided.*

Target 4 - *Conserve the resting haul-out sites in a natural condition.*

- *This target is relevant to proposed activities or operations that will result in significant interference with or disturbance of (a) resting behaviour by grey seal within the site and/or (b) aquatic/terrestrial/intertidal habitat used for resting.*
- *Operations or activities that cause displacement of individuals from a resting haul-out site to an extent that may ultimately interfere with key ecological functions would be regarded as significant and should therefore be avoided.*

Target 5 - *Human activities should occur at levels that do not adversely affect the grey seal population at the site.*

- *Proposed activities or operations should not introduce man-made energy (e.g. aerial or underwater noise, light or thermal energy) at levels that could result in a significant negative impact on individuals and/or the population of grey seal within the site. This refers to both the aquatic and terrestrial/intertidal habitats used by the species in addition to important natural behaviours during the species annual cycle.*
- *This target also relates to proposed activities or operations that may result in the deterioration of key resources (e.g. water quality, feeding, etc) upon which grey seals depend. In the absence of complete knowledge on the species ecological requirements in this site, such considerations should be assessed where appropriate on a case-by-case basis.*
- *Proposed activities or operations should not cause death or injury to individuals to an extent that may ultimately affect the grey seal population at the site.*

Objective: *To maintain the favourable conservation condition of harbour seal in Lambay Island SAC which is defined by the following list of attributes and targets*

Target 1 - *Species range within the site should not be restricted by artificial barriers to site use.*

- *This target may be considered relevant to proposed activities or operations that will result in the permanent exclusion of harbour seal from part of its range within the site, or will permanently prevent access for the species to suitable habitat therein.*
- *It does not refer to short-term or temporary restriction of access or range.*
- *Early consultation or scoping with the Department in advance of formal application is advisable for proposals that are likely to result in permanent exclusion.*

Target 2 - *Conserve the breeding sites in a natural condition.*

- *This target is relevant to proposed activities or operations that will result in significant interference with or disturbance of (a) breeding behaviour by harbour seal within the site and/or (b) aquatic/terrestrial/intertidal habitat used during the annual breeding season.*
- *Operations or activities that cause displacement of individuals from a breeding site or alteration of natural breeding behaviour, and that may result in higher mortality or reduced reproductive success, would be regarded as significant and should therefore be avoided.*

Target 3 - *Conserve the moult haul-out sites in a natural condition.*

- *This target is relevant to proposed activities or operations that will result in significant interference with or disturbance of (a) moulting behaviour by harbour seal within the site and/or (b) aquatic/terrestrial/intertidal habitat used during the annual moult.*
- *Operations or activities that cause displacement of individuals from a moult haul-out site or alteration of natural moulting behaviour to an extent that may ultimately interfere with key ecological functions would be regarded as significant and should therefore be avoided.*

Target 4 - *Conserve the resting haul-out sites in a natural condition.*

- *This target is relevant to proposed activities or operations that will result in significant interference with or disturbance of (a) resting behaviour by harbour seal within the site and/or (b) aquatic/terrestrial/intertidal habitat used for resting.*
- *Operations or activities that cause displacement of individuals from a resting haul-out site to an extent that may ultimately interfere with key ecological functions would be regarded as significant and should therefore be avoided.*

Target 5 - Human activities should occur at levels that do not adversely affect the harbour seal population at the site.

- Proposed activities or operations should not introduce man-made energy (e.g. aerial or underwater noise, light or thermal energy) at levels that could result in a significant negative impact on individuals and/or the population of harbour seal within the site. This refers to both the aquatic and terrestrial/intertidal habitats used by the species in addition to important natural behaviours during the species annual cycle.
- This target also relates to proposed activities or operations that may result in the deterioration of key resources (e.g. water quality, feeding, etc) upon which harbour seals depend. In the absence of complete knowledge on the species' ecological requirements in this site, such considerations should be assessed where appropriate on a case-by-case basis.
- Proposed activities or operations should not cause death or injury to individuals to an extent that may ultimately affect the harbour seal population at the site.'

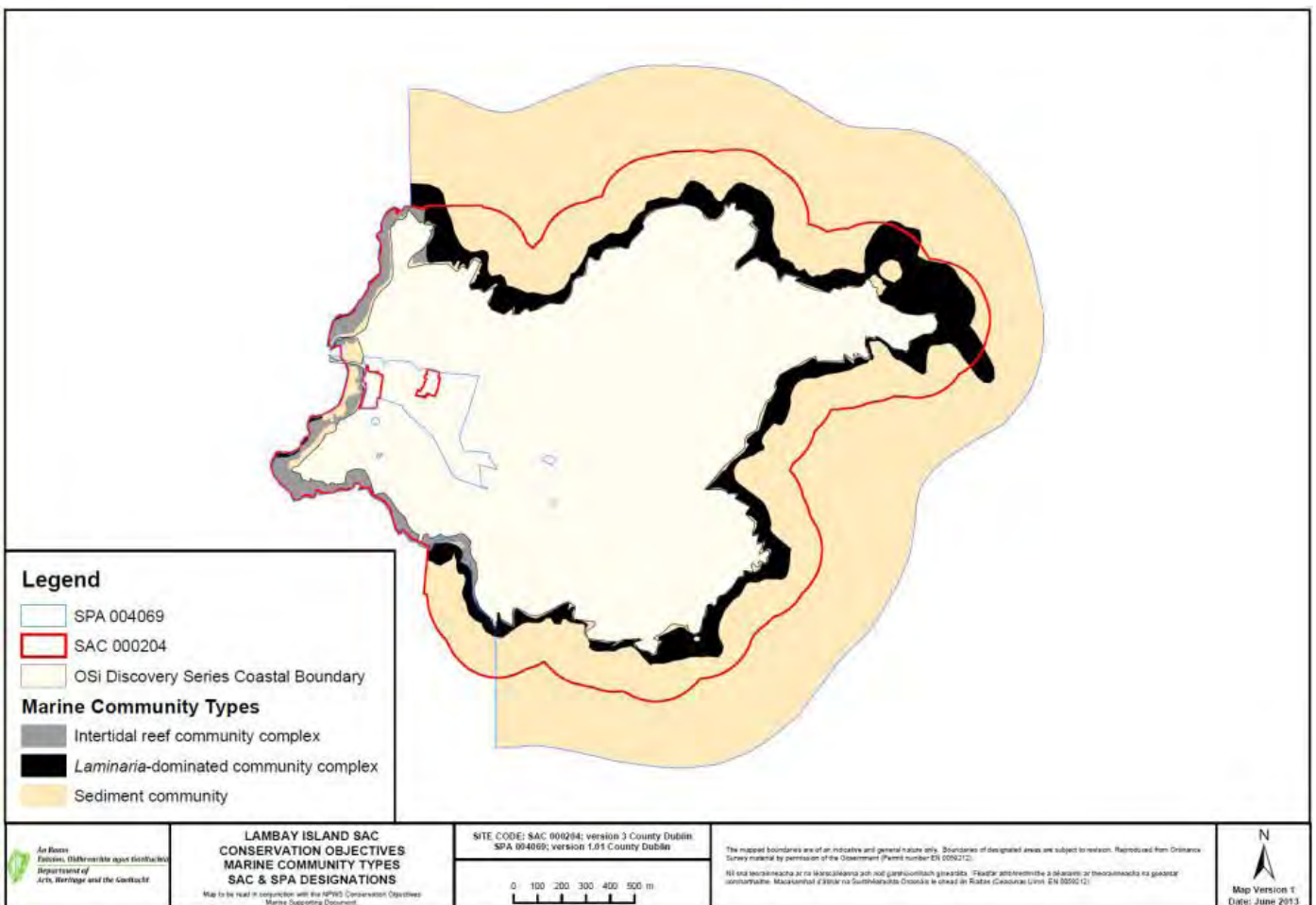
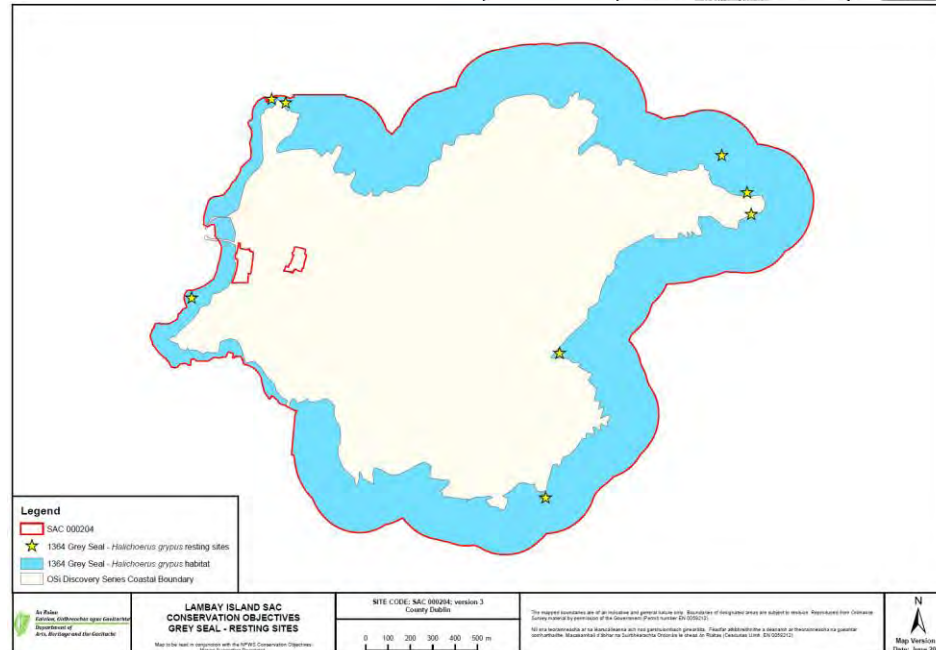
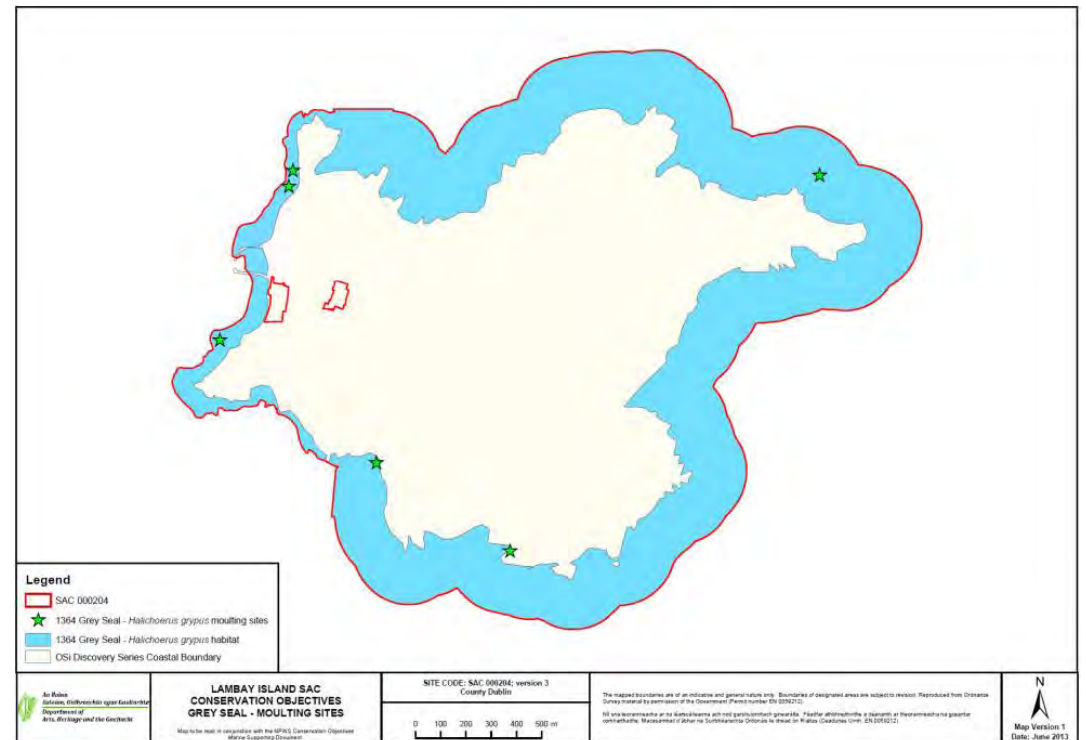
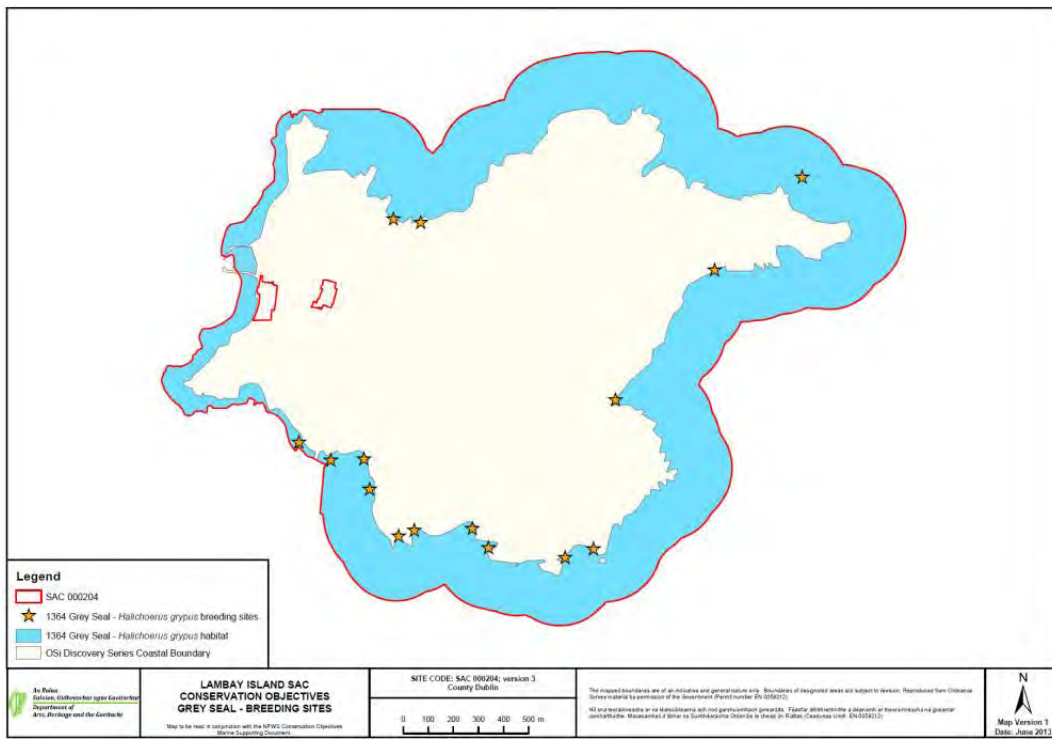
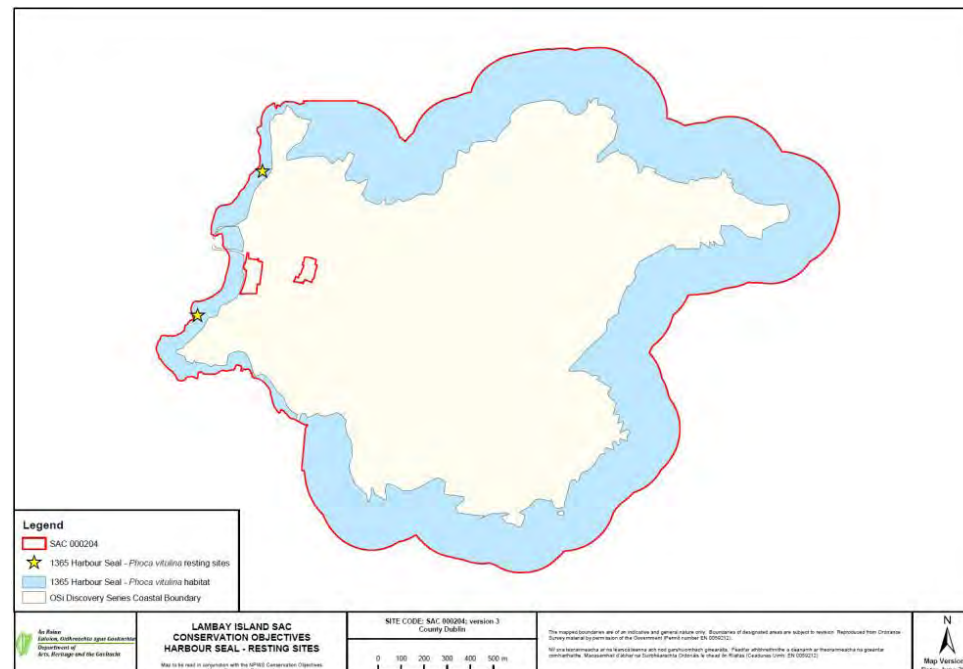
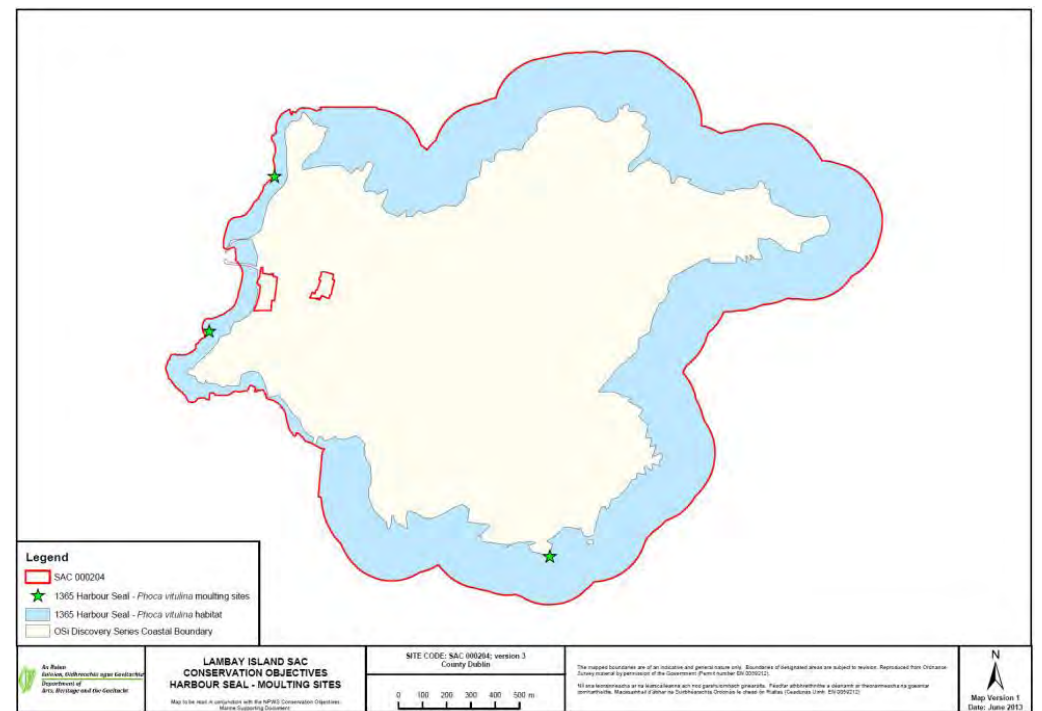
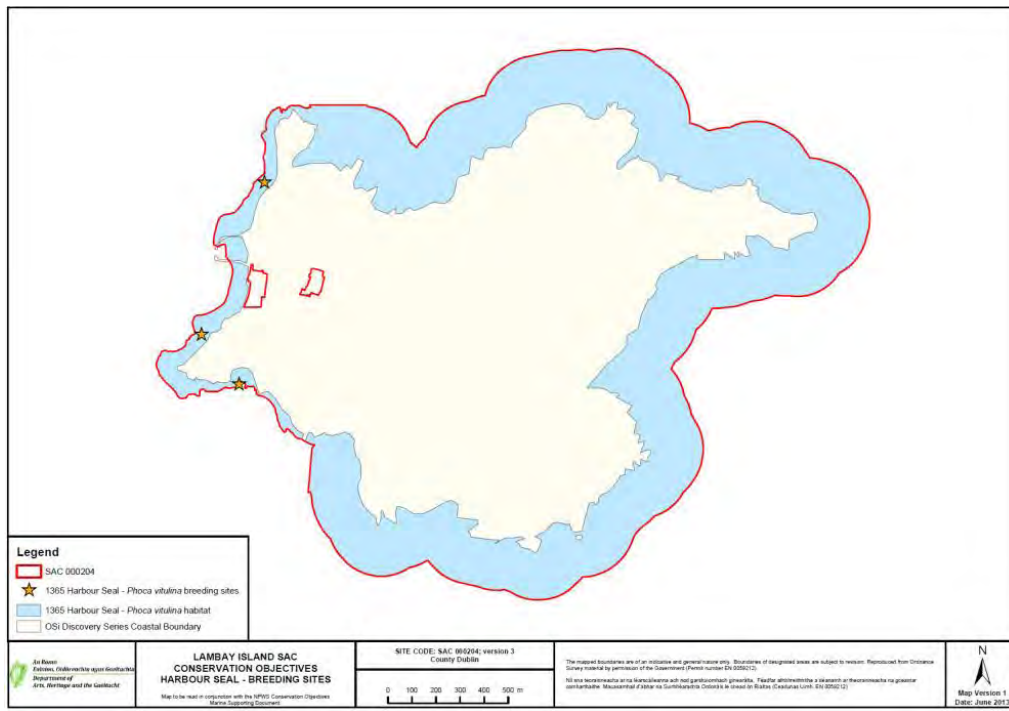


Figure 50. Distribution of marine community types in Lambay Island SAC



Figures 51 - 53. Distribution of Grey seal breeding, moulting, and resting sites on Lambay Island SAC



Figures 54 - 56. Distribution of Harbour seal breeding, moulting, and resting sites on Lambay Island SAC

5.3.1 Conservation Objectives of Lambay Island SAC 000204 (All Habitats and Species)

All habitats and non-marine mammal species that are features of interest of Lambay Island SAC have been screened out in relation to potential effect in Table 11. However, grey seal and harbour seal. within Lambay Island SAC have been included in the NIS as individuals from the SAC may be within the survey area and standard marine mammal mitigation measures (NPWS 2011) are required. All other features of interest have been screened out as there is a significant distance between the proposed survey and Lambay Island SAC and no effects are foreseen on these features of interest. However, as standard mitigation will be in place in relation to marine mammals and it is considered that grey seal and harbour porpoise from this SAC have the potential to be in the vicinity of the proposed survey and are therefore screened in for NIS.

The qualifying interests, their attributes, targets and the potential impact of the proposed fibre-optic cable survey on each of the features of interest of Lambay SAC are seen in Table 18.

Table 18. The site-specific Conservation Objectives, overall status of species and habitats and the potential impact of the proposed works on the features of interest and conservation objectives of Lambay Island SAC.

Annex Species/Habitats- Qualifying Interest	Overall Conservation Status	<i>Site Specific Conservation Objectives</i> , attributes, targets and perceived impacts.
[1170] Reefs	Inadequate	<p>To maintain the favourable conservation condition of Reefs in Lambay Island SAC, which is defined by the following list of attributes and targets:</p> <p><i>(Attribute. Target)</i></p> <p><i>Habitat area.</i> The permanent area is stable or increasing, subject to natural processes.</p> <p><i>Distribution.</i> The distribution of reefs is stable or increasing, subject to natural processes.</p> <p><i>Community Structure:</i> Conserve the following community types in a natural condition: Intertidal reef community complex; Laminaria-dominated community complex.</p> <p>Potential Effect</p> <p>The cable survey route is not within or proximal to reef habitat. No significant effects are foreseen on Reef habitat.</p>
[1230] Vegetated sea cliffs of the Atlantic and Baltic coasts	Inadequate	<p>To maintain the favourable conservation condition of Vegetated sea cliffs of the Atlantic and Baltic coasts in Lambay Island SAC, which is defined by the following list of attributes and targets:</p> <p><i>(Attribute. Target)</i></p> <p><i>Habitat length.</i> Area stable, subject to natural processes, including erosion. Total length of cliff section mapped: 7.27km.</p> <p><i>Habitat distribution.</i> No decline, subject to natural processes.</p> <p><i>Physical structure: functionality and hydrological regime:</i> No alteration to natural functioning of geomorphological and hydrological processes due to artificial structures.</p>

Annex Species/Habitats- Qualifying Interest	Overall Conservation Status	<i>Site Specific Conservation Objectives</i> , attributes, targets and perceived impacts.
		<p><i>Vegetation structure: zonation:</i> Maintain range of sea cliff habitat zonations including transitional zones, subject to natural processes including erosion and succession.</p> <p><i>Vegetation structure: vegetation height:</i> Maintain structural variation within sward.</p> <p><i>Vegetation composition: typical species and subcommunities:</i> Maintain range of subcommunities with typical species listed in the Irish Sea Cliff Survey (Barron et al., 2011).</p> <p><i>Vegetation composition: negative indicator species:</i> Negative indicator species (including non-natives) to represent less than 5% cover.</p> <p><i>Vegetation composition: bracken and woody species:</i> Cover of bracken (<i>Pteridium aquilinum</i>) on grassland and/or heath less than 10%. Cover of woody species on grassland and/or heath less than 20%.</p> <p>Potential Effect</p> <p>The cable survey route is not within or proximal to Vegetated sea cliffs of the Atlantic and Baltic coasts habitat. No significant effects are foreseen on Vegetated sea cliffs of the Atlantic and Baltic coasts habitat.</p>
Grey Seal (<i>Halichoerus grypus</i>) [1364]	Favourable	<p>To maintain the favourable conservation condition of Grey Seal in Lambay Island SAC, which is defined by the following list of attributes and targets:</p> <p><i>(Attribute. Target)</i></p> <p><i>Access to suitable habitat:</i> Species range within the site should not be restricted by artificial barriers to site use.</p> <p><i>Breeding behaviour:</i> The breeding sites should be maintained in a natural condition.</p> <p><i>Moulting behaviour:</i> The moult haul-out sites should be maintained in a natural condition.</p> <p><i>Resting behaviour:</i> The resting haul-out sites should be maintained in a natural condition.</p> <p><i>Disturbance:</i> Human activities should occur at levels that do not adversely affect the grey seal population at the site.</p> <p>Potential Effect</p> <p>The proposed survey will introduce underwater noise into the marine environment. The survey is 10.4km from this SAC. Detailed assessment is required in relation to the potential effects on Grey Seal. Mitigation measures are required.</p>

Annex Species/Habitats- Qualifying Interest	Overall Conservation Status	<i>Site Specific Conservation Objectives</i> , attributes, targets and perceived impacts.
Harbour seal (<i>Phoca vitulina</i>) [1365]	Favourable	<p>To maintain the favourable conservation condition of Harbour Seal in Lambay Island SAC, which is defined by the following list of attributes and targets:</p> <p><i>(Attribute. Target)</i></p> <p><i>Access to suitable habitat:</i> Species range within the site should not be restricted by artificial barriers to site use.</p> <p><i>Breeding behaviour:</i> The breeding sites should be maintained in a natural condition.</p> <p><i>Moulting behaviour:</i> The moult haul-out sites should be maintained in a natural condition.</p> <p><i>Resting behaviour:</i> The resting haul-out sites should be maintained in a natural condition.</p> <p><i>Disturbance:</i> Human activities should occur at levels that do not adversely affect the harbour seal population at the site.</p> <p>Potential Effect</p> <p>The proposed survey will introduce underwater noise into the marine environment. The survey is 10.4km from this SAC. Detailed assessment is required in relation to the potential effects on Harbour Seal. Mitigation measures are required.</p>

5.4 South Dublin Bay and River Tolka SPA (Site code: 004024)

As outlined in the South Dublin Bay SAC Site Synopsis¹⁰. (NPWS, version date 30.05.2015):

'The South Dublin Bay and River Tolka Estuary SPA comprises a substantial part of Dublin Bay. It includes the intertidal area between the River Liffey and Dun Laoghaire, and the estuary of the River Tolka to the north of the River Liffey, as well as Booterstown Marsh. A portion of the shallow marine waters of the bay is also included.

*In the south bay, the intertidal flats extend for almost 3 km at their widest. The sediments are predominantly well-aerated sands. Several permanent channels exist, the largest being Cockle Lake. A small sandy beach occurs at Merrion Gates, while some bedrock shore occurs near Dun Laoghaire. The landward boundary is now almost entirely artificially embanked. There is a bed of Dwarf Eelgrass (*Zostera noltii*) below Merrion Gates which is the largest stand on the east coast. Green algae (*Ulva* spp.) are distributed throughout the area at a low density. The macroinvertebrate fauna is well-developed, and is characterised by annelids such as Lugworm (*Arenicola marina*), Nephthys spp. and Sand Mason (*Lanice conchilega*), and bivalves, especially Cockle (*Cerastoderma edule*) and Baltic Tellin (*Macoma balthica*). The small gastropod Spire Shell (*Hydrobia ulvae*) occurs on the muddy sands off Merrion Gates, along with the crustacean *Corophium volutator*. Sediments in the Tolka Estuary vary from soft thixotropic muds with a high organic content in the inner estuary to exposed, well-aerated sands off the Bull Wall. The site includes Booterstown Marsh, an enclosed area of saltmarsh and muds that is cut off from the sea by the Dublin/Wexford railway line, being linked only by a channel to the east, the Nutley stream. Sea water incursions into the marsh occur along this stream at high tide. An area of grassland at Poolbeg, north of Irishtown Nature Park, is also included in the site.*

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Light-bellied Brent Goose, Oystercatcher, Ringed Plover, Grey Plover, Knot, Sanderling, Dunlin, Bar-tailed Godwit, Redshank, Black-headed Gull, Roseate Tern, Common Tern and Arctic Tern. The E.U. Birds Directive pays particular attention to wetlands, and as these form part of the SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds.

The site is an important site for wintering waterfowl, being an integral part of the internationally important Dublin Bay complex – all counts for wintering waterbirds are five year mean peaks for the period 1995/96 to 1999/2000. Although birds regularly commute between the south bay and the north bay, recent studies have shown that certain populations which occur in the south bay spend most of their time there. An internationally important population of Light-bellied Brent Goose (368) occurs regularly and newly arrived birds in the autumn feed on the Eelgrass bed at Merrion. At the time of designation the site supported nationally important numbers of a further nine species: Oystercatcher (1,145), Ringed Plover (161), Grey Plover (45), Knot (548), Sanderling (321), Dunlin (1,923), Bar-tailed Godwit (766), Redshank (260) and Black-headed Gull (3,040). Other species occurring in smaller numbers include Great Crested Grebe (21), Curlew (127) and Turnstone (52). Little Egret, a species which has recently colonised Ireland, also occurs at this site.

South Dublin Bay is a significant site for wintering gulls, with a nationally important population of Black-headed Gull, but also Common Gull (330) and Herring Gull (348). Mediterranean Gull is also recorded from here, occurring through much of the year, but especially in late winter/spring and again in late summer into winter.

Both Common Tern and Arctic Tern breed in Dublin Docks, on a man-made mooring structure known as the E.S.B. dolphin – this is included within the site. Small numbers of Common Tern and Arctic Tern were recorded nesting on this dolphin in the 1980s. A survey in 1995 recorded nationally important numbers of Common Tern nesting here (52 pairs). The breeding population of Common Tern at this site has increased, with 216 pairs recorded in 2000. This increase was largely due to the ongoing management of the site for breeding terns. More recent data highlights this site as one of the most important Common Tern sites in the country with over 400 pairs recorded here in 2007.

¹⁰ <https://www.npws.ie/sites/default/files/protected-sites/synopsis/SY004024.pdf>

South Dublin Bay is an important staging/passage site for a number of tern species in the autumn (mostly late July to September). The origin of many of the birds is likely to be the Dublin breeding sites (Rockabill and the Dublin Docks) though numbers suggest that the site is also used by birds from other sites, perhaps outside the state. This site is selected for designation for its autumn tern populations: Roseate Tern (2,000 in 1999), Common Tern (5,000 in 1999) and Arctic Tern (20,000 in 1996).

The South Dublin Bay and River Tolka Estuary SPA is of ornithological importance as it supports an internationally important population of Light-bellied Brent Goose and nationally important populations of a further nine wintering species. Furthermore, the site supports a nationally important colony of breeding Common Tern and is an internationally important passage/staging site for three tern species. It is of note that four of the species that regularly occur at this site are listed on Annex I of the E.U. Birds Directive, i.e. Bar-tailed Godwit, Common Tern, Arctic Tern and Roseate Tern. Sandymount Strand/Tolka Estuary is also a Ramsar Convention site.'

The Natura 2000 Standard Data Form (2020)¹¹ states that:

*'This site comprises a substantial part of Dublin Bay. It includes virtually all of the intertidal area in the south bay, as well as much of the Tolka Estuary to the north of the River Liffey. A portion of the shallow bay waters is also included. In the south bay, the intertidal flats extend for almost 3 km at their widest. The sediments are predominantly well-aerated sands. The sands support the largest stand of *Zostera noltii* on the East Coast. Several permanent channels exist, the largest being Cockle Lake. A small sandy beach occurs at Merrion Gates, while some bedrock shore occurs near Dun Laoghaire. The landward boundary is now almost entirely artificially embanked. Sediments in the Tolka Estuary vary from soft thixotropic muds with a high organic content in the inner estuary to exposed, well aerated sands off the Bull Wall. The proximity of the site to Dublin City results in it being a very popular recreational area. It is also important for educational and research purposes.*

*The site possesses extensive intertidal flats which support wintering waterfowl which are part of the overall Dublin Bay population. It regularly has an internationally important population of *Branta bernicla hrota*, which feeds on *Zostera noltii* in the autumn. It has nationally important numbers of a further 6 species: *Haematopus ostralegus*, *Charadrius hiaticula*, *Calidris canutus*, *Calidris alba*, *Calidris alpina* and *Limosa lapponica*. It is an important site for wintering gulls, especially *Larus ridibundus* and *Larus canus*. South Dublin Bay is the premier site in Ireland for *Larus melanocephalus*, with up to 20 birds present at times. Is a regular autumn roosting ground for significant numbers of terns, including *Sterna dougallii*, *S. hirundo* and *S. paradisaea*.'*

According to the conservation Objectives Supporting Document¹² (NPWS 2014) for the South Dublin Bay and River Tolka Estuary SPA:

'The overarching Conservation Objective for North Bull Island Special Protection Area, and for South Dublin Bay and River Tolka Estuary Special Protection Area, is to ensure that waterbird populations and their wetland habitats are maintained at, or restored to, favourable conservation condition. This includes, as an integral part, the need to avoid deterioration of habitats and significant disturbance; thereby ensuring the persistence of site integrity.

The site should contribute to the maintenance and improvement where necessary, of the overall favourable status of the national resource of waterbird species, and continuation of their long-term survival across their natural range.

Conservation Objectives for North Bull Island Special Protection Area, and for South Dublin Bay and River Tolka Estuary Special Protection Area, based on the principles of favourable conservation status, are described below

¹¹ <https://www.npws.ie/sites/default/files/protected-sites/natura2000/NF004024.pdf>

¹² Note that 'population' refers to site population (numbers wintering at the site) rather than the species biogeographic population.

[https://www.npws.ie/sites/default/files/publications/pdf/South%20Dublin%20Bay%20and%20River%20Tolka%20Estuar%20SPA%20\(004024\)%20Conservation%20objectives%20supporting%20document%20-%20\[Version%201\].pdf](https://www.npws.ie/sites/default/files/publications/pdf/South%20Dublin%20Bay%20and%20River%20Tolka%20Estuar%20SPA%20(004024)%20Conservation%20objectives%20supporting%20document%20-%20[Version%201].pdf)

and summarised in Table 3.1. Note that these objectives should be read and interpreted in the context of information and advice provided in additional sections of this report.

Objective 1: To maintain the favourable conservation condition of the non-breeding waterbird Special Conservation Interest species listed for North Bull Island SPA and South Dublin Bay and River Tolka Estuary SPA.

This objective is defined by the following attributes and targets:

- *To be favourable, the long term population trend for each waterbird Special Conservation Interest species should be stable or increasing¹³. Waterbird populations are deemed to be unfavourable when they have declined by 25% or more, as assessed by the most recent population trend analysis.*
- *To be favourable, there should be no significant decrease in the range, timing or intensity of use of areas by the waterbird species of Special Conservation Interest, other than that occurring from natural patterns of variation.*

Factors that can adversely effect the achievement of Objective 1 include:

- *Habitat modification: activities that modify discreet areas or the overall habitat(s) within the SPA in terms of how one or more of the listed species use the site (e.g. as a feeding resource) could result in the displacement of these species from areas within the SPA and/or a reduction in their numbers (for further discussion on this topic please refer to Section 5.4).*
- *Disturbance: anthropogenic disturbance that occurs in or near the site and is either singular or cumulative in nature could result in the displacement of one or more of the listed waterbird species from areas within the SPA, and/or a reduction in their numbers (for further discussion on this topic please refer to Section 5.4).*
- *Ex-situ factors: several of the listed waterbird species may at times use habitats situated within the immediate hinterland of the SPA or in areas ecologically connected to it. The reliance on these habitats will vary from species to species and from site to site. Significant habitat change or increased levels of disturbance within these areas could result in the displacement of one or more of the listed waterbird species from areas within the SPA, and/or a reduction in their numbers (for further information on this topic please refer to Section 5.2).*

Objective 2. To maintain the favourable conservation condition of the wetland habitat at North Bull Island SPA and South Dublin Bay and River Tolka Estuary SPA as a resource for the regularly-occurring migratory waterbirds that utilise these areas.

This objective is defined by the following attributes and targets:

- *To be favourable, the permanent area occupied by the wetland habitat should be stable and not significantly less than the area of 3,904 ha, other than that occurring from natural patterns of variation.*

This objective seeks to maintain the permanent extent of the wetland habitats that are contained within the boundary of these two SPAs, and which constitute an important resource for regularly-occurring migratory waterbirds (note that the total designated area also contains some non-wetland habitat).'

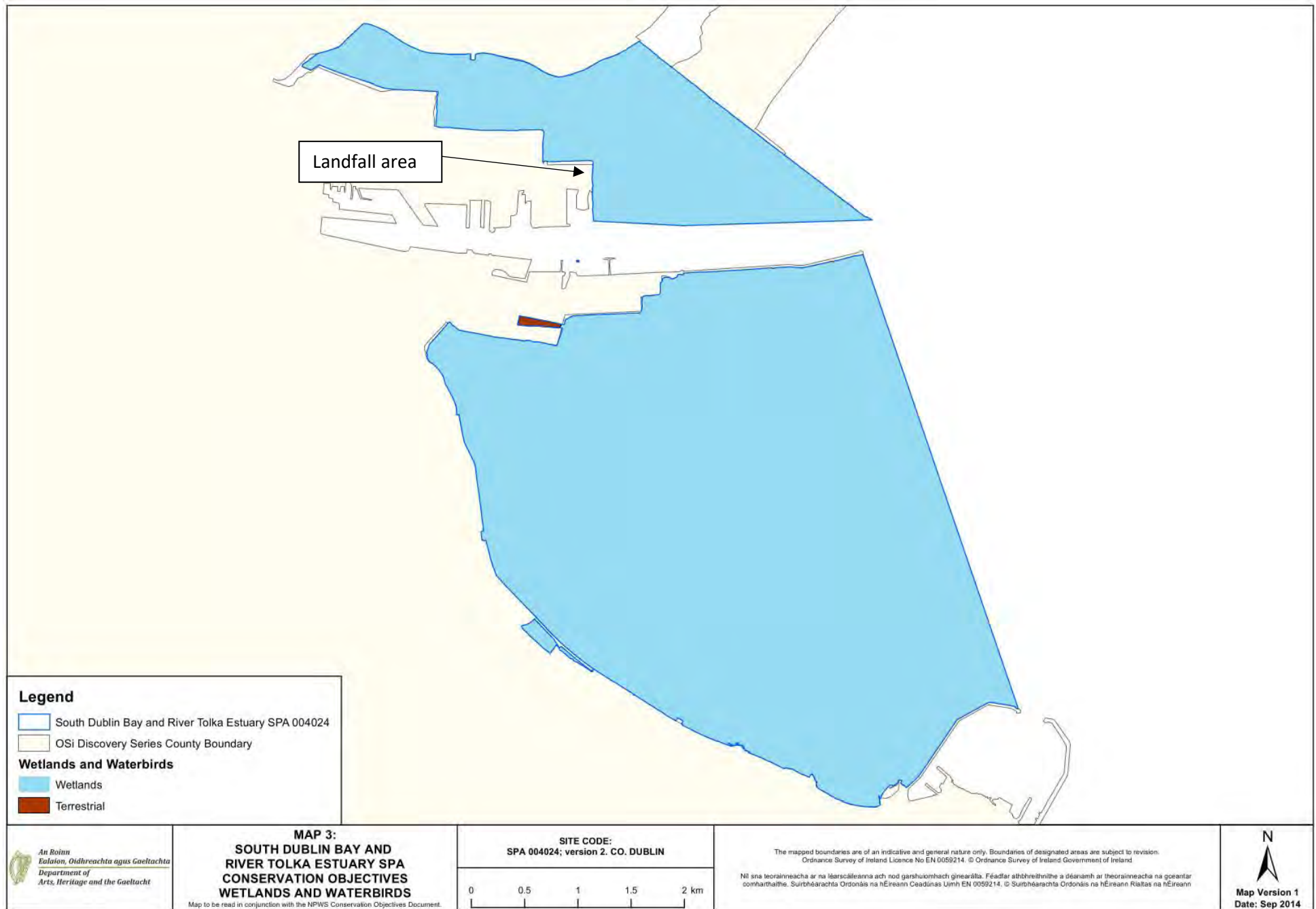


Figure 57. Wetlands and Waterbirds – South Dublin Bay and River Tolka Estuary SPA

5.4.1 Conservation Objectives of South Dublin Bay and River Tolka Estuary SPA 004024 (All Habitats and Species)

The qualifying interests, their attributes, targets and the potential impact of the proposed fibre-optic cable survey on each of the features of interest of South Dublin Bay and River Tolka Estuary SPA are seen in Table 19.

Table 19. The site-specific Conservation Objectives, overall status of species and habitats and the potential impact of the proposed works on the features of interest and conservation objectives of South Dublin Bay and River Tolka Estuary SPA.

Annex Species/Habitats- Qualifying Interest	Overall Conservation Status	<i>Site Specific Conservation Objectives</i> , attributes, targets and perceived impacts.
<p>Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046], Oystercatcher (<i>Haematopus ostralegus</i>) [A130], Ringed Plover (<i>Charadrius hiaticula</i>) [A137], Knot (<i>Calidris canutus</i>) [A143], Sanderling (<i>Calidris alba</i>) [A144], Dunlin (<i>Calidris alpina alpina</i>) [A149], Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157], Redshank (<i>Tringa totanus</i>) [A162], Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179]</p> <p>Note: Grey Plover (<i>Pluvialis squatarola</i>) [A141] is proposed for removal from the list of SCI's for the site so no site specific conservation objective is included for the species</p>	<p>[A046] Amber; [A130] Amber; [A137] Green; [A143] Amber; [A144] Green; [A149] Red; [A157] Amber; [A162] Red; [A179] Red</p>	<p>To maintain the favourable conservation condition of the qualifying interests in South Dublin Bay and River Tolka Estuary SPA, which is defined by the following list of attributes and targets:</p> <p>(Attribute. Target)</p> <p><i>Population Trend.</i> Long term population trend stable or increasing.</p> <p><i>Distribution.</i> No significant decrease in the range, timing and intensity of use of areas by all of the above named species, other than that occurring from natural patterns of variation.</p> <p>Potential Effect</p> <p>The cable survey route is within a busy port and in an area of high vessel activity. Birds in the vicinity of the cable route survey will be accustomed to vessel activity. A small section of intertidal sedimentary habitat is solely present at very low Spring tides. All proposed works in mudflat area will be carried out when the site is covered by water. However, out of an abundance of caution there is potential for pollution e.g. from vessel activities to impact on bird species.</p>
<p>[A192] Roseate Tern (<i>Sterna dougallii</i>)</p>	<p>Amber</p>	<p>To maintain the favourable conservation condition of Roseate Tern in South Dublin Bay and River Tolka Estuary SPA, which is defined by the following list of attributes and targets:</p> <p>(Attribute. Target)</p> <p><i>Passage population: individuals.</i> No significant decline.</p> <p><i>Distribution: roosting areas.</i> No significant decline.</p> <p><i>Prey biomass available:</i> No significant decline.</p> <p><i>Barriers to connectivity:</i> No significant increase.</p> <p><i>Disturbance at roosting site:</i> Human activities should occur at levels that do not adversely affect the numbers of roseate tern among the post-breeding aggregation of terns.</p>

Annex Species/Habitats- Qualifying Interest	Overall Conservation Status	<i>Site Specific Conservation Objectives</i> , attributes, targets and perceived impacts.
		<p>Potential Effect</p> <p>The cable survey route is within a busy port and in an area of high vessel activity. Birds in the vicinity of the cable route survey will be accustomed to vessel activity. However, out of an abundance of caution there is potential for pollution e.g. from vessel activities to impact on bird species.</p>
[A193] Common Tern (<i>Sterna hirundo</i>)	Amber	<p>To maintain the favourable conservation condition of Common Tern in South Dublin Bay and River Tolka Estuary SPA, which is defined by the following list of attributes and targets:</p> <p><i>(Attribute. Target)</i></p> <p><i>Breeding population abundance: apparently occupied nests (AONs).</i> No significant decline.</p> <p><i>Productivity rate: fledged young per breeding pair:</i> No significant decline.</p> <p><i>Passage population: individuals.</i> No significant decline.</p> <p><i>Distribution: breeding colonies.</i> No significant decline.</p> <p><i>Distribution: roosting areas.</i> No significant decline.</p> <p><i>Prey biomass available:</i> No significant decline.</p> <p><i>Barriers to connectivity:</i> No significant increase.</p> <p><i>Disturbance at breeding site.</i> Human activities should occur at levels that do not adversely affect the breeding common tern population.</p> <p><i>Disturbance at roosting site:</i> Human activities should occur at levels that do not adversely affect the numbers of common tern among the post-breeding aggregation of terns.</p> <p>Potential Effect</p> <p>The cable survey route is within a busy port and in an area of high vessel activity. Birds in the vicinity of the cable route survey will be accustomed to vessel activity. However, out of an abundance of caution there is potential for pollution e.g. from vessel activities to impact on bird species.</p>
[A194] Arctic Tern (<i>Sterna paradisaea</i>)	Amber	<p>To maintain the favourable conservation condition of Arctic Tern in South Dublin Bay and River Tolka Estuary SPA, which is defined by the following list of attributes and targets:</p> <p><i>(Attribute. Target)</i></p> <p><i>Passage population.</i> No significant decline.</p> <p><i>Distribution: roosting areas.</i> No significant decline.</p> <p><i>Prey biomass available:</i> No significant decline.</p>

Annex Species/Habitats- Qualifying Interest	Overall Conservation Status	<i>Site Specific Conservation Objectives</i> , attributes, targets and perceived impacts.
		<p><i>Barriers to connectivity:</i> No significant increase.</p> <p><i>Disturbance at roosting site:</i> Human activities should occur at levels that do not adversely affect the numbers of Arctic tern among the post-breeding aggregation of terns.</p> <p>Potential Effect</p> <p>The cable survey route is within a busy port and in an area of high vessel activity. Birds in the vicinity of the cable route survey will be accustomed to vessel activity. However, out of an abundance of caution there is potential for pollution e.g. from vessel activities to impact on bird species.</p>
[A999] Wetland and Waterbirds	N/A	<p>To maintain the favourable conservation condition of the wetland habitat in South Dublin Bay and River Tolka Estuary SPA as a resource for the regularly occurring migratory waterbirds that utilise it. This is defined by the following attribute and target:</p> <p><i>(Attribute. Target)</i></p> <p><i>Habitat area.</i> The permanent area occupied by the wetland habitat should be stable and not significantly less than the area of 2,192 hectares, other than that occurring from natural patterns of variation.</p> <p>Potential Effect</p> <p>The cable survey route is within a busy port and in an area of high vessel activity. Birds in the vicinity of the cable route survey will be accustomed to vessel activity. However, out of an abundance of caution there is potential for pollution e.g. from vessel activities to impact on bird species and wetland habitat.</p>

5.5 North Bull Island SPA (Site code: 004006)

As outlined in the North Bull Island SPA Site Synopsis¹⁴ (NPWS, version date 25.03.2014)

'This site covers all of the inner part of north Dublin Bay, with the seaward boundary extending from the Bull Wall lighthouse across to Drumleck Point at Howth Head. The North Bull Island sand spit is a relatively recent depositional feature, formed as a result of improvements to Dublin Port during the 18th and 19th centuries. It is almost 5 km long and 1 km wide and runs parallel to the coast between Clontarf and Sutton. Part of the interior of the island has been converted to golf courses.

*Saltmarsh extends along the length of the landward side of the island and provides the main roost site for wintering birds in Dublin Bay. The island shelters two intertidal lagoons which are divided by a solid causeway. These lagoons provide the main feeding grounds for the wintering waterfowl. The sediments of the lagoons are mainly sands with a small and varying mixture of silt and clay. Green algal mats (*Ulva* spp.) are a feature of the flats during summer. These sediments have a rich macro-invertebrate fauna, with high densities of Lugworm (*Arenicola marina*) and Ragworm (*Hediste diversicolor*).*

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Light-bellied Brent Goose, Shelduck, Teal, Pintail, Shoveler, Oystercatcher, Golden Plover, Grey Plover, Knot, Sanderling, Dunlin, Black-tailed Godwit, Bar-tailed Godwit, Curlew, Redshank, Turnstone and Black-headed Gull. The site is also of special conservation interest for holding an assemblage of over 20,000 wintering waterbirds. The E.U. Birds Directive pays particular attention to wetlands and, as these form part of this SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds.

The North Bull Island SPA is of international importance for waterfowl on the basis that it regularly supports in excess of 20,000 waterfowl. The site supports internationally important populations of three species, Light-bellied Brent Goose (1,548), Black-tailed Godwit (367) and Bar-tailed Godwit (1,529) - all figures are mean peaks for the five winters between 1995/96 and 1999/2000. The site is one of the most important in the country for Light-bellied Brent Goose. A further 14 species have populations of national importance – Shelduck (1,259), Teal (953), Pintail (233), Shoveler (141), Oystercatcher (1,784), Grey Plover (517), Golden Plover (2,033), Knot (2,837), Sanderling (141), Dunlin (4,146), Curlew (937), Redshank (1,431), Turnstone (157) and Black-headed Gull (2,196). The populations of Pintail and Knot are of particular note as they comprise 14% and 10% respectively of the all-Ireland population totals. Other species that occur regularly in winter include Grey Heron, Little Egret, Cormorant, Wigeon, Goldeneye, Red-breasted Merganser, Ringed Plover and Greenshank. Gulls are a feature of the site during winter and, along with the nationally important population of Black-headed Gull (2,196), other species that occur include Common Gull (332) and Herring Gull (331). While some of the birds also frequent South Dublin Bay and the River Tolka Estuary for feeding and/or roosting purposes, the majority remain within the site for much of the winter. The wintering bird populations have been monitored more or less continuously since the late 1960s and the site is now surveyed each winter as part of the larger Dublin Bay complex.

The North Bull Island SPA is a regular site for passage waders, especially Ruff, Curlew Sandpiper and Spotted Redshank. These are mostly observed in single figures in autumn but occasionally in spring or winter.

The site formerly had an important colony of Little Tern but breeding has not occurred in recent years. Several pairs of Ringed Plover breed, along with Shelduck in some years. Breeding passerines include Skylark, Meadow Pipit, Stonechat and Reed Bunting. The island is a regular wintering site for Short-eared Owl, with up to 5 present in some winters.

The North Bull Island SPA is an excellent example of an estuarine complex and is one of the top sites in Ireland for wintering waterfowl. It is of international importance on account of both the total number of waterfowl and the individual populations of Light-bellied Brent Goose, Black-tailed Godwit and Bar-tailed Godwit that use it. Also of significance is the regular presence of several species that are listed on Annex I of the E.U. Birds Directive, notably

¹⁴ <https://www.npws.ie/sites/default/files/protected-sites/synopsis/SY004006.pdf>

Golden Plover and Bar-tailed Godwit, but also Ruff and Short-eared Owl. North Bull Island is a Ramsar Convention site, and part of the North Bull Island SPA is a Statutory Nature Reserve and a Wildfowl Sanctuary.'

The Natura 2000 Standard Data Form (2020)¹⁵ states that:

'The North Bull Island sand spit is a relatively recent depositional feature, formed as a result of improvements to Dublin Port during the 18th and 19th centuries. It is almost 5km long and 1km wide and runs parallel to the coast between Clontarf and Sutton. The sediment which forms the island is predominantly glacial in origin and siliceous in nature. A well-developed dune system runs the length of the island, with good examples of embryonic, shifting marram and fixed dunes, as well as excellent examples of humid dune slacks. Extensive salt marshes also occur. Between the island and the mainland occur two sheltered intertidal areas which are separated by a solid causeway constructed in 1964. The seaward side of the island has a fine sandy beach. A substantial area of shallow marine water is included in the site. Part of the interior of the island has been converted to golf courses. The proximity of the North Bull Island to Dublin City results in it being a very popular recreational area. It is also very important for educational and research purposes. Nature conservation is a main landuse within the site.'

*The site is among the top ten sites for wintering waterfowl in the country. It supports internationally important populations of *Branta bernicla hrota* and *Limosa lapponica* and is the top site in the country for both of these species. A further 14 species have populations of national importance, with particular notable numbers of *Tadorna tadorna* (8.5% of national total), *Anas acuta* (11.6% of national total), *Pluvialis squatarola* (6.9% of national total), *Calidris canutus* (10.5% of national total). North Bull Island SPA is a regular site for passage waders such as *Philomachus pugnax*, *Calidris ferruginea* and *Tringa erythropus*. The site supports *Asio flammeus* in winter. Formerly the site had an important colony of *Sterna albifrons* but breeding has not occurred in recent years. The site provides both feeding and roosting areas for the waterfowl species. Habitat quality for most of the estuarine habitats is very good. The site has a population of the rare *Petalophyllum ralfsii* which is the only known station away from the western seaboard as well as five Red Data Book vascular plant species and four bryophyte species. It is nationally important for three insect species. Wintering bird populations have been monitored more or less continuously since the late 1960s, and the other scientific interests of the site have also been well documented. Future prospects are good owing to various designations assigned to site.'*

The North Bull Island SPA Conservation Objectives Supporting Document¹⁶ (NPWS, 2014) states the following:

*'North Bull Island lies roughly parallel to the shore and is a low-lying sandy spit, about 4.85 km long and 0.70 km wide (McCorry & Ryle, 2009a). It is a relatively recent geomorphological feature having emerged as a result of the build up of sediment over the last 200 years following the construction of the South and North Bull walls during the 18th and 19th centuries. The North Bull Wall marks the southern boundary of the island and is connected to the mainland by a wooden bridge. The island is actively accreting (Ryle et al. 2009a). A sandy beach, Dollymount Strand, occurs on the seaward side of the island and intertidal mudflats occur on the inner (mainland side) fringed by saltmarsh. A causeway built in 1965 provides the main access to the island and divides the intertidal flats into two areas known as the North and South Bull lagoons. Both of these are covered completely by most tides and are drained by permanent channels; the southern lagoon fills and empties beneath Bull Bridge, while water in the northern lagoon is channelled in and out through Sutton Creek (Harris, 1977). These lagoons provide the main feeding grounds for the wintering waterfowl while the fringing saltmarsh provides the main roost site for wintering birds in Dublin Bay. Macroalgal mats of filamentous *Ulva* spp. (formerly *Enteromorpha* spp.) 1 are prevalent.*

North Bull Island is one of the finest sand dune systems in Ireland and is internationally important in terms of conservation value (McCorry & Ryle, 2009a). It has several high quality examples of rare and threatened coastal habitats and a wealth of biodiversity, which includes several habitats and species listed in Annexes I and II of the EU Habitats Directive. As a consequence, North Bull Island is afforded several other nature conservation designations alongside its status as a Special Protection Area. It was designated as an official bird sanctuary under the Wild Bird

¹⁵ <https://www.npws.ie/sites/default/files/protected-sites/natura2000/NF004006.pdf>

¹⁶

[https://www.npws.ie/sites/default/files/publications/pdf/North%20Bull%20Island%20SPA%20\(004006\)%20Conservation%20objectives%20supporting%20document%20-%20\[Version%201\].pdf](https://www.npws.ie/sites/default/files/publications/pdf/North%20Bull%20Island%20SPA%20(004006)%20Conservation%20objectives%20supporting%20document%20-%20[Version%201].pdf)

Protection Act, 1931, the first bird sanctuary in Ireland (McCorry & Ryle, 2009a), and was established as a National Nature Reserve in 1988 (two parts covered by S.I. 231 and S. I. 232 of 1988). The site has been designated as part of a Special Area of Conservation (North Dublin Bay SAC - NPWS site code 000206). North Bull Island is also a Biogenetic Reserve (Council of Europe) and a UNESCO World Biosphere Reserve.'

The following objectives have been identified:

'Objective 1: To maintain the favourable conservation condition of the non-breeding waterbird Special Conservation Interest species listed for North Bull Island SPA and South Dublin Bay and River Tolka Estuary SPA

Objective 2: To maintain the favourable conservation condition of the wetland habitat at North Bull Island SPA and South Dublin Bay and River Tolka Estuary SPA as a resource for the regularly-occurring migratory waterbirds that utilise these areas.'

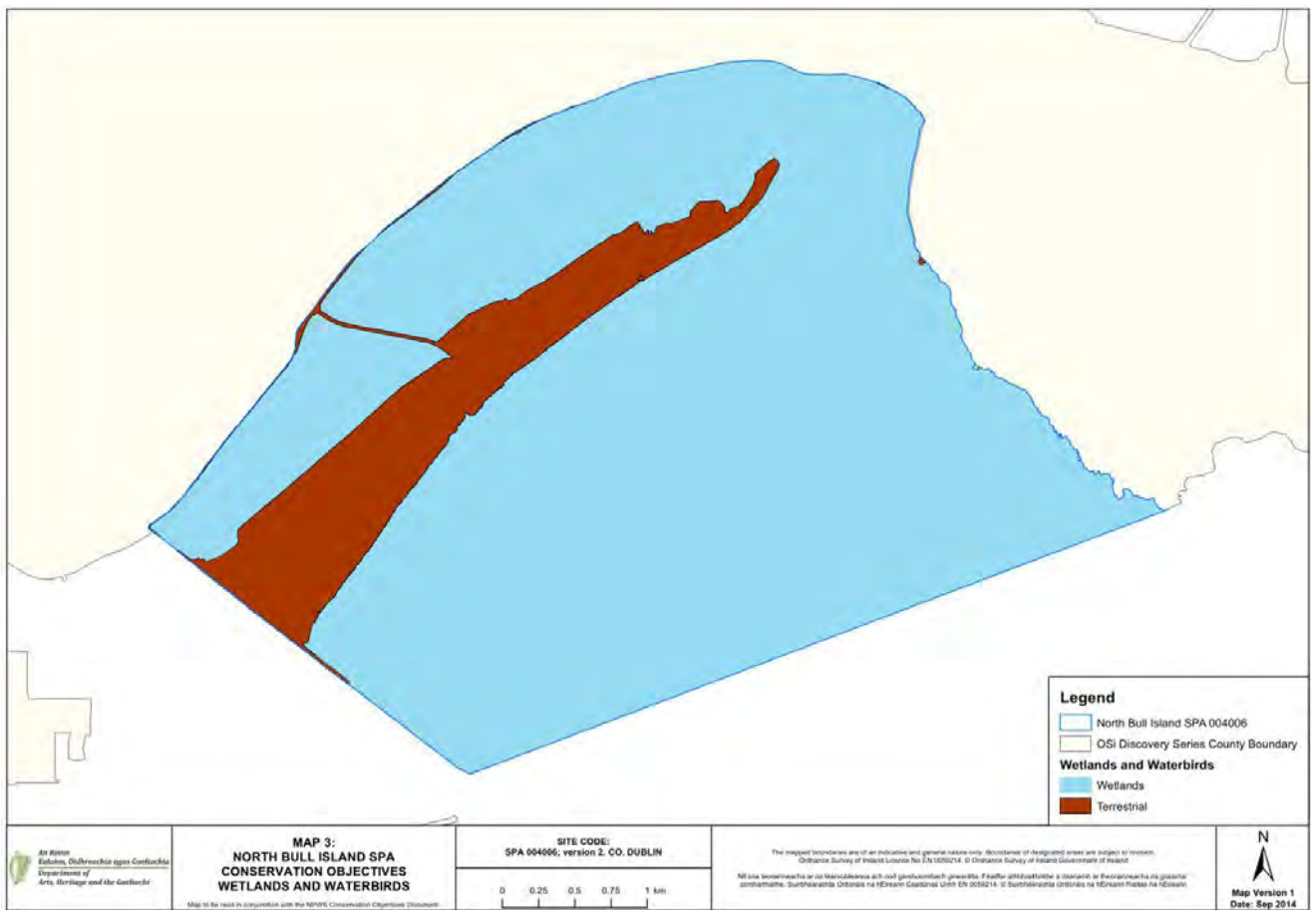


Figure 58. Wetlands and Waterbirds – North Bull Island SPA

5.5.1 Conservation Objectives of North Bull Island SPA 004006 (All Habitats and Species)

The qualifying interests, their attributes, targets and the potential impact of the proposed fibre-optic cable survey on each of the features of interest of North Bull Island SPA are seen in Table 20.

Table 20. The site-specific Conservation Objectives, overall status of species and habitats and the potential impact of the proposed works on the features of interest and conservation objectives of North Bull Island SPA.

Annex Species/Habitats- Qualifying Interest	Overall Conservation Status	Site Specific Conservation Objectives, attributes, targets and perceived impacts.
<p>Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046], Shelduck (<i>Tadorna tadorna</i>) [A048], Teal (<i>Anas crecca</i>) [A052], Pintail (<i>Anas acuta</i>) [A054], Shoveler (<i>Anas clypeata</i>) [A056], Oystercatcher (<i>Haematopus ostralegus</i>) [A130], Golden Plover (<i>Pluvialis apricaria</i>) [A140], Grey Plover (<i>Pluvialis squatarola</i>) [A141], Knot (<i>Calidris canutus</i>) [A143], Sanderling (<i>Calidris alba</i>) [A144], Dunlin (<i>Calidris alpina alpina</i>) [A149], Black-tailed Godwit (<i>Limosa limosa</i>) [A156], Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157], Curlew (<i>Numenius arquata</i>) [A160], Redshank (<i>Tringa totanus</i>) [A162], Turnstone (<i>Arenaria interpres</i>) [A169], Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179]</p>	<p>[A046] Amber; [A048] Amber; [A052] Amber; [A054] Red; [A056] Red; [A130] Amber; [A140] Red; [A141] Amber; [A143] Amber; [A144] Green; [A149] Red; [A156] Amber; [A157] Amber; [A160] Red; [A162] Red; [A169] Green; [A179] Red</p>	<p>To maintain the favourable conservation condition of the qualifying interests in North Bull Island SPA, which is defined by the following list of attributes and targets:</p> <p>(Attribute. Target)</p> <p><i>Population Trend.</i> Long term population trend stable or increasing.</p> <p><i>Distribution.</i> No significant decrease in the range, timing and intensity of use of areas by all of the above named species, other than that occurring from natural patterns of variation.</p> <p>Potential Effect</p> <p>The cable survey route is within a busy port and in an area of high vessel activity. Birds in the vicinity of the cable route survey will be accustomed to vessel activity. However, out of an abundance of caution there is potential for pollution e.g. from vessel activities to impact on bird species.</p>
<p>[A999] Wetland and Waterbirds</p>	<p>N/A</p>	<p>To maintain the favourable conservation condition of the wetland habitat in North Bull Island SPA as a resource for the regularly occurring migratory waterbirds that utilise it. This is defined by the following attribute and target:</p> <p>(Attribute. Target)</p> <p><i>Habitat area.</i> The permanent area occupied by the wetland habitat should be stable and not significantly less than the area of 1,713 hectares, other than that occurring from natural patterns of variation.</p> <p>Potential Effect</p> <p>The cable survey route is within a busy port and in an area of high vessel activity. Birds in the vicinity of the cable route survey will be accustomed to vessel activity. However, out of an abundance of caution there is potential for pollution e.g. from vessel activities to impact on bird species and wetland habitat.</p>

5.6 North-west Irish Sea SPA 004236

As outlined in the North-west Irish Sea Synopsis¹⁷ (NPWS, version date 17.7.2023)

“The North-west Irish Sea cSPA constitutes an important resource for marine birds. The estuaries and bays that open into it along with connecting coastal stretches of intertidal and shallow subtidal habitats, provide safe feeding and roosting habitats for waterbirds throughout the winter and migration periods. These areas, along with more pelagic marine waters further offshore, provide additional supporting habitats (for foraging and other maintenance behaviours) for those seabirds that breed at colonies on the north-west Irish Sea’s islands and coastal headlands. These marine areas are also important for seabirds outside the breeding period.

This SPA extends offshore along the coasts of counties Louth, Meath and Dublin, and is approximately 2,333km² in area. This SPA is ecologically connected to several existing SPAs in this area.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Common Scoter, Red-throated Diver, Great Northern Diver, Fulmar, Manx Shearwater, Shag, Cormorant, Little Gull, Kittiwake, Black-headed Gull, Common Gull, Lesser Black-backed Gull, Herring Gull, Great Black-backed Gull, Little Tern, Roseate Tern, Common Tern, Arctic Tern, Puffin, Razorbill and Guillemot.

The breeding seabird species listed for those SPAs, which abut the North-West Irish Sea SPA are: Fulmar (Lambay Island SPA); Cormorant (Skerries Island SPA; Ireland’s Eye SPA; Lambay Island SPA); Shag (Skerries Island SPA; Lambay Island SPA); Lesser Black-backed Gull (Lambay Island SPA); Herring Gull (Skerries Island SPA; Ireland’s Eye SPA; Lambay Island SPA); Kittiwake (Lambay Island SPA; Ireland’s Eye SPA; Howth Head SPA); Roseate Tern (Rockabill SPA); Common Tern (Rockabill SPA); Arctic Tern (Rockabill SPA); Little Tern (Boyne Estuary SPA); Guillemot (Lambay Island SPA, Ireland’s Eye SPA); Razorbill (Lambay Island SPA, Ireland’s Eye SPA); and Puffin (Lambay Island SPA). The Common Tern population that is listed for the nearby South Dublin Bay and River Tolka Estuary SPA is also likely to use this SPA as a foraging resource.

Informed by two surveys of the western Irish Sea region in 2016 an estimated 120,232 and 34,626 individual marine birds occurred in this SPA during autumn and winter respectively. Those marine bird species whose estimated abundances equalled or exceeded 1% of the total estimated size of the winter assemblage are: Red-throated Diver (538), Fulmar (506), Little Gull (391), Kittiwake (944), Black-headed Gull (508), Common Gull (2,866), Herring Gull (6,893), Great Black-backed Gull (2,096), Razorbill (4,638) and Guillemot (13,914).

The estimated 2016 summer abundance of Manx Shearwater in the North West Irish Sea SPA is 13,010 and is of international importance. The estimated 2016 autumn and winter abundances of Great Northern Diver in the North West Irish Sea SPA is 248 and 230 respectively and are of international importance. The estimated abundances of Common Scoter over parts of this SPA can reach significant numbers (e.g. 14,567 in December 2018) which is also of international importance.”

5.6.1 Conservation Objectives of North-west Irish Sea SPA 004236 (All Habitats and Species)

The qualifying interests, their attributes, targets and the potential impact of the proposed fibre-optic cable survey on each of the features of interest of North-west Irish Sea SPA 004236 are seen in Table 21.

Table 21. The site-specific Conservation Objectives, overall status of species and habitats and the potential impact of the proposed works on the features of interest and conservation objectives of North-west Irish Sea SPA.

¹⁷ <https://www.npws.ie/sites/default/files/protected-sites/synopsis/SY004236.pdf>

Annex Species/Habitats- Qualifying Interest	Overall Conservation Status	Site Specific Conservation Objectives, attributes, targets and perceived impacts.
<p>Common Scoter (<i>Melanitta nigra</i>) [A065] Red-throated Diver (<i>Gavia stellata</i>) [A001] Great Northern Diver (<i>Gavia immer</i>) [A003] Fulmar (<i>Fulmarus glacialis</i>) [A009] Manx Shearwater (<i>Puffinus puffinus</i>) [A013] Cormorant (<i>Phalacrocorax carbo</i>) [A017] Little Tern (<i>Sterna albifrons</i>) [A195] Kittiwake (<i>Rissa tridactyla</i>) [A188] Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179] Common Gull (<i>Larus canus</i>) [A182] Lesser Black-backed Gull (<i>Larus fuscus</i>) [A183] Herring Gull (<i>Larus argentatus</i>) [A184] Roseate Tern (<i>Sterna dougallii</i>) [A192] Arctic Tern (<i>Sterna paradisaea</i>) [A194] Puffin (<i>Fratercula arctica</i>) [A204] Razorbill (<i>Alca torda</i>) [A200] Guillemot (<i>Uria aalge</i>) [A199] Little Gull (<i>Hydrocoloeus minutus</i>) (A862) Common Tern (<i>Sterna hirundo</i>) (A193)</p>	<p>[A065] Red; [A001] Amber; [A003] Amber; [A009] Amber; [A013] Amber; [A017] Amber; [A195] Amber; [A188] Red; [A179] Amber; [A182] Amber; [A183] Amber; [A184] Amber; [A192] Amber; [A194] Amber; [A204] Red; [A200] Amber; [A199] Amber; [A862] Amber; [A193] Amber;</p>	<p>To maintain the favourable conservation condition of the qualifying interests in North-west Irish Sea SPA, which is defined by the following list of attributes and targets:</p> <p>(Attribute. Target)</p> <p><i>Population Size.</i> Long term SPA population trend is stable or increasing</p> <p><i>Spatial Distribution.</i> Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population</p> <p><i>Forage spatial distribution, extent, abundance and availability.</i> Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target</p> <p>Disturbance across the site. The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population size and spatial distribution.</p> <p><i>Barriers to connectivity.</i> The number, location, shape and area of barriers do not significantly impact the site population's access to the SPA or other ecologically important sites outside the SPA.</p> <p>Potential Effect</p> <p>The cable survey route is within a busy port and in an area of high vessel activity. Birds in the vicinity of the cable route survey will be accustomed to vessel activity. However, out of an abundance of caution there is potential for pollution e.g. from vessel activities to impact on bird species.</p>

5.7 Slaney River Valley SAC 000781

5.7.1 Conservation Objectives of Slaney River Valley SAC (Harbour Seal)

The attributes and targets of harbour seal (screened in), and the potential impact of the proposed fibre-optic cable survey on this feature of interest of Slaney River Valley SAC 000781 are seen in Table 22. All other features of interest were screened out at initial screening.

Table 22. The site-specific Conservation Objectives, overall status of harbour seal, and the potential impact of the proposed works on this feature of interest and conservation objectives of Slaney River Valley SAC.

Annex Species/Habitats- Qualifying Interest	Overall Conservation Status	Site Specific Conservation Objectives, attributes, targets and perceived impacts.
Harbour seal (<i>Phoca vitulina</i>) [1365]	Favourable	<p>To maintain the favourable conservation condition of Harbour Seal in the Slaney River Valley SAC, which is defined by the following list of attributes and targets:</p> <p><i>(Attribute. Target)</i></p> <p><i>Access to suitable habitat:</i> Species range within the site should not be restricted by artificial barriers to site use.</p> <p><i>Breeding behaviour:</i> The breeding sites should be maintained in a natural condition.</p> <p><i>Moulting behaviour:</i> The moult haul-out sites should be maintained in a natural condition.</p> <p><i>Resting behaviour:</i> The resting haul-out sites should be maintained in a natural condition.</p> <p><i>Disturbance:</i> Human activities should occur at levels that do not adversely affect the harbour seal population at the site.</p> <p>Potential Effect</p> <p>The proposed survey will introduce underwater noise into the marine environment. The survey is 44 km from this SAC, which is within the foraging range (273km) of harbour seal (Carter et al., 2022). Detailed assessment is required in relation to the potential effects on Harbour Seal. Mitigation measures are required.</p>

5.8 Saltee Islands SAC 000707

5.8.1 Conservation Objectives of Saltee Islands SAC (Grey Seal)

The attributes and targets of grey seal, and the potential impact of the proposed fibre-optic cable survey on this feature of interest of Saltee Islands SAC 000707 (Screened in) are seen in Table 23. All other features of interest were screened out at initial screening.

Table 23. The site-specific Conservation Objectives, overall status of grey seal, and the potential impact of the proposed works on this feature of interest and conservation objectives of Saltee Islands SAC.

Annex Species/Habitats- Qualifying Interest	Overall Conservation Status	<i>Site Specific Conservation Objectives</i> , attributes, targets and perceived impacts.
Grey Seal (Halichoerus grypus) [1364]	Favourable	<p>To maintain the favourable conservation condition of Grey Seal in the Saltee Islands SAC, which is defined by the following list of attributes and targets:</p> <p><i>(Attribute. Target)</i></p> <p><i>Access to suitable habitat:</i> Species range within the site should not be restricted by artificial barriers to site use.</p> <p><i>Breeding behaviour:</i> The breeding sites should be maintained in a natural condition.</p> <p><i>Moulting behaviour:</i> The moult haul-out sites should be maintained in a natural condition.</p> <p><i>Resting behaviour:</i> The resting haul-out sites should be maintained in a natural condition.</p> <p><i>Population composition:</i> The grey seal population occurring within this site should contain adult, juvenile and pup cohorts annually.</p> <p><i>Disturbance:</i> Human activities should occur at levels that do not adversely affect the grey seal population.</p> <p>Potential Effect</p> <p>The proposed survey will introduce underwater noise into the marine environment. The survey is 131 km from this SAC, which is within the foraging range (448km) of grey seal (Carter et al., 2022). Detailed assessment is required in relation to the potential effects on Grey Seal. Mitigation measures are required.</p>

5.9 Roaringwater Bay and Islands SAC 000101

5.9.1 Conservation Objectives of Roaringwater Bay and Islands SAC (Grey Seal & Harbour Porpoise)

The attributes and targets of grey seal and harbour porpoise, and the potential impact of the proposed fibre-optic cable survey on these features of interest of Roaringwater Bay and Islands SAC are seen in Table 24. All other features of interest were screened out at initial screening.

Table 24. The site-specific Conservation Objectives, overall status of grey seal and harbour porpoise, and the potential impact of the proposed works on this feature of interest and conservation objectives of Roaringwater Bay and Islands SAC.

Annex Species/Habitats- Qualifying Interest	Overall Conservation Status	Site Specific Conservation Objectives, attributes, targets and perceived impacts.
Grey Seal (Halichoerus grypus) [1364]	Favourable	<p>To maintain the favourable conservation condition of Grey Seal in Roaringwater Bay and Islands SAC, which is defined by the following list of attributes and targets:</p> <p>(Attribute. Target)</p> <p><i>Access to suitable habitat:</i> Species range within the site should not be restricted by artificial barriers to site use.</p> <p><i>Breeding behaviour:</i> The breeding sites should be maintained in a natural condition.</p> <p><i>Moulting behaviour:</i> The moult haul-out sites should be maintained in a natural condition.</p> <p><i>Resting behaviour:</i> The resting haul-out sites should be maintained in a natural condition.</p> <p><i>Population composition:</i> The grey seal population occurring within this site should contain adult, juvenile and pup cohorts annually.</p> <p><i>Disturbance:</i> Human activities should occur at levels that do not adversely affect the grey seal population at the site.</p> <p>Potential Effect</p> <p>The proposed survey will introduce underwater noise into the marine environment. The survey is 295 km from this SAC, which is within the foraging range (448km) of grey seal (Carter et al., 2022). Detailed assessment is required in relation to the potential effects on Grey Seal. Mitigation measures are required.</p>
[1351] Harbour Porpoise (Phocoena phocoena)	Favourable	<p>To maintain the favourable conservation condition of Harbour Porpoise in Roaringwater Bay and Islands SAC, which is defined by the following list of attributes and targets:</p> <p>(Attribute. Target)</p> <p><i>Access to suitable habitat:</i> Species range within the site should not be restricted by artificial barriers to site use.</p> <p><i>Disturbance:</i> Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site.</p> <p>Potential Effect</p> <p>The proposed survey will introduce underwater noise into the marine environment. The proposed survey area is located within the Celtic and Irish Seas MU for Harbour Porpoise, which includes this SAC (JNCC, 2023). Detailed assessment is required in relation to the potential effects on Harbour Porpoise. Mitigation measures are required.</p>

5.10 Blasket Islands SAC 002172

5.10.1 Conservation Objectives of Blasket Islands SAC (Grey Seal & Harbour Porpoise)

The attributes and targets of grey seal and harbour porpoise, and the potential impact of the proposed fibre-optic cable survey on these features of interest of Blasket Islands SAC are seen in Table 25. All other features of interest were screened out at initial screening.

Table 25. The site-specific Conservation Objectives, overall status of grey seal and harbour porpoise, and the potential impact of the proposed works on this feature of interest and conservation objectives of Blasket Islands SAC.

Annex Species/Habitats- Qualifying Interest	Overall Conservation Status	Site Specific Conservation Objectives, attributes, targets and perceived impacts.
Grey Seal (Halichoerus grypus) [1364]	Favourable	<p>To maintain the favourable conservation condition of Grey Seal in Blasket Islands SAC, which is defined by the following list of attributes and targets:</p> <p>(Attribute. Target)</p> <p><i>Access to suitable habitat:</i> Species range within the site should not be restricted by artificial barriers to site use.</p> <p><i>Breeding behaviour:</i> The breeding sites should be maintained in a natural condition.</p> <p><i>Moulting behaviour:</i> The moult haul-out sites should be maintained in a natural condition.</p> <p><i>Resting behaviour:</i> The resting haul-out sites should be maintained in a natural condition.</p> <p><i>Disturbance:</i> Human activities should occur at levels that do not adversely affect the grey seal population at the site.</p> <p>Potential Effect</p> <p>The proposed survey will introduce underwater noise into the marine environment. The survey is 319 km from this SAC, which is within the foraging range (448km) of grey seal (Carter et al., 2022). Detailed assessment is required in relation to the potential effects on Grey Seal. Mitigation measures are required.</p>
[1351] Harbour Porpoise (Phocoena phocoena)	Favourable	<p>To maintain the favourable conservation condition of Harbour Porpoise in Blasket Islands SAC, which is defined by the following list of attributes and targets:</p> <p>(Attribute. Target)</p> <p><i>Access to suitable habitat:</i> Species range within the site should not be restricted by artificial barriers to site use.</p> <p><i>Disturbance:</i> Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site.</p> <p>Potential Effect</p> <p>The proposed survey will introduce underwater noise into the marine environment. The proposed survey area is located within the Celtic and Irish Seas MU for Harbour Porpoise, which includes this SAC (JNCC, 2023). Detailed assessment is required in relation to the potential effects on Harbour Porpoise. Mitigation measures are required.</p>

5.11 UK SACs Designated for Harbour Porpoise

5.11.1 Conservation Objectives of UK Sites Designated for Harbour Porpoise

The potential impact of the proposed fibre-optic cable survey on the features of interest (screened in) of the following sites designated for harbour porpoise are seen in Table 26:

- North Anglesey Marine/Gogledd Môn Forol (**UK0030398**)
- West Wales Marine / Gorllewin Cymru Forol (**UK0030397**)
- North Channel (**UK0030399**)
- Bristol Channel Approaches/Dynesfeydd Môr Hafren (**UK0030396**)

Table 26. The site-specific Conservation Objectives, overall status of harbour porpoise, and the potential impact of the proposed works on this feature of interest and conservation objectives of the above sites.

Annex Species/Habitats- Qualifying Interest	Overall Conservation Status	<i>Site Specific Conservation Objectives</i> and perceived impacts.
[1351] Harbour Porpoise (Phocoena phocoena)	Unknown	<p>Ensuring:</p> <ol style="list-style-type: none"> 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. <p>Potential Effect</p> <p>The proposed survey will introduce underwater noise into the marine environment. The proposed survey area is located within the Celtic and Irish Seas MU for Harbour Porpoise, which includes the following SACs (JNCC, 2023):</p> <ul style="list-style-type: none"> • North Anglesey Marine/Gogledd Môn Forol (UK0030398) • West Wales Marine / Gorllewin Cymru Forol (UK0030397) • North Channel (UK0030399) • Bristol Channel Approaches/Dynesfeydd Môr Hafren (UK0030396) <p>Detailed assessment is required in relation to the potential effects on Harbour Porpoise. Mitigation measures are required.</p>

5.12 UK SACs Designated for Bottlenose Dolphin

5.12.1 Conservation Objectives of UK Sites Designated for Bottlenose Dolphin

The potential impact of the proposed fibre-optic cable survey on these features of interest (screened in) of the following sites designated for common bottlenose dolphin are seen in Table 27:

- Pen Llyn a'r Sarnau/Lleyn Peninsula and the Sarnau (**UK0013117**)
- Cardigan Bay / Bae Ceredigion (**UK0012712**)

Table 27. The site-specific Conservation Objectives, overall status of common bottlenose dolphin, and the potential impact of the proposed works on this feature of interest and conservation objectives of the above sites.

Annex Species/Habitats- Qualifying Interest	Overall Conservation Status	<i>Site Specific Conservation Objectives</i> and perceived impacts.
[1349] Common Bottlenose Dolphin (<i>Tursiops truncatus</i>)	Unknown	<p>To maintain / restore the favourable conservation condition of Bottlenose Dolphin.</p> <p>Potential Effect</p> <p>The proposed survey will introduce underwater noise into the marine environment. The proposed survey area is located within the Irish Sea MU for Bottlenose Dolphin, which includes the following SACs (JNCC, 2023):</p> <ul style="list-style-type: none"> • Pen Llyn a'r Sarnau/Lleyn Peninsula and the Sarnau (UK0013117) • Cardigan Bay / Bae Ceredigion (UK0012712) <p>Detailed assessment is required in relation to the potential effects on Bottlenose Dolphin. Mitigation measures are required.</p>

5.13 UK SACs Designated for Grey Seal

5.13.1 Conservation Objectives of UK Sites Designated for Grey Seal

The potential impact of the proposed fibre-optic cable survey on these features of interest (screened in) of the following sites designated for grey seal are seen in Table 28:

- Pen Llyn a’r Sarnau/Lleyn Peninsula and the Sarnau (**UK0013117**)
- The Maidens (**UK0030384**)
- Lundy (**UK0013114**)
- Pembrokeshire Marine / Sir Benfro Forol (**UK0013116**)
- Isles of Scilly Complex (**UK0013694**)

Table 28. The site-specific Conservation Objectives, overall status of grey seal, and the potential impact of the proposed works on this feature of interest and conservation objectives of the above sites.

Annex Species/Habitats- Qualifying Interest	Overall Conservation Status	Site Specific Conservation Objectives and perceived impacts.
[1364] Grey Seal (<i>Halichoerus grypus</i>)	Favourable	<p>To maintain / restore the favourable conservation condition of Grey Seal.</p> <p>Potential Effect</p> <p>The proposed survey will introduce underwater noise into the marine environment. The proposed survey area is located within the 448km foraging range of grey seal (Carter et al., 2022), which includes the following SACs:</p> <ul style="list-style-type: none"> • Pen Llyn a’r Sarnau/Lleyn Peninsula and the Sarnau (UK0013117) • The Maidens (UK0030384) • Lundy (UK0013114) • Pembrokeshire Marine / Sir Benfro Forol (UK0013116) • Isles of Scilly Complex (UK0013694) <p>Detailed assessment is required in relation to the potential effects on Grey Seal. Mitigation measures are required.</p>

5.14 UK SACs Designated for Harbour Seal

5.14.1 Conservation Objectives of UK Sites Designated for Harbour Seal

The potential impact of the proposed fibre-optic cable survey on these features of interest (screened in) of the following sites designated for harbour seal are seen in Table 29:

- Murlough (**UK0016612**)
- Strangford Lough (**UK0016618**)

Table 29. The site-specific Conservation Objectives, overall status of harbour seal, and the potential impact of the proposed works on this feature of interest and conservation objectives of the above sites.

Annex Species/Habitats- Qualifying Interest	Overall Conservation Status	<i>Site Specific Conservation Objectives</i> and perceived impacts.
[1351] Harbour Seal (<i>Phoca vitulina</i>)	Unfavourable - Inadequate	<p>To maintain / restore the favourable conservation condition of Harbour Seal.</p> <p>Potential Effect</p> <p>The proposed survey will introduce underwater noise into the marine environment. The proposed survey area is located within the 273km foraging range of harbour seal (Carter et al., 2022), which includes the following SACs:</p> <ul style="list-style-type: none"> • Murlough (UK0016612) • Strangford Lough (UK0016618) <p>Detailed assessment is required in relation to the potential effects on Harbour Seal. Mitigation measures are required.</p>

5.15 French SACs Designated for Harbour Porpoise

5.15.1 Conservation Objectives of French Sites Designated for Harbour Porpoise

The potential impact of the proposed fibre-optic cable survey on these features of interest of the following sites designated for harbour porpoise are seen in Table 30:

- Nord Bretagne DH (FR2502022)
- Récifs et landes de la Hague (FR2500084)
- Anse de Vauville (FR2502019)
- Mers Celtiques – Talus du golfe de Gascogne (FR5302015)
- Banc et récifs de Surtainville (FR2502018)
- Côte de Granit rose-Sept-Iles (FR5300009)
- Trégor – Goëlo (FR5300010)
- Baie de Morlaix (FR5300015)
- Abers – Côtes des legends (FR5300017)
- Rivière Leguer, forêts de Beffou, Coat an Noz et Coat an Hay (FR5300008)
- Cap d’Erquy-Cap Fréhel (FR5300011)
- Ouessant-Molène (FR5300018)
- Chausey (FR2500079)
- Baie de Saint-Brieuc – Est (FR5300066)
- Côtes de Crozon (FR5302006)
- Baie du Mont Saint-Michel (FR2500077)
- Baie de Lancieux, Baie de l’Arguenon, Archipel de Saint Malo et Dinard (FR5300012)
- Estuaire de la Rance (FR5300061)
- Chaussée de Sein (FR5302007)
- Récifs du talus du golfe de Gascogne (FR5302016)

Table 30. The site-specific Conservation Objectives, overall status of harbour porpoise, and the potential impact of the proposed works on this feature of interest (screened in) and conservation objectives of the above sites.

Annex Species/Habitats- Qualifying Interest	Overall Conservation Status	Site Specific Conservation Objectives and perceived impacts.
[1351] Harbour Porpoise (Phocoena phocoena)	Poor	<p>To maintain (or restore where appropriate) the qualifying interests to favourable condition.</p> <p>Potential Effect</p> <p>The proposed survey will introduce underwater noise into the marine environment. The proposed survey area is located within the Celtic and Irish Seas MU for Harbour Porpoise, which includes the following SACs (JNCC, 2023):</p> <ul style="list-style-type: none"> • Nord Bretagne DH (FR2502022) • Récifs et landes de la Hague (FR2500084) • Anse de Vauville (FR2502019) • Mers Celtiques – Talus du golfe de Gascogne (FR5302015) • Banc et récifs de Surtainville (FR2502018) • Côte de Granit rose-Sept-Iles (FR5300009) • Trégor – Goëlo (FR5300010) • Baie de Morlaix (FR5300015) • Abers – Côtes des legends (FR5300017) • Rivière Leguer, forêts de Beffou, Coat an Noz et Coat an Hay (FR5300008) • Cap d’Erquy-Cap Fréhel (FR5300011) • Ouessant-Molène (FR5300018)

Annex Species/Habitats- Qualifying Interest	Overall Conservation Status	<i>Site Specific Conservation Objectives</i> and perceived impacts.
		<ul style="list-style-type: none"> • Chausey (FR2500079) • Baie de Saint-Brieuc – Est (FR5300066) • Côtes de Crozon (FR5302006) • Baie du Mont Saint-Michel (FR2500077) • Baie de Lancieux, Baie de l’Arguenon, Archipel de Saint Malo et Dinard (FR5300012) • Estuaire de la Rance (FR5300061) • Chaussée de Sein (FR5302007) • Récifs du talus du golfe de Gascogne (FR5302016) <p>Detailed assessment is required in relation to the potential effects on Harbour Porpoise. Mitigation measures are required.</p>

6. Further information on the potential impacts on Cetaceans and Pinnipeds

All cetaceans are listed under Annex IV of the Habitats Directive, which means that they are protected wherever they occur. Bottle-nosed Dolphin and Harbour Porpoise are also listed under Annex II of the Directive. Annex II species require that core areas of their habitat are designated as sites of Community importance.

The proposed survey would be expected to impact on cetaceans primarily through the emission of noise due to the vessel and from survey equipment including multibeam. As outlined by O'Brien (2005), 'sound travels 4.5 times faster in water than in air and low frequency sounds travel farther underwater than high frequency sounds.' Multi-beam can be defined as Low frequency (<1 kHz), Mid-frequency (1-10 kHz) and High Frequency (>10 kHz).

Southall *et al.* (2019) outlined in their publication "Marine Mammal Noise Exposure Criteria: Updated Scientific Recommendations for Residual Hearing Effects" revised the marine mammal hearing groups, which are seen in Table 31.

Table 31. Marine Mammal Functional Hearing Groups and Estimated Functional Hearing groups Proposed by Southall *et al.* (2019)

Marine mammal hearing group	Auditory weighting function	Genera (or species) included
Low-frequency cetaceans	LF	<i>Balaenidae</i> (<i>Balaena</i> , <i>Eubalaenidae</i> spp.); <i>Balaenopteridae</i> (<i>Balaenoptera physalus</i> , <i>B. musculus</i>)
		<i>Balaenopteridae</i> (<i>Balaenoptera acutorostrata</i> , <i>B. bonaerensis</i> , <i>B. borealis</i> , 1 <i>B. edeni</i> , <i>B. omurai</i> ; <i>Megaptera novaeangliae</i>); <i>Neobalenidae</i> (<i>Caperea</i>); <i>Eschrichtiidae</i> (<i>Eschrichtius</i>)
High-frequency cetaceans	HF	<i>Physeteridae</i> (<i>Physeter</i>); <i>Ziphiidae</i> (<i>Berardius</i> spp., <i>Hyperoodon</i> spp., <i>Indopacetus</i> , <i>Mesoplodon</i> spp., <i>Tasmacetus</i> , <i>Ziphius</i>); <i>Delphinidae</i> (<i>Orcinus</i>)
		<i>Delphinidae</i> (<i>Delphinus</i> , <i>Feresa</i> , <i>Globicephala</i> spp., <i>Grampus</i> , 2 <i>Lagenodelphis</i> , <i>Lagenorhynchus acutus</i> , <i>L. albirostris</i> , <i>L. obliquidens</i> , <i>L. obscurus</i> , <i>Lissodelphis</i> spp., <i>Orcaella</i> spp., <i>Peponocephala</i> , <i>Pseudorca</i> , <i>Sotalia</i> spp., <i>Sousa</i> spp., <i>Stenella</i> spp., <i>Steno</i> , <i>Tursiops</i> spp.); <i>Montodontidae</i> (<i>Delphinapterus</i> , <i>Monodon</i>); <i>Plantanistidae</i> (<i>Plantanista</i>)
Very high frequency cetaceans	VHF	<i>Delphinidae</i> (<i>Cephalorhynchus</i> spp.; <i>Lagenorhynchus cruciger</i> , <i>L. australis</i>); <i>Phocoenidae</i> (<i>Neophocaena</i> spp., <i>Phocoena</i> spp., <i>Phocoenoides</i>); <i>Iniidae</i> (<i>Inia</i>); <i>Kogiidae</i> (<i>Kogia</i>); <i>Lipotidae</i> (<i>Lipotes</i>); <i>Pontoporiidae</i> (<i>Pontoporia</i>)
Phocid carnivores in water	PCW	<i>Phocidae</i> (<i>Cystophora</i> , <i>Erignathus</i> , <i>Halichoerus</i> , <i>Histriophoca</i> , <i>Hydrurga</i> , <i>Leptonychotes</i> , <i>Lobodon</i> , <i>Mirounga</i> spp., <i>Monachus</i> , <i>Neomonachus</i> , <i>Ommatophoca</i> , <i>Pagophilus</i> , <i>Phoca</i> spp., <i>Pusa</i> spp.)

The Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (NOAA, 2018) outlined the hearing groups of marine mammals including the generalised hearing range of these cetacean groups (Table 32). They also noted that "Exposures exceeding the specified respective criteria level for any exposure metric are interpreted as resulting in predicted temporary threshold shift (TTS) or permanent threshold shift (PTS) onset." The onset of PTS on marine mammals was also outlined in NOAA 2018 (Table 33). The updated figures for PTS and TTS for are outlined in Table 34.

The hearing ranges and sensitivity of marine mammals differ from one species to another depending on their audiogram. "For example, harbour porpoises are sensitive from 3 kHz to 130 kHz, with peak sensitivity at 125-130 kHz, and bottlenose dolphins from 5-110 kHz, with peak sensitivity at 40 and 60-116 kHz" (Southall *et al.*, 2007). Common seals are sensitive 4-45 kHz (peak sensitivity at 32 kHz) and grey seals 8-40 kHz. Humans are sensitive only to frequencies from 20 Hz to 16-18 kHz but with peak sensitivity from 2-4 kHz.

Table 32. Hearing Groups of Marine Mammals (NOAA, 2018)

Hearing Group	Generalized Hearing Range*
Low-frequency (LF) cetaceans (baleen whales)	7 Hz to 35 kHz
Mid-frequency (MF) cetaceans (dolphins, toothed whales, beaked whales, bottlenose whales)	150 Hz to 160 kHz
High-frequency (HF) cetaceans (true porpoises, Kogia, river dolphins, cephalorhynchid, Lagenorhynchus cruciger & L. australis)	275 Hz to 160 kHz
Phocid pinnipeds (PW) (underwater) (true seals)	50 Hz to 86 kHz
Otariid pinnipeds (OW) (underwater) (sea lions and fur seals)	60 Hz to 39 kHz

* Represents the generalized hearing range for the entire group as a composite (i.e., all species within the group), where individual species' hearing ranges are typically not as broad. Generalized hearing range chosen based on ~65 dB threshold from normalized composite audiogram, with the exception for lower limits for LF cetaceans (Southall et al. 2007) and PW pinniped (approximation).

Table 33. Onset of PTS in Marine mammals

Hearing Group	PTS Onset Thresholds (Received Level)	
	Impulsive ¹	Non-impulsive ²
Low-Frequency (LF) Cetaceans	Cell 1 <i>Lpk,flat</i> : 219 dB <i>LE,LF,24h</i> : 183 dB	Cell 2 <i>LE,LF,24h</i> : 199 dB
Mid-Frequency (MF) Cetaceans	Cell 3 <i>Lpk,flat</i> : 230 dB <i>LE,MF,24h</i> : 185 dB	Cell 4 <i>LE,MF,24h</i> : 198 dB
High-Frequency (HF) Cetaceans	Cell 5 <i>Lpk,flat</i> : 202 dB <i>LE,HF,24h</i> : 155 dB	Cell 6 <i>LE,HF,24h</i> : 173 dB
Phocid Pinnipeds (PW) (Underwater)	Cell 7 <i>Lpk,flat</i> : 218 dB <i>LE,PW,24h</i> : 185 dB	Cell 8 <i>LE,PW,24h</i> : 201 dB
Otariid Pinnipeds (OW) (Underwater)	Cell 9 <i>Lpk,flat</i> : 232 dB <i>LE,OW,24h</i> : 203 dB	Cell 10 <i>LE,OW,24h</i> : 219 dB

¹Impulsive: produce sounds that are typically transient, brief (less than 1 second), broadband, and consist of high peak sound pressure with rapid rise time and rapid decay (ANSI 1986; NIOSH 1998; ANSI 2005).

²Non-impulsive: produce sounds that can be broadband, narrowband or tonal, brief or prolonged, continuous or intermittent) and typically do not have a high peak sound pressure with rapid rise/decay time that impulsive sounds do (ANSI 1995; NIOSH 1998).

Table 34. Southall *et al.* (2019) TTS- and PTS-onset thresholds for marine mammals exposed to impulsive noise: SEL thresholds in dB re 1 $\mu\text{Pa}^2\text{s}$ under water and dB re (20 μPa)²s; and peak SPL thresholds in dB re 1 μPa under water.

Hearing Group	Impulsive Noise		Non-impulsive Noise
	Unweighted SPLpeak(dB re 1 μPa)	Weighted SELcum (dB re 1 $\mu\text{Pa}^2\text{s}$)	Weighted SELcum (dB re 1 $\mu\text{Pa}^2\text{s}$)
PTS Criteria			
Low-frequency (LF) cetaceans	219	183	199
High-frequency (HF) cetaceans	230	185	198
Very-frequency cetaceans (VHF)	202	155	173
Phocid carnivores in water (PCW)	218	185	201
TTS Criteria			
Low-frequency cetaceans	213	168	179
High-frequency cetaceans	224	170	178
Very high-frequency cetaceans	196	140	153
Phocid carnivores in water	212	170	181

Most small cetaceans, excluding harbour porpoise, have an auditory bandwidth of 150 Hz to – 160 kHz, while harbour porpoise have an auditory bandwidth within 200 Hz to 180 kHz. Pinnipeds in water are thought to have an auditory bandwidth of between of 75 Hz to 75 kHz and from 75 Hz to 30 kHz in air (Southall et al. 2007).”

The proposed survey equipment and the noise frequency emissions are seen in Table 35.

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 35a. Details of the proposed types of acoustic equipment which emit sound.

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 35b. Details of the proposed types of geophysical equipment which emit sound.

The cetacean species observed in the survey area are high frequency, mid-frequency and low frequency cetaceans. Grey and Common Seals may also be present. The proposed survey equipment and the noise frequency emissions are seen in Table 31. The high frequencies emitted from the equipment are above the auditory range of the mid frequency (150Hz-160 kHz) but within the hearing range of high frequency cetaceans (275Hz -160kHz)- observed and on the proposed survey area.

The Multibeam Echo Sounder (MBES) (200 kHz to 500 kHz) and Side Scan Sonar (SSS)(200 kHz to 700 kHz), single beam echo sounder and Multi Beam Echo Sounder (MBES) will emit noise above the hearing frequency of marine mammals. The hull mounted Sub-bottom Profiler (SBP) – Pinger (2 kHz to 15 kHz) and Sub-bottom Profiler (SBP) - Chirper(2 kHz to 13 kHz), Sub-bottom Profiler (SBP) - Boomer (15 to 500 Hz), Sub-bottom Profiler (SBP) – Parametric (4 to 15 kHz, 85 to 115 kHz) and Ultra-Short Base Line (USBL) Subsea positioning. (20 kHz to 50 kHz) emits low and mid frequency noise, within the auditory range of all marine mammals including harbour porpoise, grey seal and harbour seal. However, all of the equipment (peak noise) at 1m from source emit noise above the onset of PTS for non-impulsive sounds for high, medium, low frequency cetaceans and Phocid Pinnipeds outlined by NOAA (2018) was 173 dB, 198 dB, 199 dB and 219dB respectively and the 198dB proposed injury levels indicated by Southall et al. (2019). As a result negative impacts may be foreseen if marine mammals are close enough to the equipment to receive sound levels above this indicative threshold. As outlined in Table 7 the inshore Geophysical Survey will be undertaken in 3 to 4 days (weather and sea state dependent) and the offshore Geophysical Survey in 14 to 18 days (weather and sea state dependent).

Lurton (2016) modelled the sound field radiated by multibeam echosounders for acoustical impact assessment. He stated that “considering the injury criteria, the results illustrate that injury hazards are possible only at very short distances from the source: e.g. about 5 m for maximum Sound Pressure Level and 12 m for cumulative Sound Exposure Level in the case of a 240-dB source level, considering cetaceans. For behavioural response criteria, the corresponding values are 9 m and 70 m.”

As previously outlined the estimated time that the survey would take (excluding SI) within the Rockabill to Dalkey SAC would be 390 minutes. The operations would comply with the NPWS (2014) “*Guidance to manage the risk to marine mammals from man-made sound sources in Irish waters*”. These guidelines would be deemed adequate to mitigate the negative impacts of the proposed works. Cetaceans in the vicinity of the vessel during start up procedures would be given ample time to leave the site with the soft start procedures outlined in the guidelines. In addition, vessel speeds are extremely slow which would give marine mammals ample opportunity to move from the area.

Note: in relation to consistency between Southall (2019) and NOAA (2018)

The Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (NOAA, 2018) (or National Marine Fisheries Service, 2018 (as quoted in Southall 2019)), outlines the hearing groups of marine mammals including the generalised hearing range of these cetacean groups (Annex II). NOAA (2018) also noted that *“Exposures exceeding the specified respective criteria level for any exposure metric are interpreted as resulting in predicted temporary threshold shift (TTS) or permanent threshold shift (PTS) onset.”* The thresholds for the onset of PTS on marine mammals were also outlined in NOAA 2018. The updated Southall (2019) figures for PTS and TTS for are outlined in Annex IV.

Southall (2019) outlined the main differences between their publication and previous publications including NOAA (2018) which was referenced as NMFS (2018) in Southall (2019). Southall (2019) states that *“The noise criteria here represent the next step in a sequential process of evolution of the criteria proposed by Southall et al. (2007), substantially modified with new analytical methods by Finneran (2016), and recently adopted as U.S. regulatory guidance by the NMFS (2016, 2018). While the quantitative process described herein and the resulting exposure criteria here are based on, and in many respects are identical to, those derived by Finneran (2016) and adopted by the NMFS (2016, 2018), there are a number of significant distinctions. The exposure criteria here appear in a peer-reviewed publication and include all marine mammal species for all noise exposures, both under water and in air for amphibious species. NMFS (2016, 2018) provides regulatory guidance only for the subset of marine mammals under their jurisdiction and do not include criteria for aerial noise exposures, an important consideration in many locations for which some earlier assessments were made (Finneran & Jenkins, 2012). The exposure criteria here, while based on the Finneran (2016) quantitative method and consistent with the NMFS (2016, 2018) guidance where they overlap, are thus more broadly relevant, peer-reviewed, and less subject to potential changes in national regulatory policy.”*

Southall (2019) also stated that *“It should be noted that this results in some proposed differences in the terminology of hearing groups relative to those used in Finneran (2016) and NMFS (2016, 2018). These proposed differences in nomenclature may be confusing, but we believe they are justified (see the “Marine Mammal Hearing Groups and Estimated Group Audiograms” section and Appendices 1-6) and will support future criteria as new information emerges.”*

The difference in nomenclature between NOAA 2018 and Southall (2019) is that NOAA (2018) classified cetaceans as Low-frequency (LF) cetaceans (baleen whales), Mid-frequency (MF) cetaceans (dolphins, toothed whales, beaked whales, bottlenose whales) and High-frequency (HF) cetaceans (true porpoises, Kogia, river dolphins, cephalorhynchid, Lagenorhynchus cruciger & L. australis) while Southall reclassified these groups to Low-frequency cetaceans, High-frequency cetaceans, Very high-frequency cetaceans. As outlined in Southall (2019) *“The distinction between HF and VHF cetacean groups (as opposed to mid- and high-frequency) reflects the regions of best hearing sensitivities within these groups, often including frequencies approaching or exceeding 100 kHz; these frequencies would be more appropriately described within marine bioacoustics as high to very high. Further, as discussed in more detail below, a number of anatomical and sound production properties suggest a potential distinction of very low-(VLF) and LF cetaceans among mysticetes. Some evidence also suggests a potential segregation of mid-frequency (MF) and HF cetaceans in addition to the distinction of HF and VHF cetaceans.”* This is in effect a relabelling of Mid-Frequency (MF) Cetaceans and High-Frequency (HF) Cetaceans to High-frequency cetaceans and Very high-frequency cetaceans respectively. It should be clearly noted that the PTS values within the updated groups were identical between NOAA, 2018 and Southall 2019 and it was in effect a renaming of the groups.

7. Mitigation Measures & Monitoring

Specific controls will be incorporated into the proposed project to minimise the potential negative effects on the features of interest of the Natura 2000 sites screened in for NIS and are outlined in below:

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

Disturbance

The proposed survey route is within a busy port. As a result, the presence of additional personnel on the shore, intertidal and subtidal would not cause a significant additional disturbance. However, there is potential for disturbance of the mudflats and sandflats and as a result the following mitigation measures would be carried out:

1. An ecologist would be onsite during the surveys within the terrestrial/intertidal and subtidal within Dublin Bay in order to minimise disturbance and ensure site integrity is maintained.
2. Drift lines and vegetation on the shore in close proximity to the proposed route would contain the highest proportion of potential food source for bird species. If present, these should be avoided by machinery and personnel.
3. Any temporary access arrangements or structures that are put in place to allow machinery access to the shore area should be prepared in consultation with an ecologist and the site should be fully reinstated post works. Silt protection measures will be in place if deemed necessary by the project ecologist.
4. Bilges will be emptied prior to entering works areas and oil if present removed by oil absorbent materials. All boats will possess spill kits and oil absorbent material/booms.
5. Works in the intertidal area of Dublin Bay will take place when the mudflats and sandflats are covered by water.

Reinstatement

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

Subtidal

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

1. Mitigation measures will include the presence of a MMO onboard the survey vessel. The purpose of the MMO is to ensure that there is no disturbance of seal /cetacean populations.
2. The NPWS Guidance to manage the risk to marine mammals from man-made sound sources in Irish waters' (NPWS, 2014) should be followed throughout the survey.
3. The MMO/ecologist will ensure that mitigation measures are carried out. Sufficient resources should be made immediately available on the survey vessel to deal with accidental oil spills including hydraulic hoses bursting etc. and reported to the on-board ecologist.
4. The vessels operating within Dublin Bay will be inspected by the ecologist for pollution sources. Any pollutions sources identified by the ecologist to form a risk to the European Sites will be rectified immediately before works commence/recommence. The ecologist will maintain a watching brief in relation to pollution risks and observations.

8. Natura Impact Statement Conclusions

The conservation objectives of Natura 2000 sites within, and beyond 15km where there is a potential for significant effects, of the proposed cable survey route were assessed.

It was determined that the project may cause localised disturbance to the habitats within Dublin Bay due to pollution risk. In addition, there is potential for noise effects to harbour porpoise, harbour seals, grey seals, and bottlenose dolphin during the survey periods, in the absence of mitigation. However, these impacts are deemed to be short term for the period of works (3-4 days for inshore marine survey). Mitigation measures including ecological supervision and compliance with “Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Waters (NPWS, 2014) are to be carried out.

This NIS has involved the examination, analysis and evaluation of all relevant information including, a description of the proposed project, its survey methodology, the environment in which the project will be placed, Natura 2000 sites within the potential ZOI of the proposed project, and has applied the precautionary principle in the preparation of the conclusion. It is the professional opinion of the author of this report that there will be no adverse effects on the integrity of any Natura 2000 sites following the implementation of the mitigation measures outlined. The implementation of standard mitigation measures including the measures outlined, including onsite monitoring, the presence of a MMO, will be sufficient to prevent adverse effects on the integrity of Natura 2000 sites.

The mitigation measures detailed in this NIS have been carefully considered to ensure no adverse effects on the integrity of the following NATURA 2000 sites in light of the site’s conservation objectives and status:

- North Dublin Bay SAC, Rockabill to Dalkey Island SAC, North Bull Island SPA, South Dublin Bay to River Tolka Estuary SPA, North-West Irish Sea SPA (potential effects as a result of pollution) and,
- Rockabill to Dalkey Island SAC, Lambay Island SAC, Slaney River Valley SAC, Saltee Islands SAC, Roaringwater Bay and Islands SAC, Blasket Islands SAC, North Anglesey Marine/Gogledd Môn Forol, West Wales Marine / Gorllewin Cymru Forol, Pen Llyn a’r Sarnau/Lleyn Peninsula and the Sarnau, Murlough, North Channel, Strangford Lough, Cardigan Bay / Bae Ceredigion, Pembrokeshire Marine / Sir Benfro Forol, The Maidens, Bristol Channel Approaches/Dynesfeydd Môr Hafren, Lundy, Isles of Scilly Complex, Nord Bretagne DH, Récifs et landes de la Hague, Anse de Vauville, Mers Celtiques – Talus du golfe de Gascogne, Banc et récifs de Surtainville, Côte de Granit rose-Sept-Iles, Trégor – Goëlo, Baie de Morlaix, Abers – Côtes des legends, Rivière Leguer, forêts de Beffou, Coat an Noz et Coat an Hay, Cap d’Erquy-Cap Fréhel, Ouessant-Molène, Chausey, Baie de Saint-Brieuc – Est, Côtes de Crozon, Baie du Mont Saint-Michel, Baie de Lancieux, Baie de l’Arguenon, Archipel de Saint Malo et Dinard, Estuaire de la Rance, Chaussée de Sein, Récifs du talus du golfe de Gascogne (potential impact on harbour porpoise, bottlenose dolphin, grey seal, harbour seal). Standard mitigation measures used for harbour porpoise, bottlenose dolphin, grey seal, and harbour seal,

Based on the assessment of the proposed development (survey) alone and in combination with other projects and plans, including the implementation of mitigation measures, it can be concluded that no adverse effects on the sites’ integrity will arise, in view of the site’s conservation objectives.

This report presents a Stage II Natura Impact Statement for the proposed survey, outlining the information required for the competent authority to screen for appropriate assessment and to determine whether or not the Proposed Development, either alone or in combination with other plans and projects, in view of best scientific knowledge, will adversely affect the integrity of European sites.

On the basis of the content of this report, the competent authority is enabled to conduct an Appropriate Assessment and consider whether, either alone or in combination with other plans or projects, in view of best scientific knowledge and in view of the sites conservation objectives, will adversely affect the integrity of the European site **No significant effects will arise on Natura 2000 sites, their features of interest or conservation objectives. The proposed project will not will adversely affect the integrity of European sites.**

9. Data used for the NIS

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 site visit was carried out on the August 2023 in the landfall area.

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