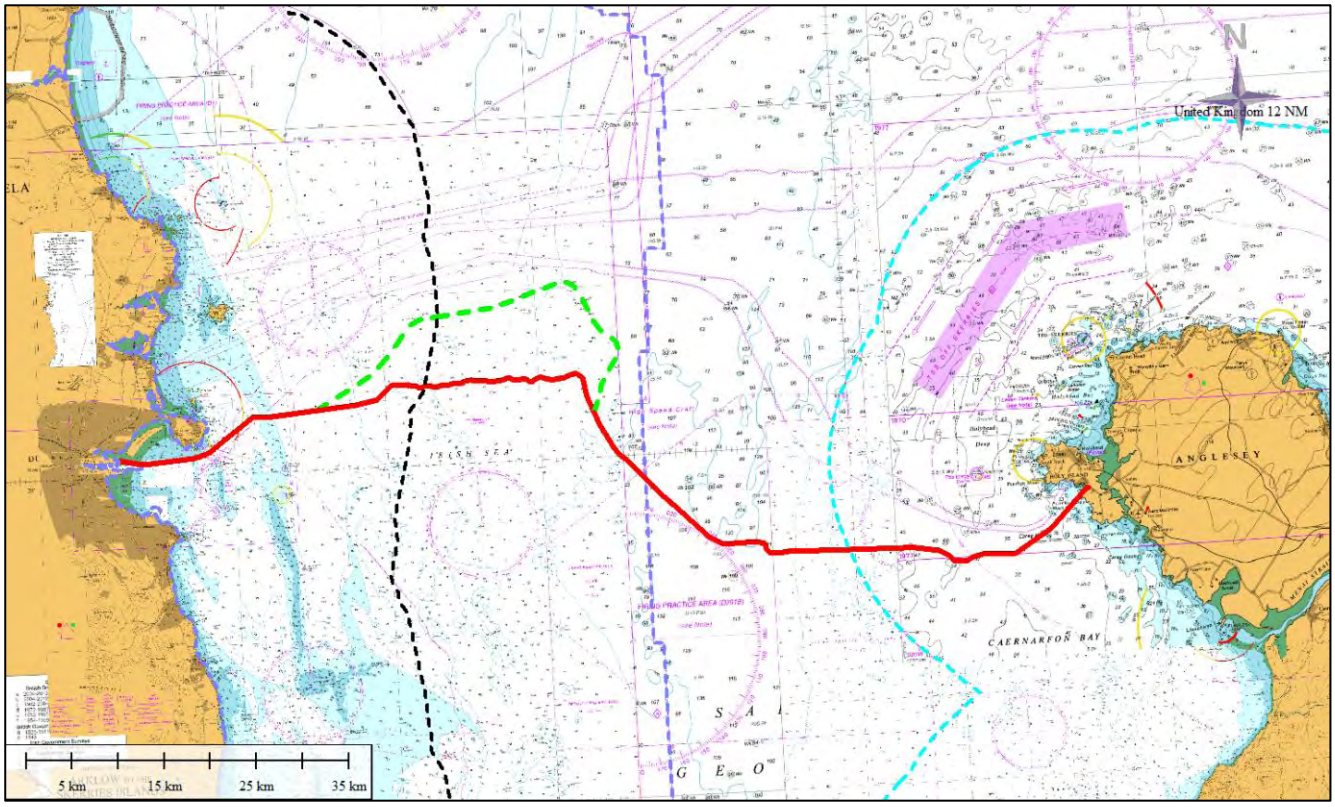
ALTEMAR

Marine & Environmental Consultancy

Ecological Impact Assessment (EcIA) for marine survey and site investigation works for a fibre optic cable in the vicinity of Dublin Bay.



28th November 2023

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

Altemar Ltd., 50 Templecarrig Upper, Delgany, Co. Wicklow. 00-353-1-2010713. info@altemar.ie
Directors: Bryan Deegan and Sara Corcoran
Company No.427560 VAT No. 9649832U
www.altemar.ie

Document Control Sheet			
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Introduction

Background

Ecological Impact Assessment (EcIA) has been defined as '*the process of identifying, quantifying and evaluating the potential impacts of defined actions on ecosystems or their components*' (Treweek, 1999). "*The purpose of EcIA is to provide decision-makers with clear and concise information about the likely ecological effects associated with a project and their significance both directly and in a wider context. Protecting and enhancing biodiversity and landscapes and maintaining natural processes depends upon input from ecologists and other specialists at all stages in the decision-making and planning process; from the early design of a project through implementation to its decommissioning*" (IEEM, 2010).

The following EcIA has been prepared by Altemar Ltd. at the request of McMahon Design and Management Ltd. for marine survey and site investigation works for a fibre optic cable in the vicinity of Dublin Bay.

Study Objectives

The objectives of this EcIA are to:

1. Outline the project and any alternatives assessed;
2. Undertake a baseline ecological feature, resource and function assessment of the site and zone of influence;
3. Assess and define significance of the direct, indirect and cumulative ecological impacts of the project during its construction, lifetime and decommissioning stages;
4. Refine, where necessary, the project and propose mitigation measures to remove or reduce impacts through sustainable design and ecological planning; and
5. Suggest monitoring measures to follow up the implementation and success of mitigation measures and ecological outcomes.

The following guidelines have been used in preparation of this EcIA:

- Guidelines on the information to be contained in EIARs (2022);
- Guidelines for Ecological Impact Assessment (EcIA) (IEEM, 2019);
- Advice Notes on current practice in the preparation of EIS's (EPA, 2003);
- Institute of Ecology and Environmental Management Guidelines for EIA (IEEM, 2005).

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. Bryan Deegan, the managing director of Altemar, is an Environmental Scientist and Marine Biologist with 28 years' experience working in Irish terrestrial and aquatic environments, providing services to the State, Semi-State and industry. He is currently contracted to Inland Fisheries Ireland as the sole "External Expert" to environmentally assess internal and external projects. Bryan Deegan has been the project ecologist for nine marine fibre optic cable projects (from design stage to installation), within Ireland and the UK. Bryan Deegan (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).

Description of the Proposed Project

Background

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.

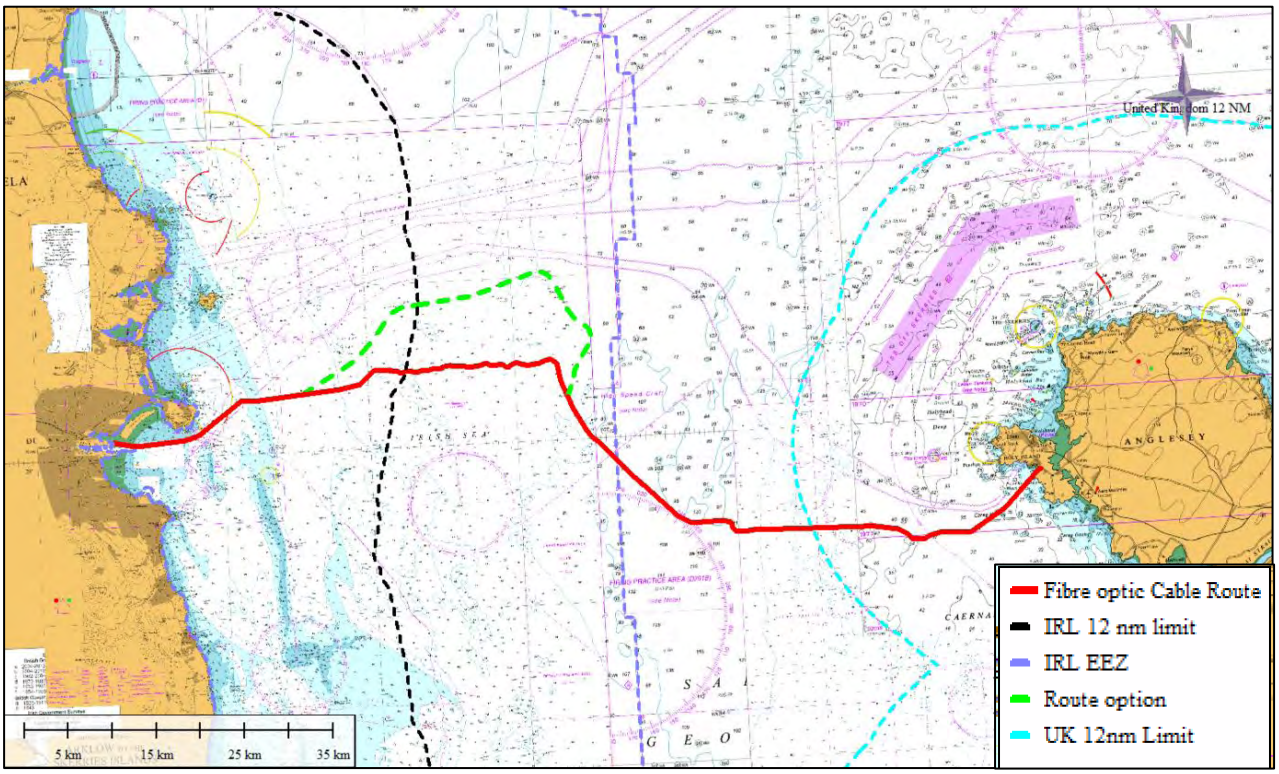


Figure 1. Proposed SOBR1 Telecoms Cable System

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.

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.

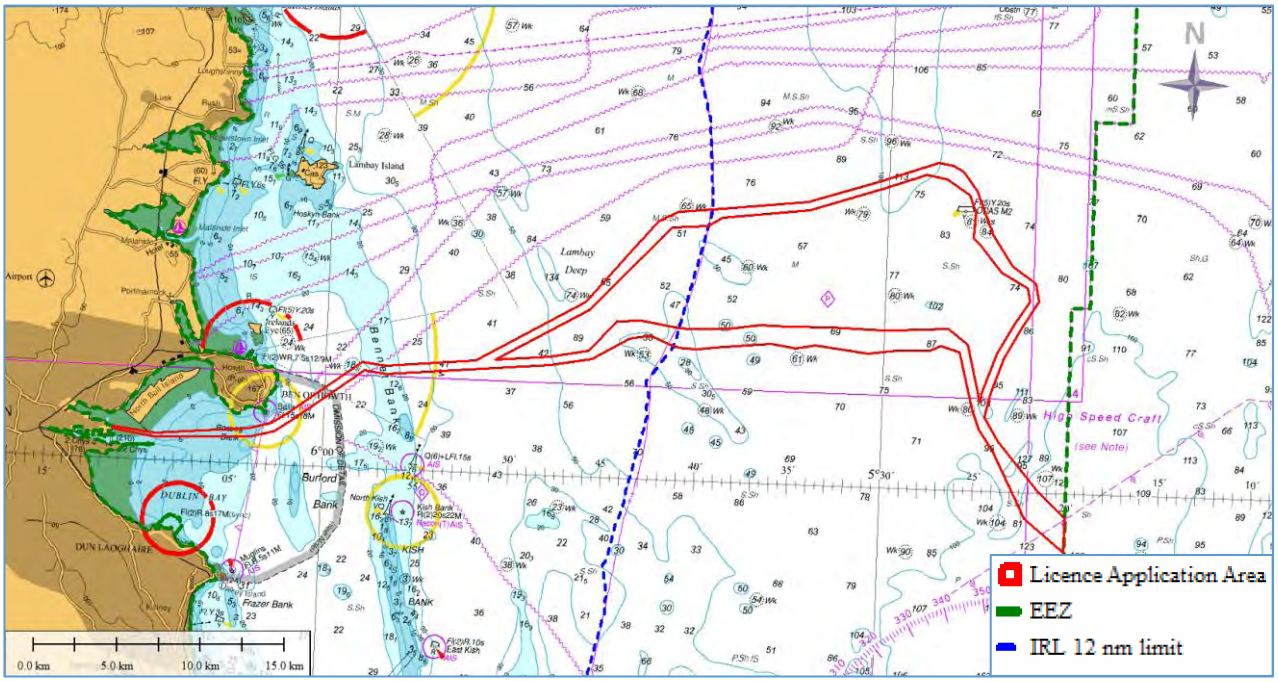


Figure 2. Proposed Survey Licence Application Area.

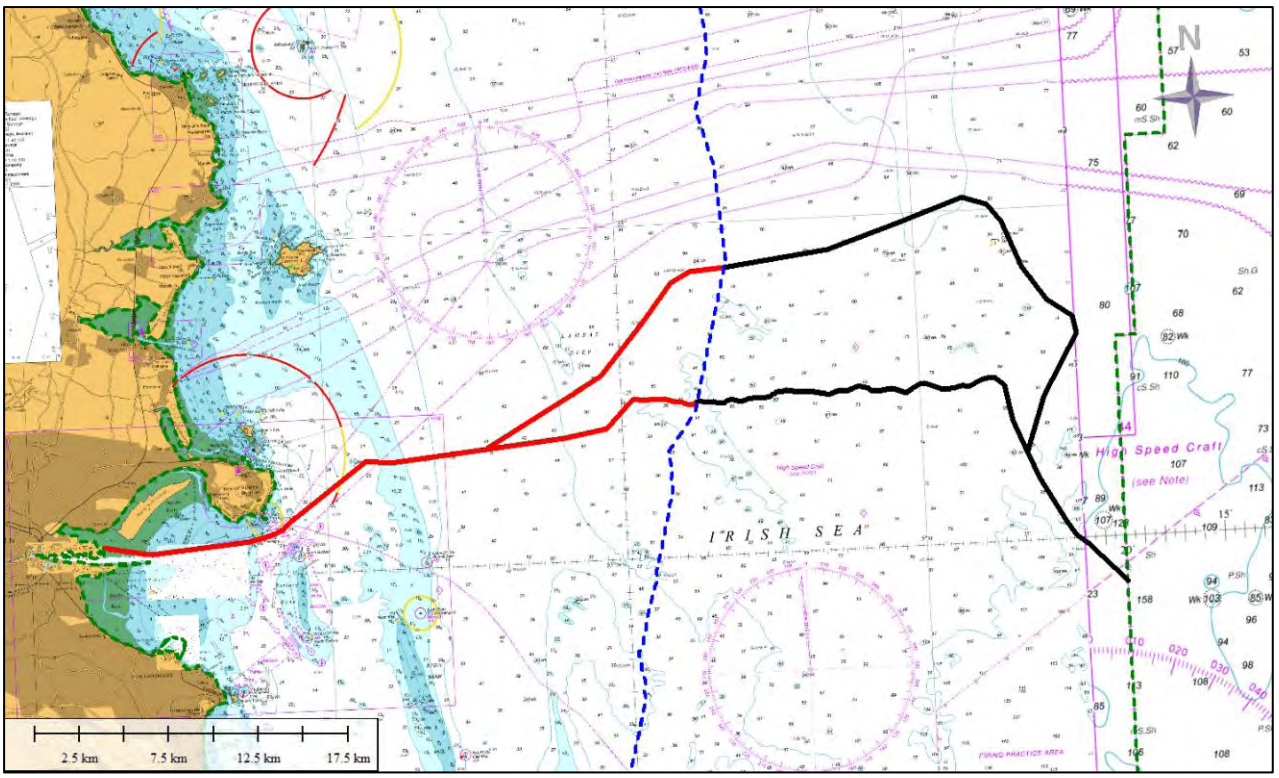


Figure 3. Offshore Survey Route.

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

Landfalls & Inshore Survey Corridors.

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

Figure 4. Landfall Locations.

Dublin Port

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

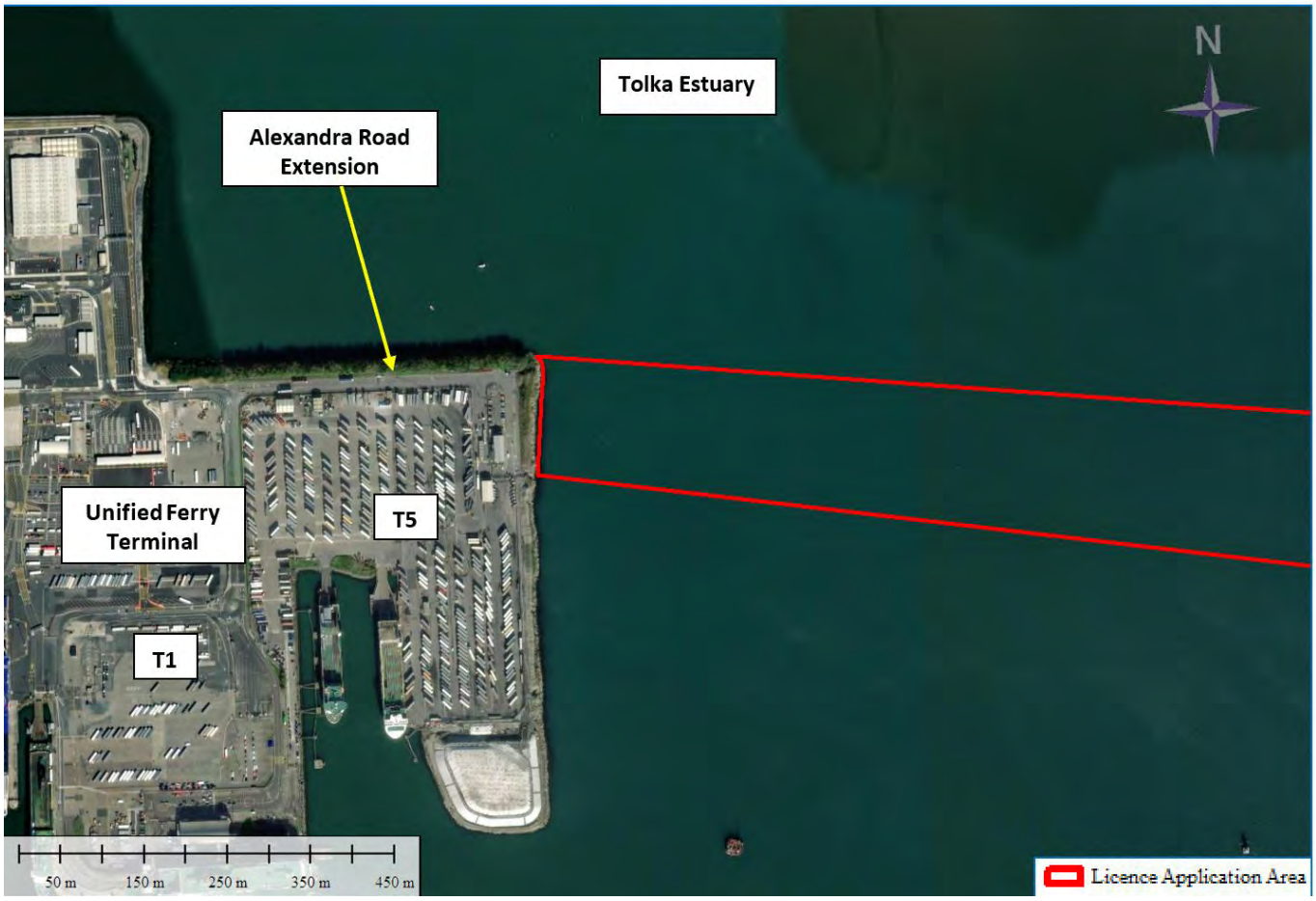


Figure 5. Landfall at Dublin Port

Figure 6. Landfall Access at T5

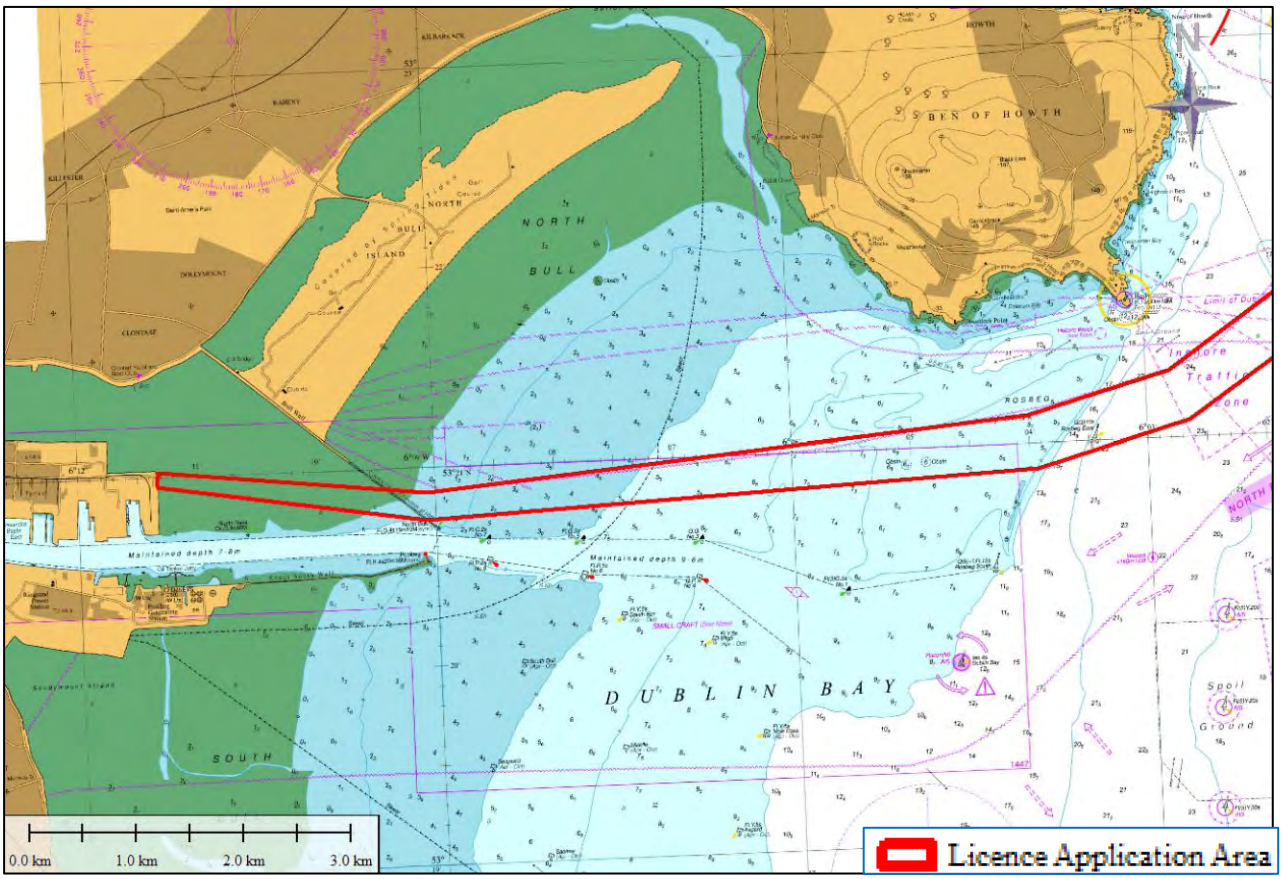


Figure 7. Inshore Survey Sections and Landfall.

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

The objectives of the marine geophysical survey shall be:

- To collect up to date high-resolution bathymetry along a 400 – 1500m wide cable corridor within the License Application Area;
- To obtain information on the seabed surface (type, texture, variability, etc.) and in particular, to identify any seabed features that may be of interest.
- Identify any shallow geohazards and man-made hazards (including but not limited to outcropping, boulders, shallow gas, wrecks, debris etc.);
- Determine the stratigraphy of the upper layers of the seabed along the cable route and quantify the variability in the lateral and vertical extents to depths of 2-5m
- Identify any magnetic anomalies;

- Identify sensitive marine habitats which will need to be avoided during site investigations and sampling.

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

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

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

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

Landfall Survey & Site Investigations

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

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

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

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

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

Inshore Marine Survey

The area extending seaward from the low water mark at the landfall and inshore of the safe working draft limits of the primary survey vessel will be accurately surveyed with a small craft or Unmanned Survey Vessel (USV) using Multibeam Echosounder (MBES), sidescan sonar, marine magnetometer and sub-bottom profile equipment. Sub-bottom profile equipment will be able to discern the nature and density of the upper 3 metres of seabed and will be used on a non-interfering basis with other sounding systems. A minimum of seven survey lines, based upon the Survey RPL, is required.

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

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

Table 2. Inshore Survey.

Offshore Marine Survey

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

Sub-bottom profile equipment will be able to discern the nature and density of the upper 3 metres of seabed and will be used on a non-interfering basis with other sounding systems.

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

Table 3. Offshore Survey

Marine Site Investigations and Seabed Sampling

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

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

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

Indicative locations for the relevant site investigation activities (Gravity or Vibrocore and CPT's) are shown in Figure 8. Typically, individual sampling positions will be determined following initial interpretation of the geophysical survey data. The positioning of individual site investigation locations will also take into consideration environmental constraints such as the position of sensitive habitats or archaeological features. Two or more attempts may be made at each location to acquire a suitable sample. If an acceptable sample is achieved on the first attempt, there is no need to perform a second attempt.

An acceptable sample is defined as;

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

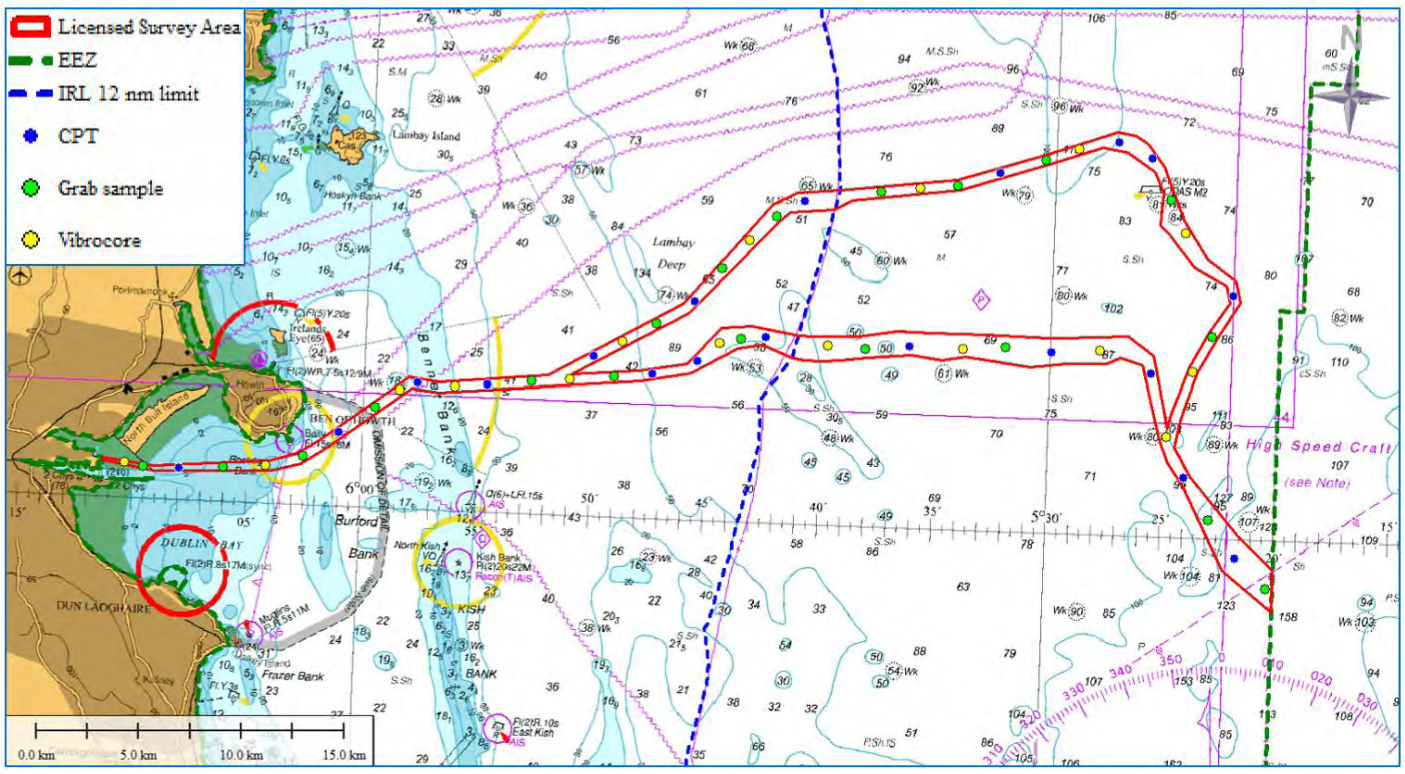


Figure 86. Indicative CPT and Vibrocore Locations.

Seabed Sampling

The total overall scope of the Site Investigations is as follows

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

Underwater video Survey

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

Archaeological Survey

The proposed survey specification takes into account archaeological data acquisition to enable professional archaeological interpretation and analysis of data. The survey equipment deployed and data acquisition and processing shall comply with the requirements of the National Monuments Service, Underwater Archaeology Unit.

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

SURVEY EQUIPMENT PARAMETERS

Multibeam Echosounder (MBES)

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

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

MBES is non-intrusive and does not interact with the seabed. The MBES system will be used will be confirmed following the appointment of a survey contractor but typical systems which can be taken as

examples would be the R2 Sonic 2024, Kongsberg EM2040 or Teledyne Seabat T50 which would be hull mounted on the survey vessel.

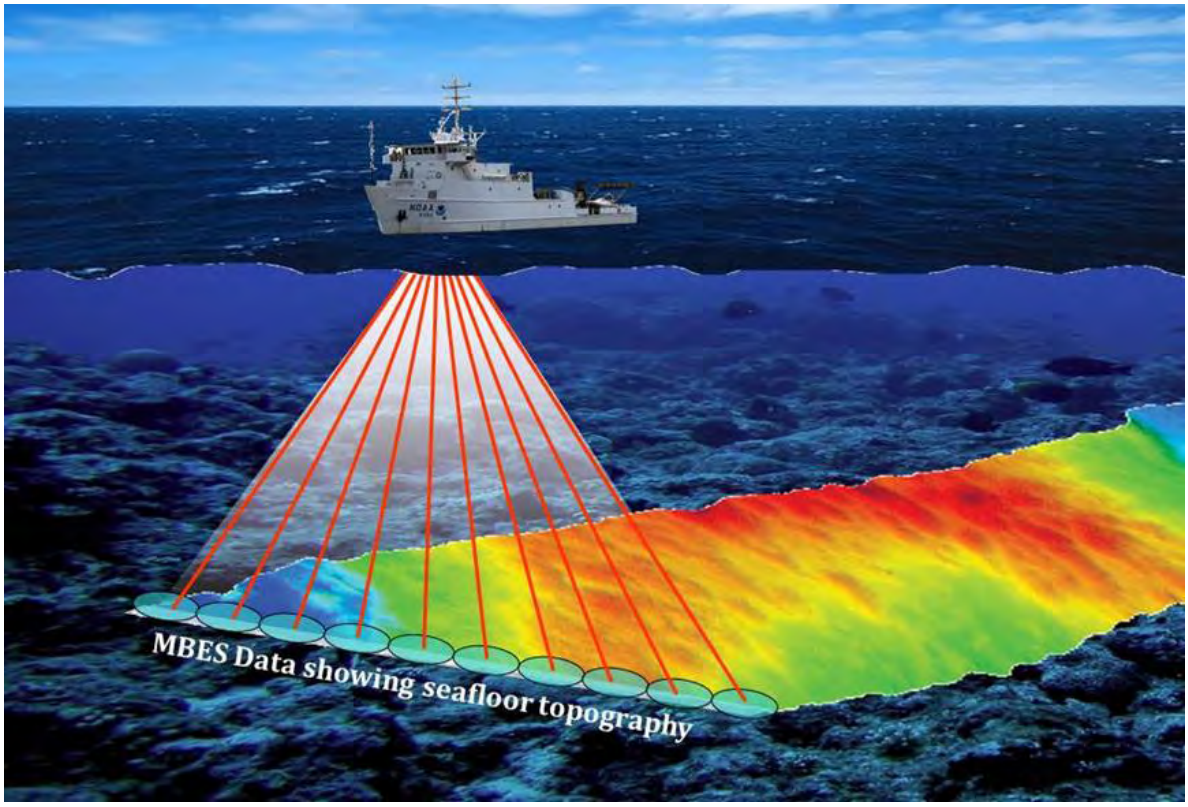


Figure 9 Graphic of MBES survey in operation.

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

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

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

Side-scan sonar

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

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

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

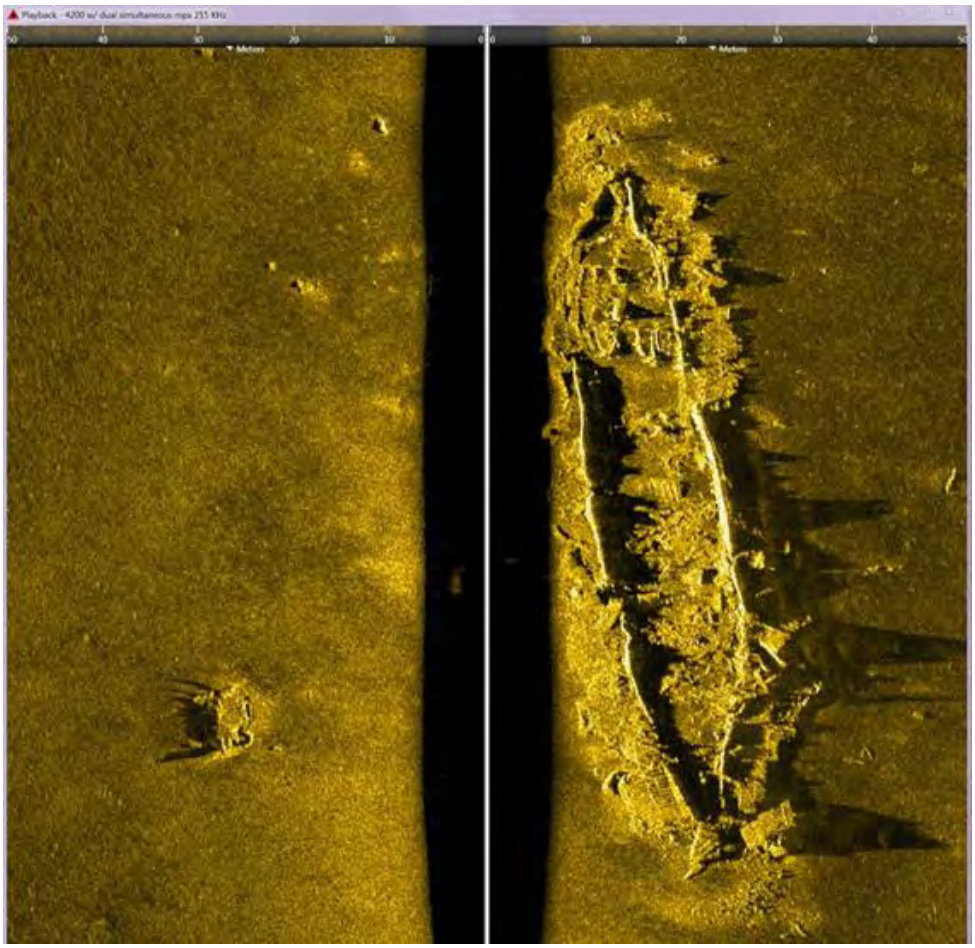


Figure 10. SSS image of shipwreck on seabed and nadir gap.

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

towed at depth behind the survey vessel on an armoured tow cable.

Figure 11. Deployment of Edgetech 4200 Tow fish

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

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

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

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

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

Marine Magnetometer

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

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

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

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

Figure 12. Marine Magnetics SeaSpy towfish.

Sub-bottom profiler

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

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

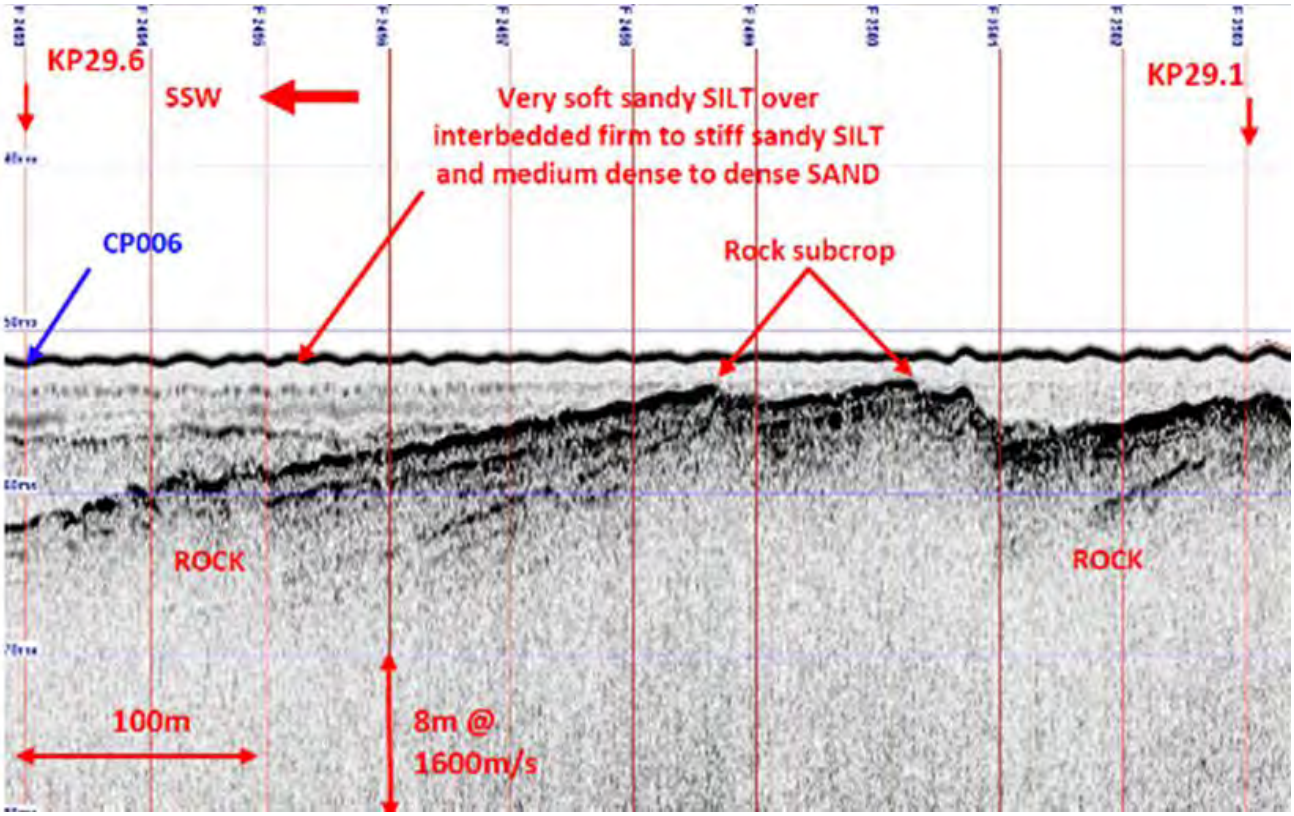


Figure 13. Interpreted SBP seabed profile.

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

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

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

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

Figure 14. Edgetech SB-424 tow body.

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

Table 4. Typical SBP specifications.

Ultra-Short Baseline (USBL) Subsea Positioning

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

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

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

Cone Penetration Test (CPT)

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

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

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

Figure 15. Neptune 3000 CPT rig.

Gravity Core

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

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

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

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

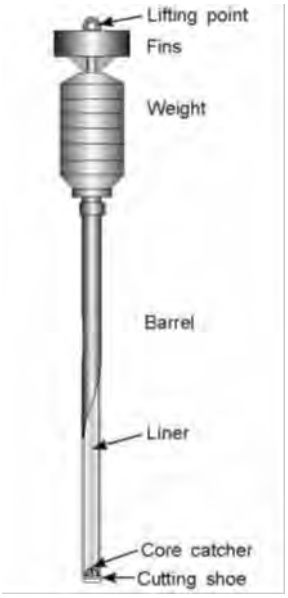


Figure 16. Gravity Corer schematic.

Vibrocorer

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

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

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

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

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

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

Figure 17. Deployment of Vibrocorer from Survey Vessel.

Grab samplers

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

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

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

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

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

Figure 18. Single and Double Van Veen Grab.

SURVEY VESSELS

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

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

All survey vessels will be fit for purpose, will possess all relevant classification certificates and capable of safely undertaking the survey work required. Health, safety, environment and welfare considerations will be a priority and will be actively managed during the course of the survey scopes of work. Appointed contractors will be required to comply with all legislation relevant to the activities within their scope of work. Prior to survey works taking place under Licence, both Project Supervisor for Design Process (PSDP) and Project Supervisor for Construction Stage (PSCS) will be appointed under the relevant legislation and project / survey specific HSE plans will be put in place which will form part of the survey project execution plans.

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

- Compliance with Safety of Life at Sea (SOLAS), International Maritime Organization (IMO) and national requirements for operating within Irish territorial waters.
- Station-keeping and sea keeping capabilities required to carry out the proposed survey operations safely;
- Calibrated equipment and spares with necessary tools for all specified works;
- Endurance (e.g. fuel, water, stores, etc.) to undertake the required survey works;
- Sufficient qualified staff to allow the survey operations to be carried out efficiently, (typically 24 hour continuous for offshore survey, 12 hour for nearshore survey); and
- Appropriate accommodation and crew welfare facilities.

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

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

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.

TIMELINE AND DURATION OF SURVEY ACTIVITIES

The intention is to commence the survey as soon as feasible following license award, taking into account survey vessel availability, the overall cable route survey programme, seasonality and suitable weather windows. The exact mobilisation dates will not be known until the process of procuring a contractor and issue of the marine licence is complete. It is anticipated that the marine geophysical survey and site investigations activities within the marine licence area will take less than 6 weeks in total and will be completed over a 6 month period.

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

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

Table 5. Marine Survey Activities.

Equipment Type	Purpose	Number of locations within Application Area (up to)	Frequency Range	*Maximum* Source Pressure Level (re 1µPa at 1 m)	Reference
Cone Penetration Test (CPT)	Determine geotechnical engineering properties of seabed sediments.	37	28 Hz	118 - 145 dB.	BOEM 2012, EIRGRID 2014
Gravity Corer	Retrieve a seabed sediment sample by penetrating seabed with a steel core barrel under self-weight	33	N/A	N/A	N/A
Vibrocorer	Retrieve a seabed sediment sample by penetrating seabed with a vibrating steel core barrel	33	30 Hz	187.4 dB.	LGL 2010
Grab Samples	Collect small sediment samples from seabed surface with clamshell mechanism	19	N/A	N/A	N/A

Table 6. Marine Site Investigation Activities.

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

Table 7. Estimated Time and Duration of Survey Activities

Ecological Assessment Methodology

Desk Study

A desk study was undertaken to gather and assess ecological data prior to undertaking fieldwork elements. Sources of datasets and information included:

- The National Parks and Wildlife Service
- National Biodiversity Data Centre
- Satellite, aerial and 6" map imagery
- INFOMAR (Lidar, backscatter and multibeam) (WMS data)
- Irish Whale and Dolphin Group
- Environmental Protection Agency (Water Quality Data)
- Bing Maps (ArcGIS)

A provisional desk-based assessment of the potential species and habitats of conservation importance was carried out in June 2023 and updated in September 2023. This included a detailed assessment of INFOMAR data (backscatter, multibeam and LIDAR) in addition to Marine Strategy Framework Directive habitat mapping of the inshore and off-shore area, Admiralty charts and satellite imagery and Rare and Protected Species Data.

Field Survey

Field surveys at Dublin Port were carried out by Bryan Deegan (MCIEEM) of Altemar Ltd. on the 9th August 2023 and the 2nd September 2022. The purpose of the field surveys was to identify habitat extents in relation to the proposed works. The intertidal mudflats in Dublin Bay were not visible during the 9th August 2023 site visit (LW 1.3m). So a second visit on the 2nd September 2023 was carried out. The second visit was at LW at an extremely low tide of 0.1m, 10cm above the Lowest Astronomical Tide (LAT). In addition, more detailed information on the species composition and structure of habitats, conservation value and other data were gathered.

Survey Limitations

During the site visit on the 9th August 2023 and 2nd September 2023 the terrestrial elements of the project at the landfall were assessed. These visits were outside of the main wintering bird season. In light of this, additional detail was gleaned from the deskbased review particularly in relation to the conservation objectives supporting documents for both the SPAs and SACs.

Consultation

The National Parks and Wildlife Service (NPWS) were consulted in relation to species and sites of conservation interest. Data of rare and threatened species were acquired from NPWS. The National Biological Data Centre records were consulted for species of conservation significance.

Spatial Scope and Zone of Influence

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 ecological 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, conservatively it is not considered that the impacts of the proposed works would extend beyond 1km of the intertidal, primarily extended beyond the project footprint due to noise generation and 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*." During the survey works, vessel speeds are slow (4 kn). In light of this, and based on the localised nature of the survey works, the Zone of Influence in the subtidal was extended to 1 km either side of the proposed survey area. However, a search area of 15 km was used for the gathering of information for nationally and internationally designated sites and marine mammal species.

Impact Assessment Significance Criteria

This section of the EcIA examines the potential causes of impact that could result in likely significant effects to the species and habitats that occur within the ZOI of the proposed development. These impacts could arise during either the construction or operational phases of the proposed development. The following terms are derived from EPA EIAR Guidance (2022) and are used in the assessment to describe the predicted and potential residual impacts on the ecology by the construction and operation of the proposed development.

Magnitude of effect and typical descriptions

Magnitude of effect (change)		Typical description
High	Adverse	Loss of resource and/or quality and integrity of resource; severe damage to key characteristics, features or elements.
	Beneficial	Large scale or major improvement of resource quality; extensive restoration; major improvement of attribute quality.
Medium	Adverse	Loss of resource, but not adversely affecting the integrity; partial loss of/damage to key characteristics, features or elements
	Beneficial	Benefit to, or addition of, key characteristics, features or elements; improvement of attribute quality.
Low	Adverse	Some measurable change in attributes, quality or vulnerability; minor loss of, or alteration to, one (maybe more) key characteristics, features or elements.
	Beneficial	Minor benefit to, or addition of, one (maybe more) key characteristics, features or elements; some beneficial effect on attribute or a reduced risk of negative effect occurring
Negligible	Adverse	Very minor loss or alteration to one or more characteristics, features or elements.
	Beneficial	Very minor benefit to or positive addition of one or more characteristics, features or elements.

Criteria for Establishing Receptor Sensitivity/Importance

Importance	Ecological Valuation
International	Sites, habitats or species protected under international legislation e.g. Habitats and Species Directive. These include, amongst others: SACs, SPAs, Ramsar sites, Biosphere Reserves, including sites proposed for designation, plus undesignated sites that support populations of internationally important species.
National	Sites, habitats or species protected under national legislation e.g. Wildlife Act 1976 and amendments. Sites include designated and proposed NHAs, Statutory Nature Reserves, National Parks, plus areas supporting resident or regularly occurring populations of species of national importance (e.g. 1% national population) protected under the Wildlife Acts, and rare (Red Data List) species.
Regional	Sites, habitats or species which may have regional importance, but which are not protected under legislation (although Local Plans may specifically identify them) e.g. viable areas or populations of Regional Biodiversity Action Plan habitats or species.
Local/County	Areas supporting resident or regularly occurring populations of protected and red data listed-species of county importance (e.g. 1% of county population), Areas containing Annex I habitats not of international/national importance, County important populations of species or habitats identified in county plans, Areas of special amenity or subject to tree protection constraints.
Local	Areas supporting resident or regularly occurring populations of protected and red data listed-species of local importance (e.g. 1% of local population), Undesignated sites or features which enhance or enrich the local area, sites containing viable area or populations of local Biodiversity Plan habitats or species, local Red Data List species etc.
Site	Very low importance and rarity. Ecological feature of no significant value beyond the site boundary

Quality of Potential Impacts on Biodiversity

Quality of Effects	Effect Description
Negative /Adverse Effect	A change which reduces the quality of the environment (for example, lessening species diversity or diminishing the reproductive capacity of an ecosystem; or damaging health or property or by causing nuisance).
Neutral Effect	No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error.
Positive Effect	A change which improves the quality of the environment (for example, by increasing species diversity, or improving the reproductive capacity of an ecosystem, or by removing nuisances or improving amenities).

Significance of Effects

Significance of Effect	Description of Potential Effect
Imperceptible	An effect capable of measurement but without significant consequences.
Not significant	An effect which causes noticeable2 changes in the character of the environment but without significant consequences.
Slight Effects	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
Moderate Effects	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
Significant Effects	An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment.
Very Significant	An effect which, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment.
Profound	An effect which obliterates sensitive characteristics.

Duration of Impacts

Duration and Frequency of Effect	Description
Momentary	Effects lasting from seconds to minutes
Brief	Effects lasting less than a day
Temporary	Effects lasting less than a year
Short-term	Effects lasting one to seven years.
Medium-term	Effects lasting seven to fifteen years.
Long-term	Effects lasting fifteen to sixty years.
Permanent	Effects lasting over sixty years
Reversible	Effects that can be undone, for example through remediation or restoration

Possibility of Impact

Describing the Probability of Effects	Description
Likely Effects	The effects that can reasonably be expected to occur because of the planned project if all mitigation measures are properly implemented.
Unlikely Effects	The effects that can reasonably be expected not to occur because of the planned project if all mitigation measures are properly implemented.

Results

Proximity to Designated Conservation Sites

Designated conservation sites (National and international) within 15 km of the proposed survey works are seen in Figures 19-23.

The proposed cable survey corridor is located within seven designated conservation sites (North Dublin Bay SAC & pNHA, North Bull Island SPA & Ramsar Site, Rockabill to Dalkey Island SAC, South Dublin Bay and River Tolka Estuary SPA, and North-West Irish Sea SPA). There are no designated Natural Heritage Areas (NHAs) within 15km of the proposed survey works (Figure 22).

Given that there are proposed works located within North Dublin Bay SAC & pNHA, North Bull Island SPA & Ramsar Site, Rockabill to Dalkey Island SAC, North-west Irish Sea SPA, and South Dublin Bay and River Tolka Estuary SPA, mitigation measures are required to ensure that there are no significant impacts on these sites.

In addition, there is potential for marine mammals from Rockabill to Dalkey Island SAC (*Phocoena phocoena* (harbour porpoise)) and from Lambay Island SAC (*Halichoerus grypus* (Grey Seal) and *Phoca vitulina* (Harbour Seal)) to be in the vicinity of the proposed cable route and mitigation measures for the protection of marine mammals will be in place.

Conservation sites and Waterbodies proximate to the proposed Cable Route and Survey Route Corridor within Dublin Bay are demonstrated in Figures 24 - 29. The proposed cable route, survey route corridor, and works (to Irish 12 Nautical Mile Limit and Irish EEZ) are demonstrated in Figures 30 & 31.

There are no offshore SACs in proximity to any of the proposed survey works (Figure 32). The inshore coastal waterbodies through which the foreshore license area traverses (Dublin Bay) is classed as unpolluted under the Water Framework Directive (WFD) (Figure 33).

Table 8. European sites within 15km of the proposed site

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
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. (proposed) NHAs & Ramsar sites within 15km of the proposed development site

Status	Site Name	Distance
Proposed NHA	Kilkeran Lake and Castlefreke Dunes	**Within pNHA**
Proposed NHA	Rosscarbery Estuary	157 m
Proposed NHA	Dirk Bay	2.7 km
Proposed NHA	Cloonties Lough	6.8 km
Proposed NHA	Myross Wood	9.5 km
Proposed NHA	Clonakilty Bay	5.9 km
Proposed NHA	Gallanes Lough	10.8 km
Proposed NHA	Seven Heads and Dunworly Bay	14.1 km
Proposed NHA	Bateman's Lough	13.8 km
Proposed NHA	Castletownshend	8.8 km
Proposed NHA	Castletownshend (Gatehouse)	9 km
Proposed NHA	Lough Hyne Nature Reserve and Environs	12.6 km
Ramsar sites	None	N/A

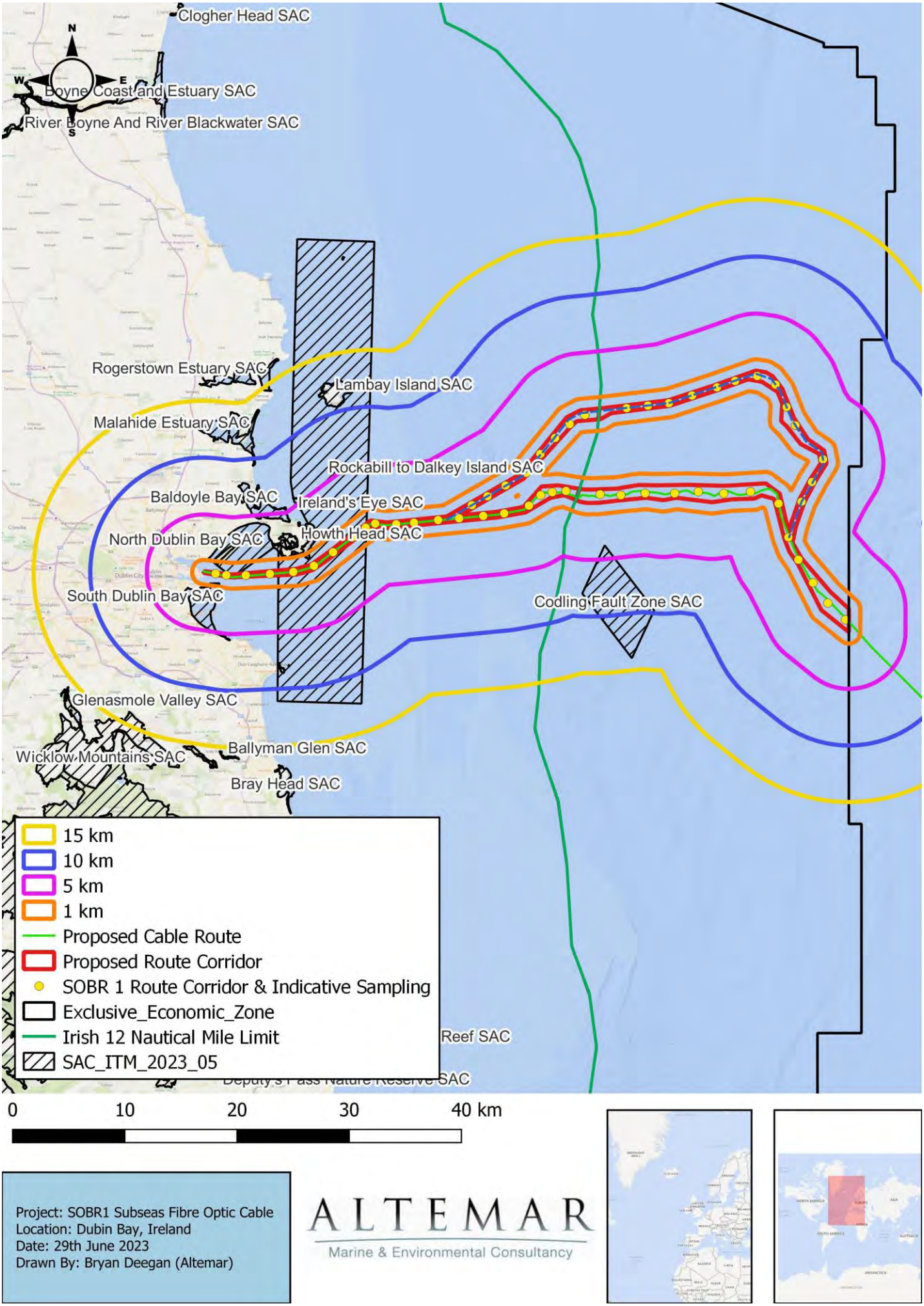


Figure 19: *Special Areas of Conservation within 15 km of the proposed survey route.*

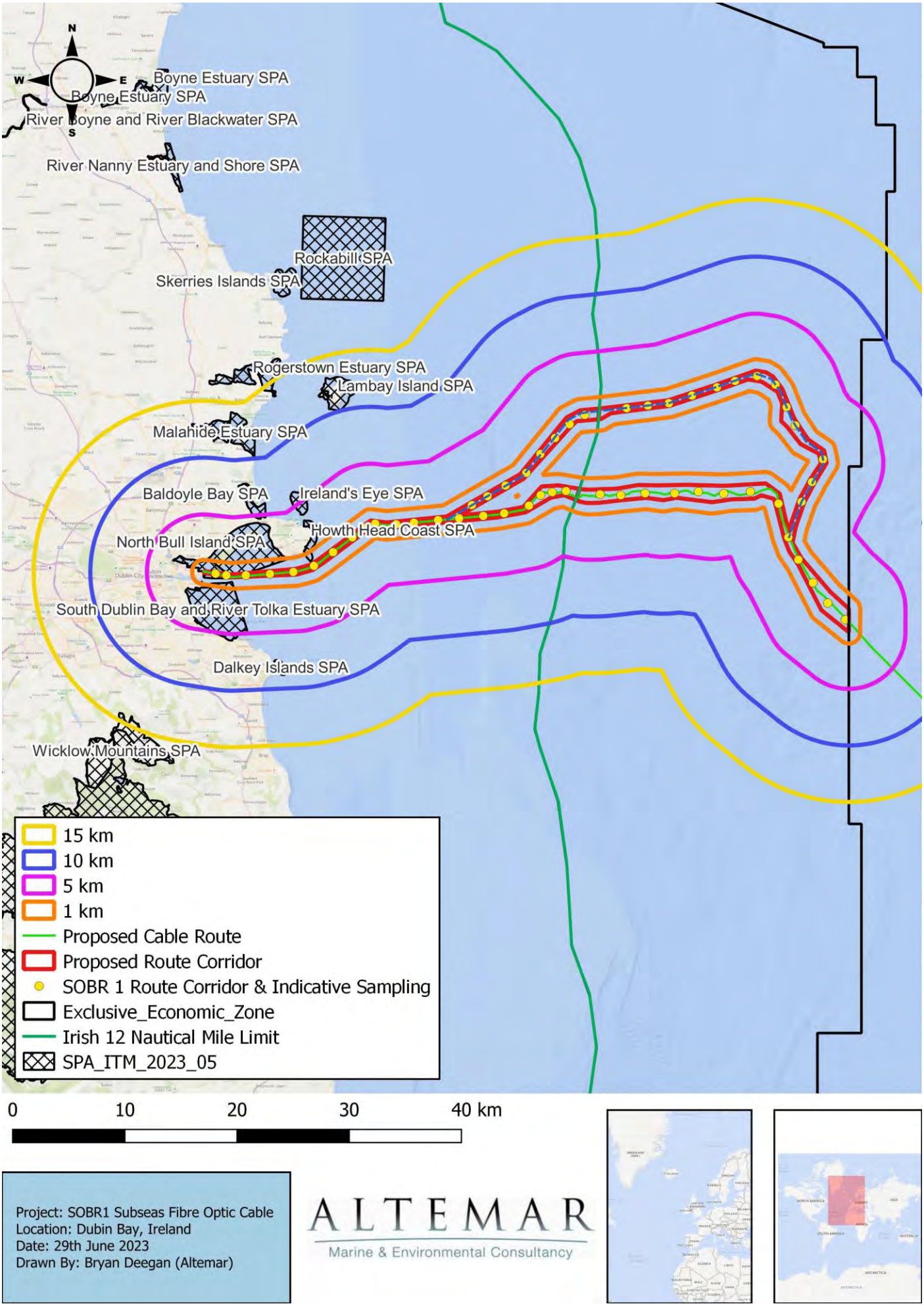


Figure 20. *Special Protection Areas within 15 km of the proposed route.*

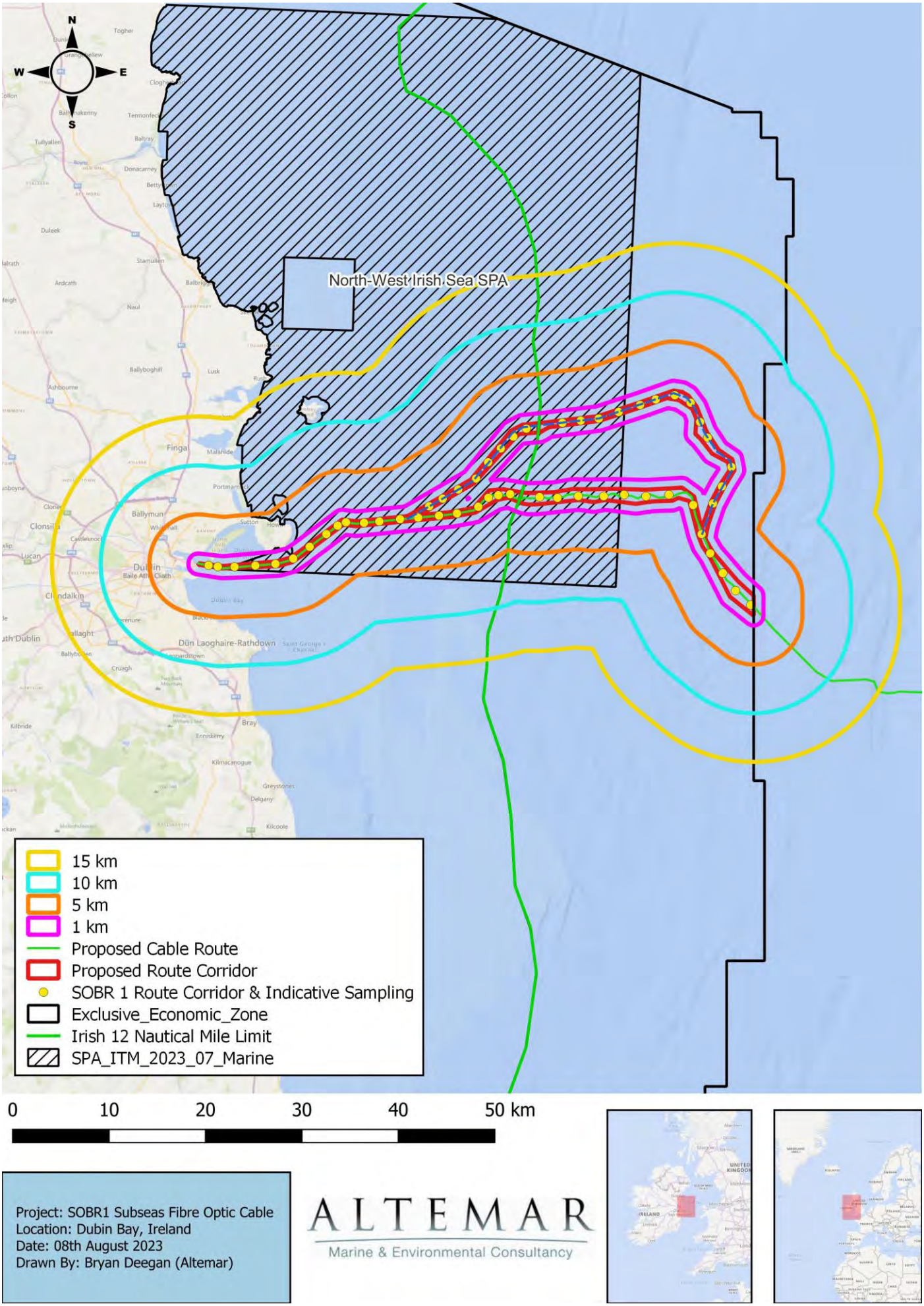


Figure 21: Marine SPAs within 15 km of the proposed Cable Route and Survey Route Corridor .

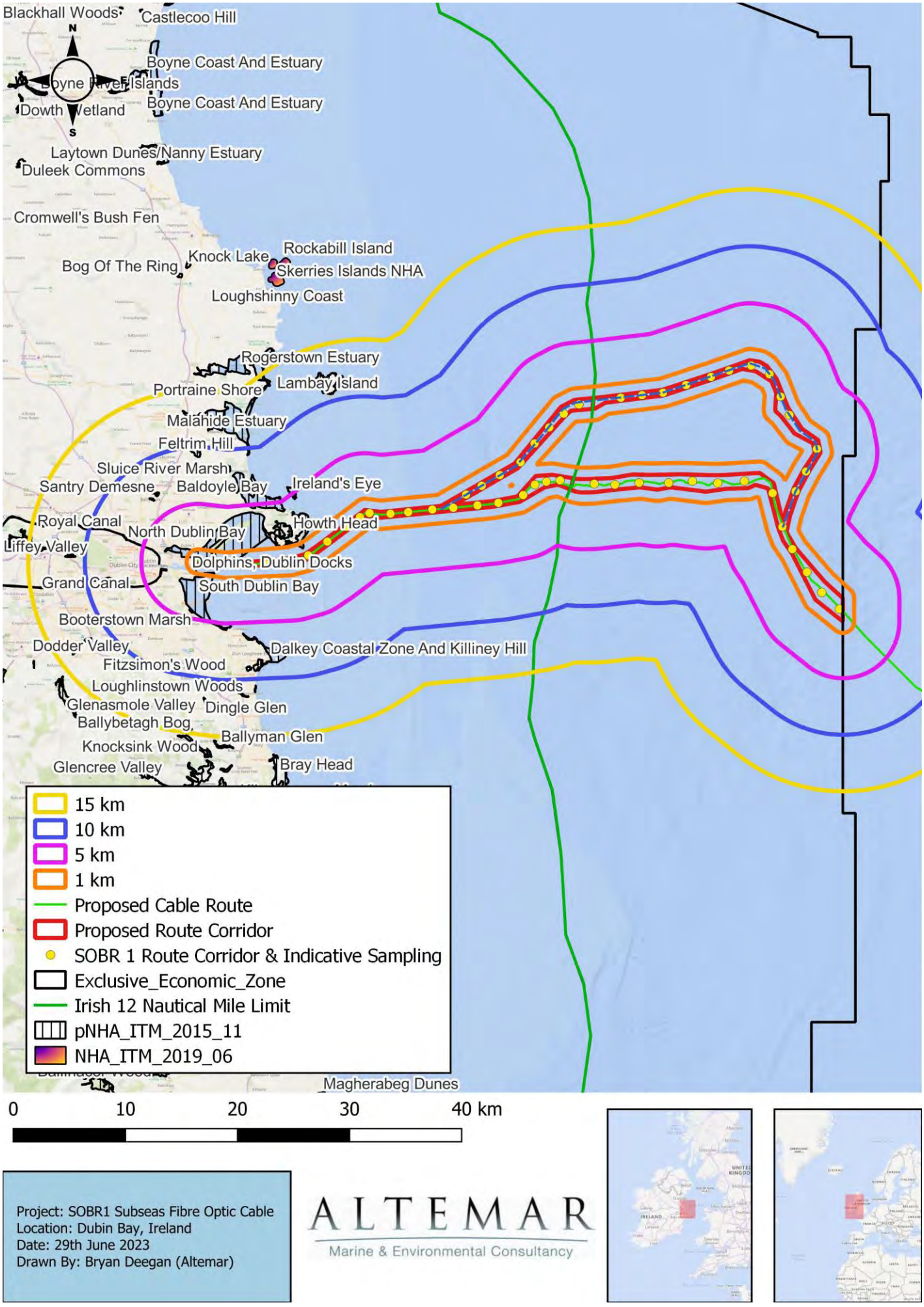


Figure 22: *Proposed National Heritage Areas and Nation Heritage Areas (None) within 15 km of the proposed survey route.*

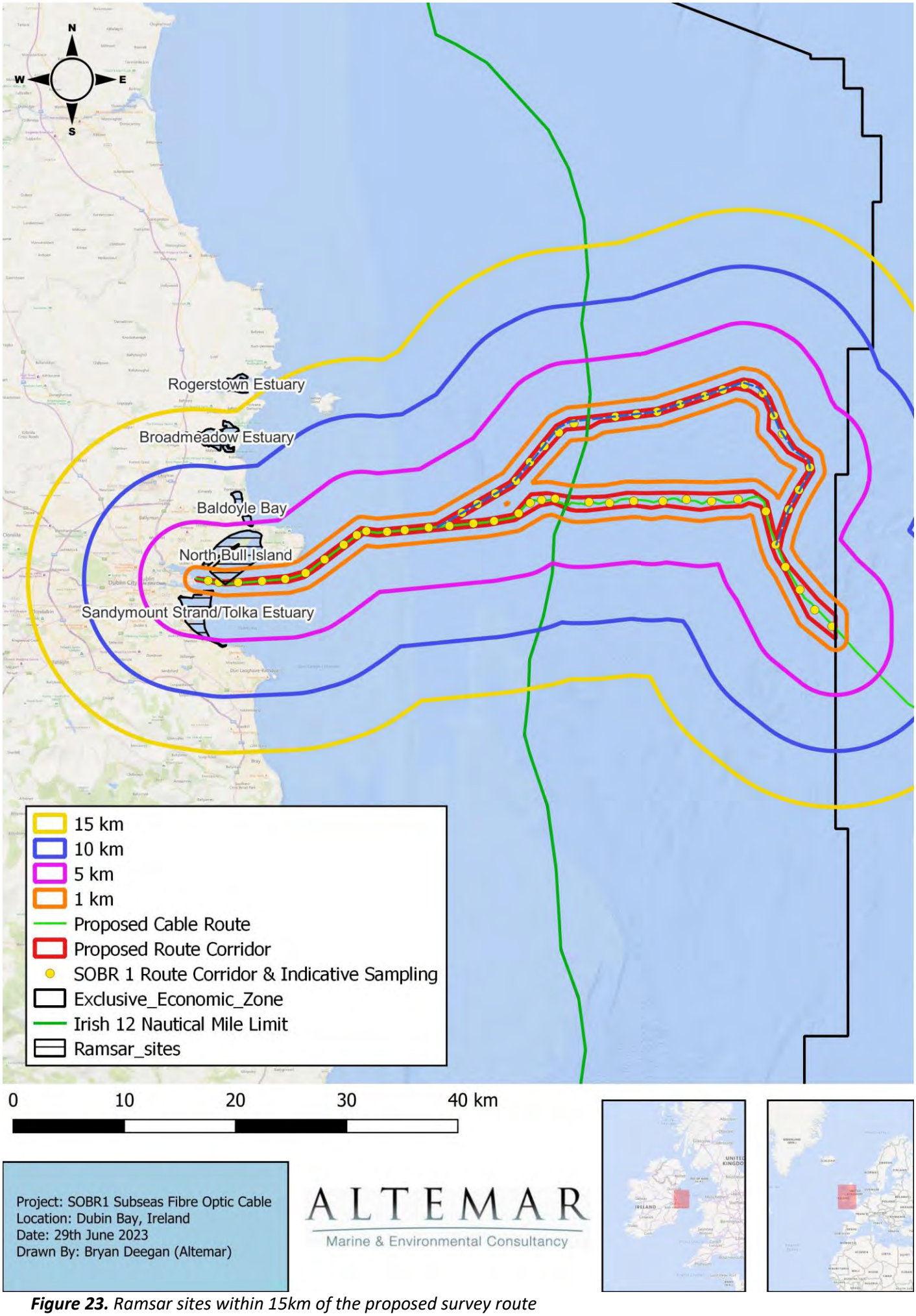


Figure 23. *Ramsar sites within 15km of the proposed survey route*

Figure 24. *Proposed Cable Route and Survey Route Corridor within Dublin Port.*

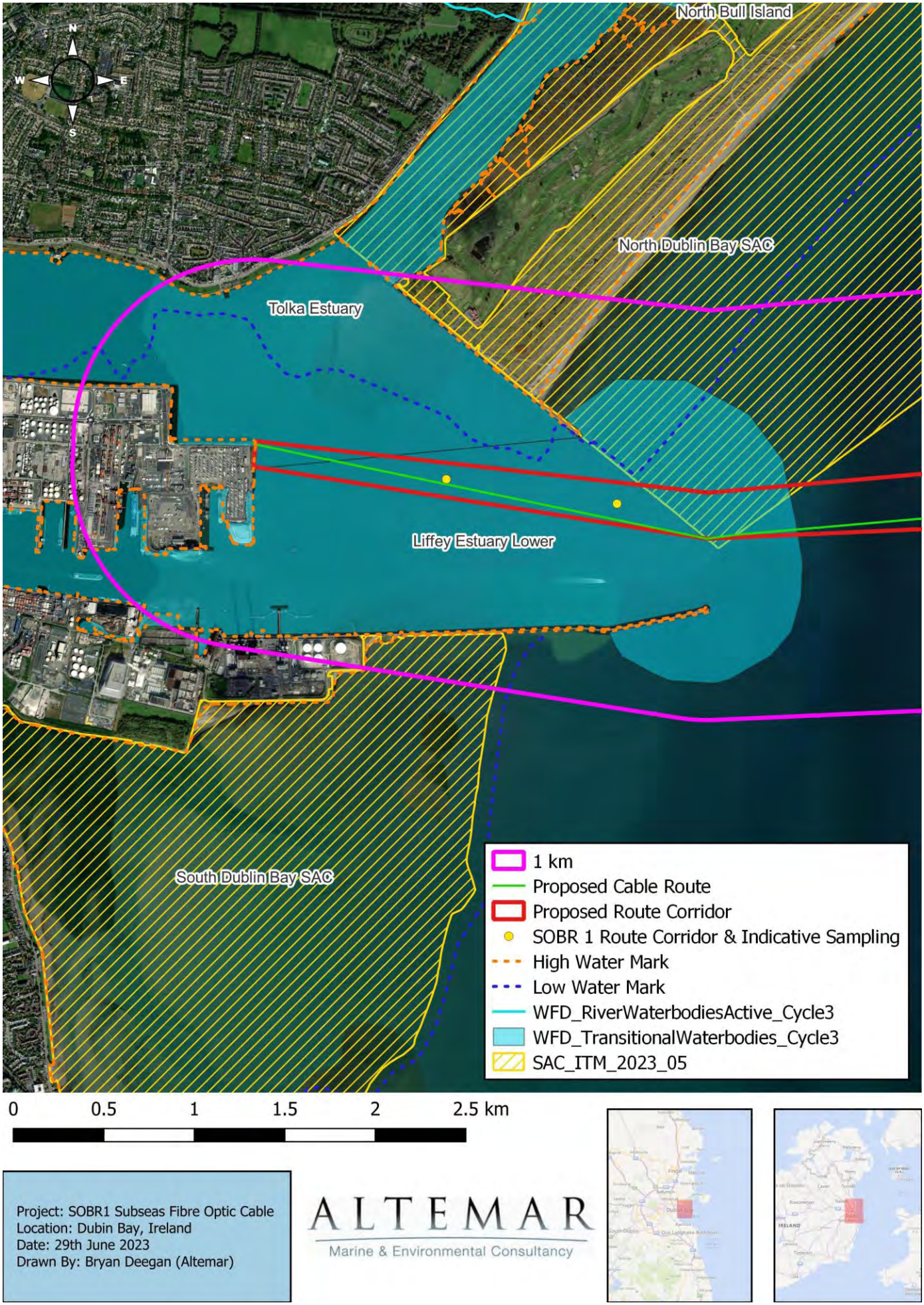


Figure 25. *Special Areas of Conservation and Waterbodies proximate to the proposed Cable Route and Survey Route Corridor within Dublin Bay.*

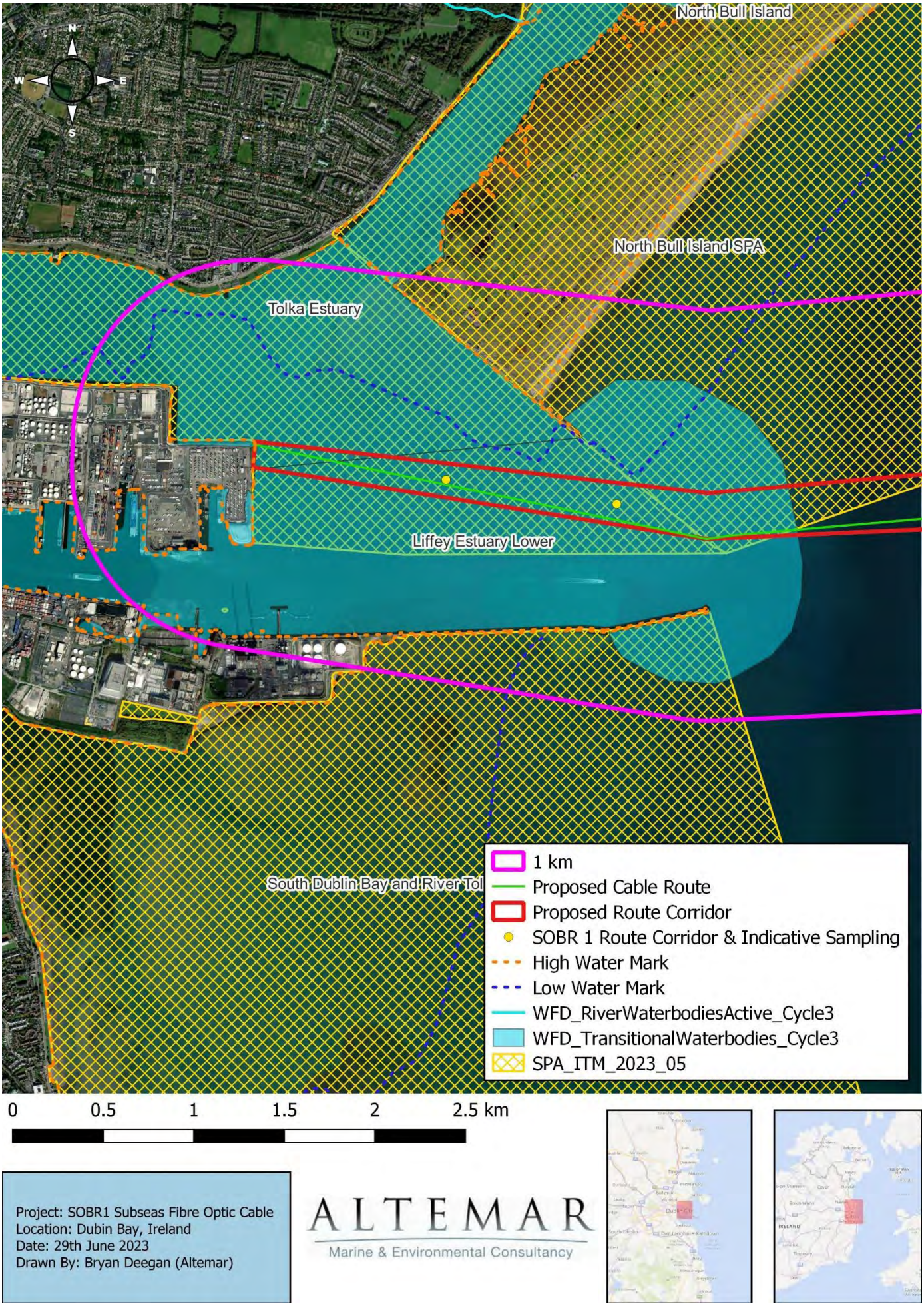


Figure 26: *Special Protection Areas and Waterbodies proximate to the proposed Cable Route and Survey Route Corridor within Dublin Bay.*

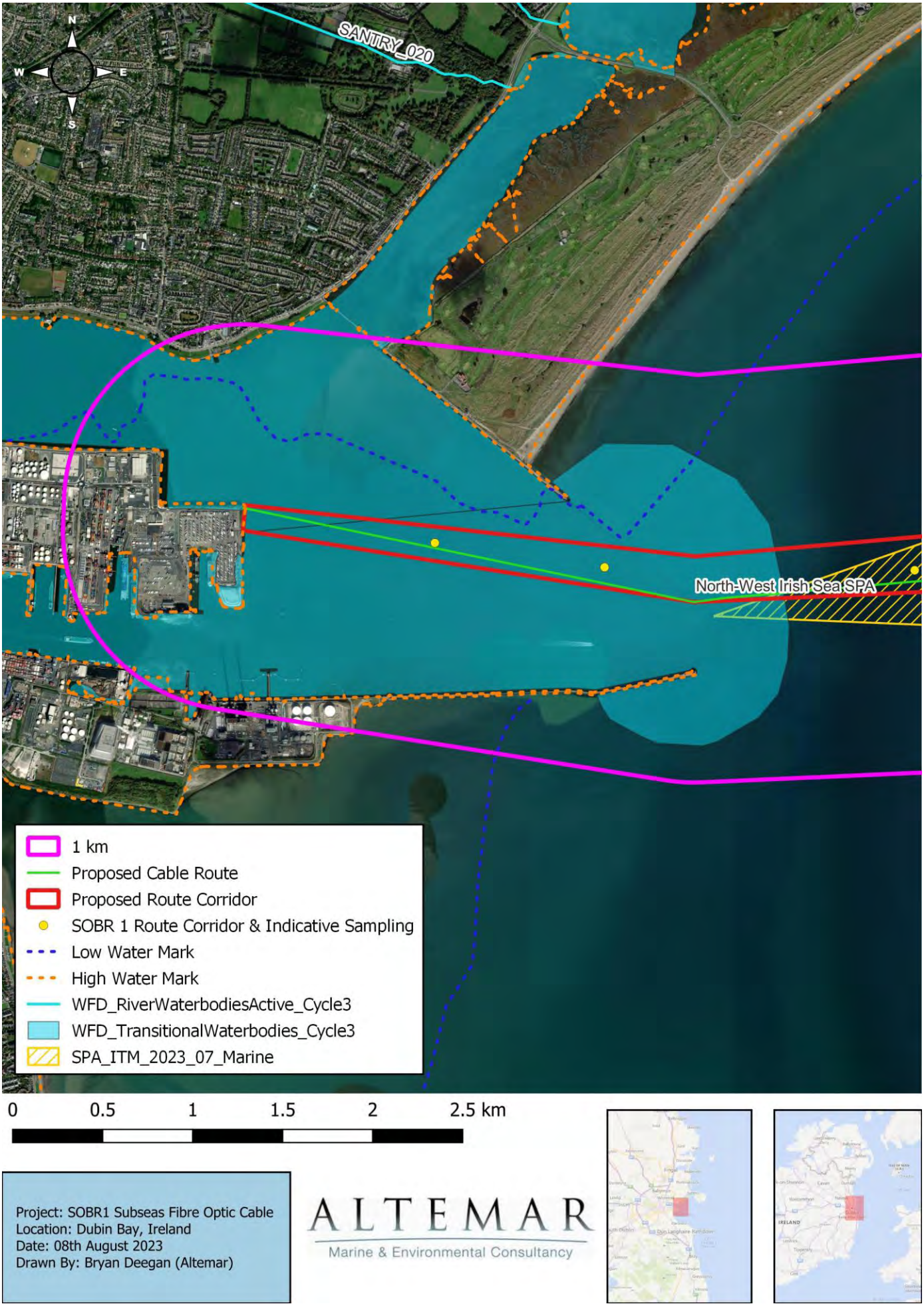


Figure 27: *Marine SPAs and Waterbodies proximate to the proposed Cable Route and Survey Route Corridor within Dublin Bay*

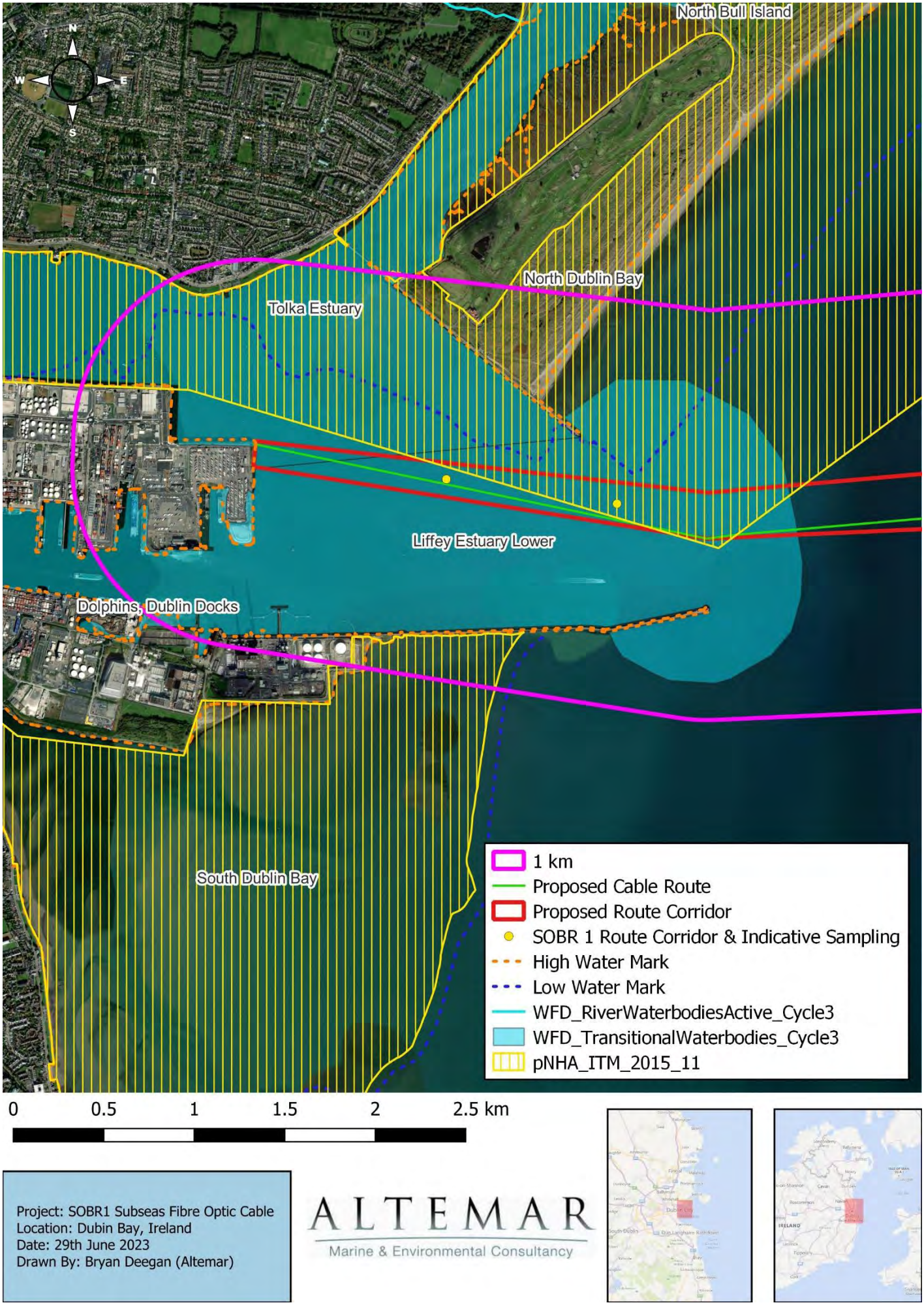


Figure 28: *Proposed Natural Heritage Areas and Waterbodies proximate to the proposed Cable Route and Survey Route Corridor within Dublin Bay.*

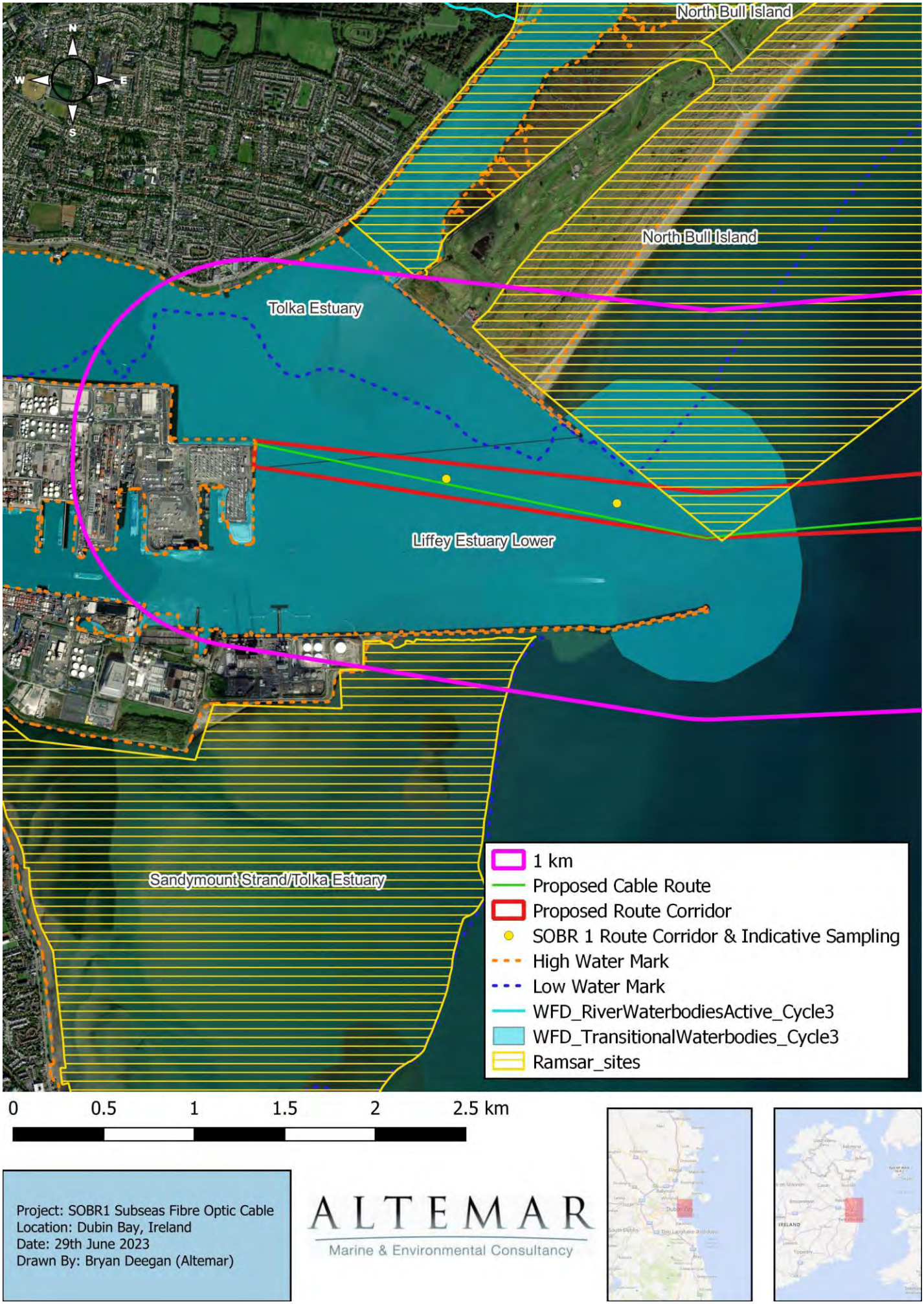


Figure 29: *Ramsar sites and Waterbodies proximate to the proposed Cable Route and Survey Route Corridor within Dublin Bay*

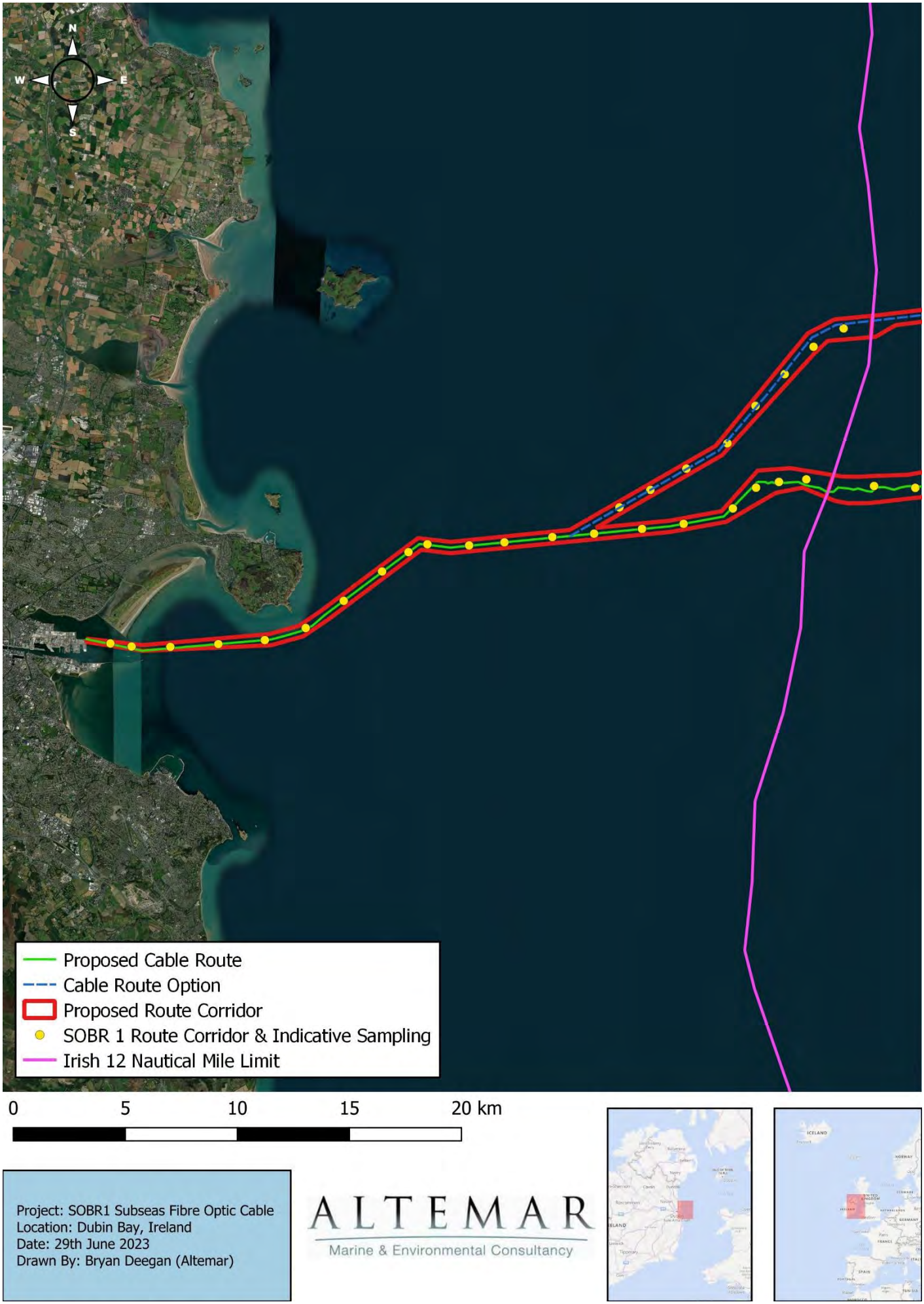


Figure 30: *Proposed Cable Route, Survey Route Corridor, and Works (to Irish 12 Nautical Mile Limit).*

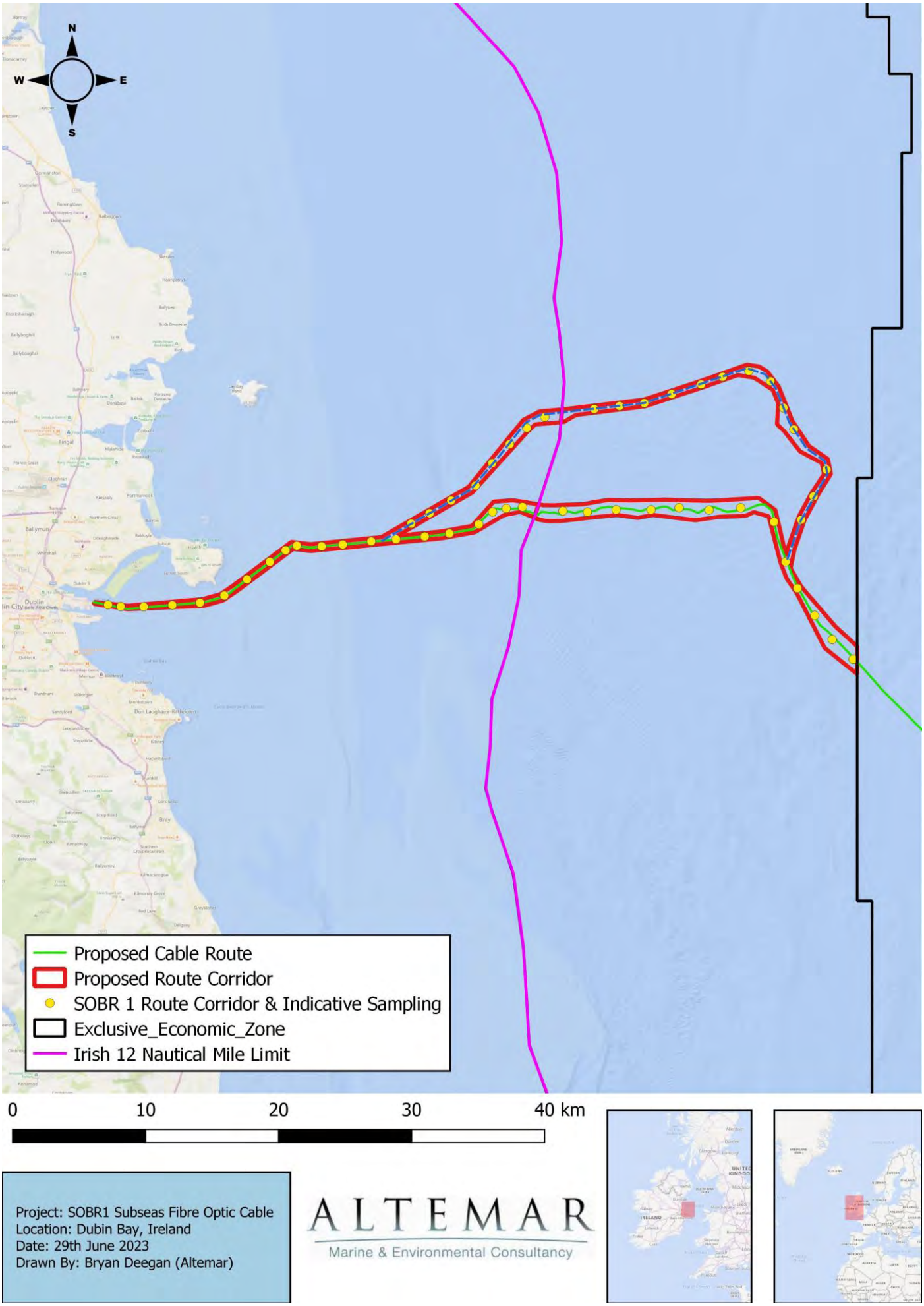


Figure 31. *Proposed Cable Route, Survey Route Corridor, and Works (to Irish Exclusive Economic Zone).*

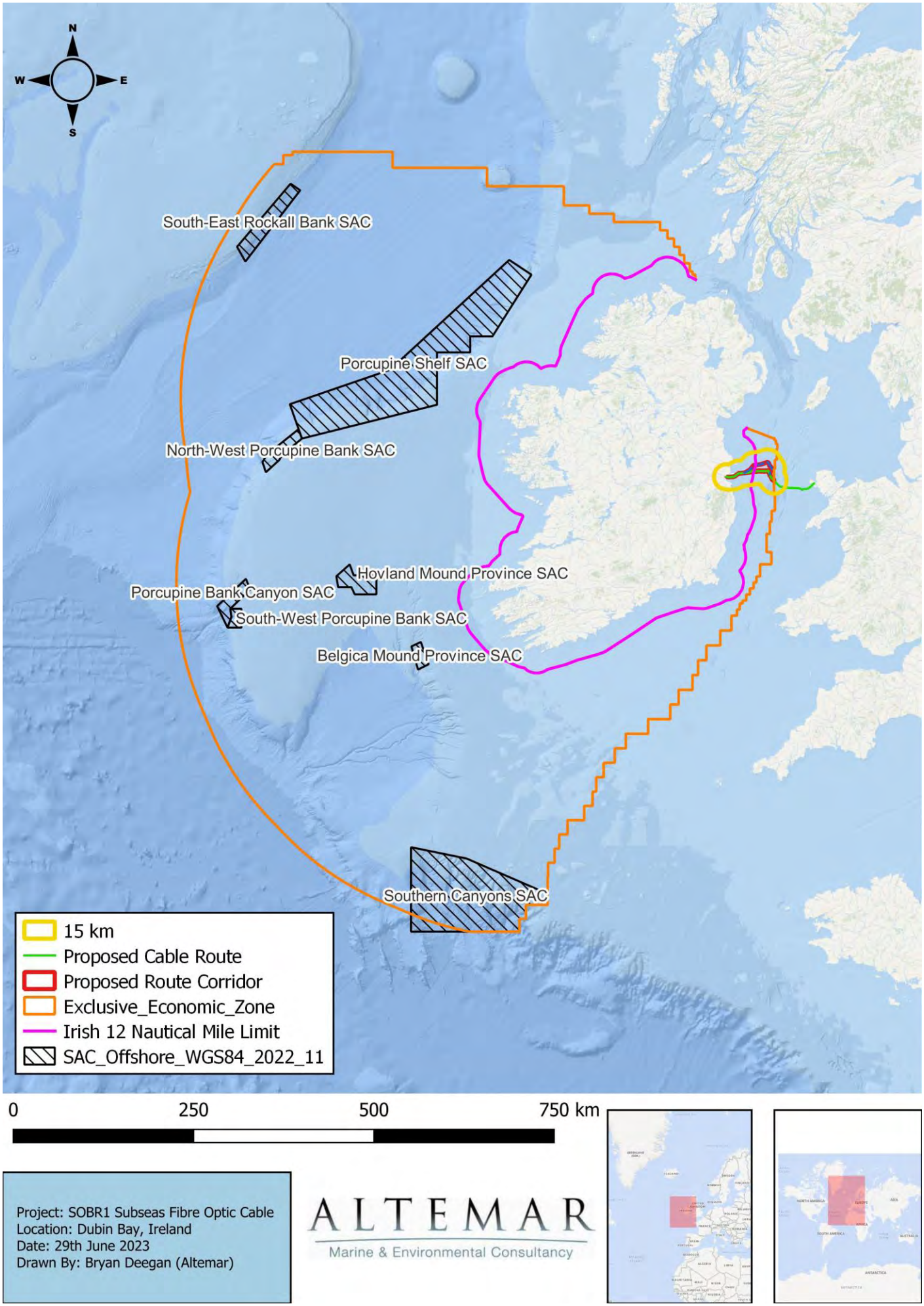


Figure 32: *Fibre optic survey route in relation to the 12 nm limit, Designated Irish Continental shelf and Offshore SAC's (no offshore SAC's in the area).*

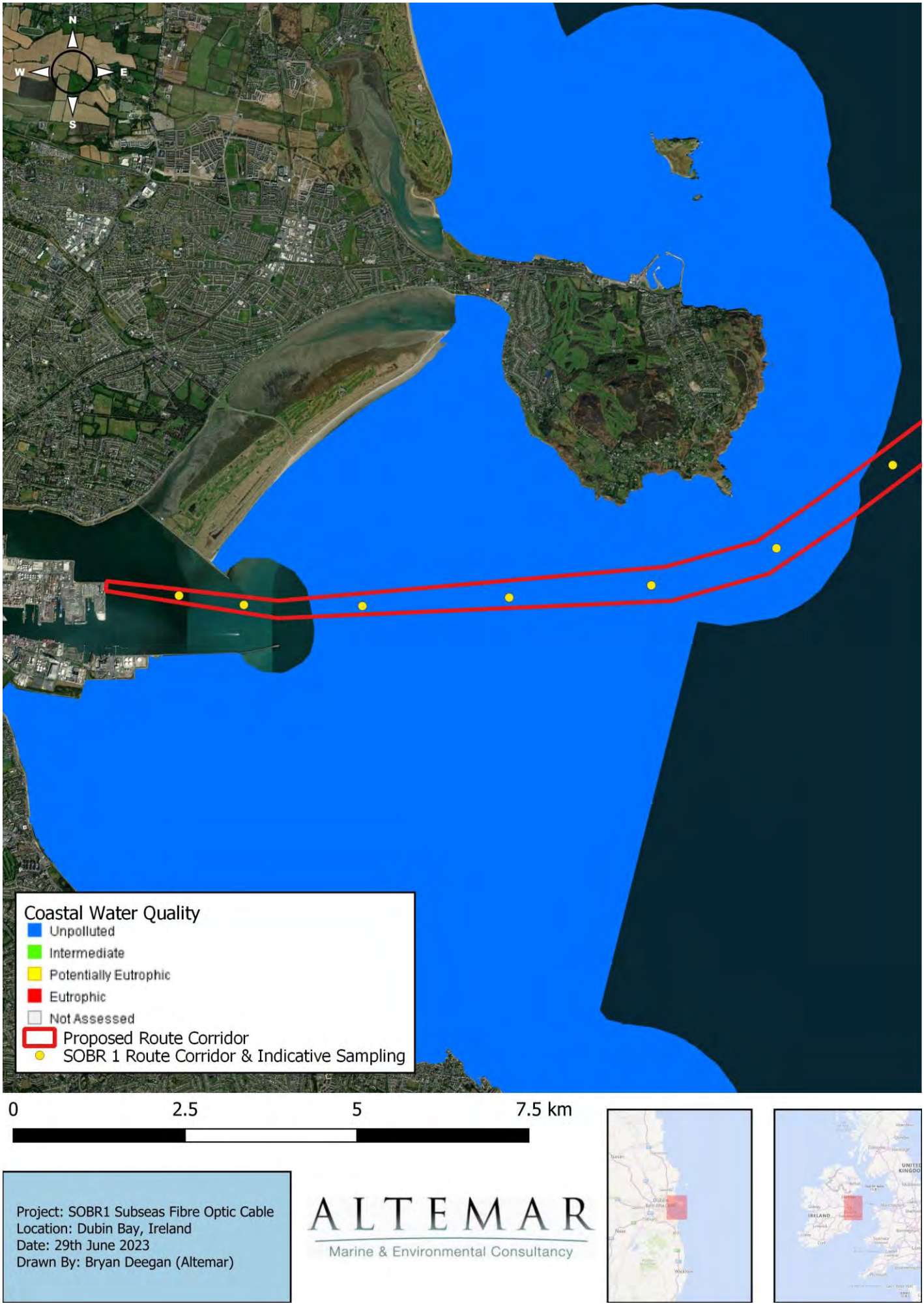


Figure 33. *Coastal waterbody quality under the Water Framework Directive (WFD)*

Habitats and Species

During the initial baseline assessment of the route, discussions took place between Altemar and MDM in relation to sensitive habitats/designations that may be present along the route and modifications of the proposed survey route. The proposed route is considered to be the optimal route for survey from an ecological and logistical perspective.

Infomar backscatter, European Marine Observation and Data Network (EMODnet), in addition to satellite imagery, Admiralty Charts and BioMar data were assessed, where available and relevant, for the entire route within the EEZ.

As can be seen from Figure 36, based on a desktop evaluation, clear habitats were distinguishable from the Infomar seabed classification (Figure 34), European Marine Observation and Data Network (EMODnet) (Figure 35) and the backscatter data (Figure 36) proximate to Dublin Bay. Further offshore habitat maps are include data from Informar (Figure 37), Emodnet (Figure 38) and Marine Strategy Framework Directive (MSFD) (Figure 38). Further offshore sediments consists primarily of sand.

Site visits were carried out on the 9th August 2023 and 2nd September 2023. Observations on species were made at Low Water. The proposed terrestrial landfall area walked and photographed (Plates 1-4). Observations were made of the intertidal mudflats on the 2nd September 2023 (0.1m). These were not visible on the higher low tide on the 9th August 2023 (1.2m). It should be noted that the estuarine element of the River Tolka borders and runs along the reclaimed land and boulder, at low water. As a result, there is no direct intertidal area beyond the extent of the boulders on the shore. The intertidal mudflats commence further towards Dublin Bay outside the scouring influence of the estuarine element of the River Tolka. No significant works are proposed in the vicinity of the landfall and works consist of non-intrusive topographic survey along the line of the proposed cable route at the landfall.

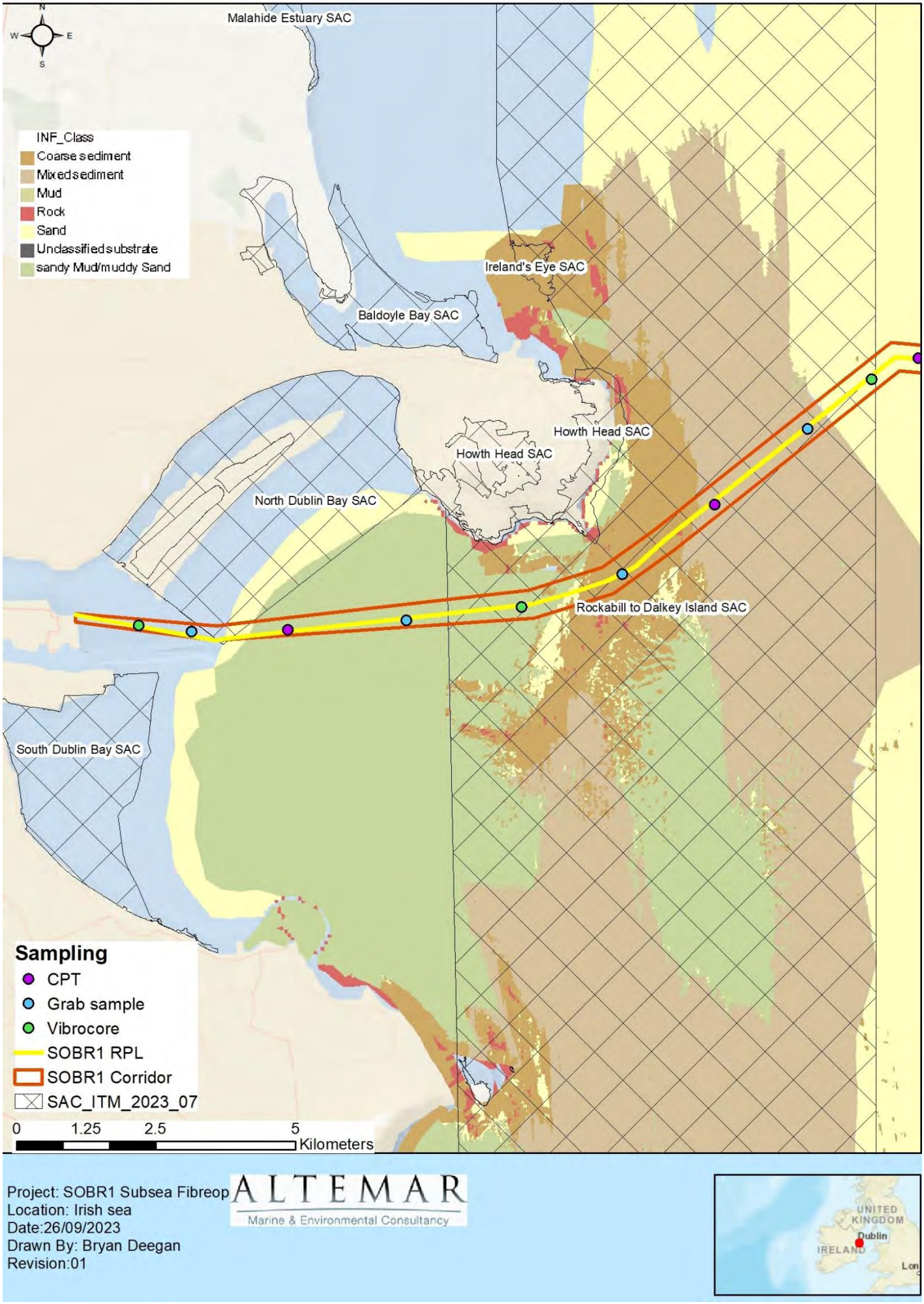


Figure 34. Seabed sediment classification and habitat type (Infomar) (SAC outlines)

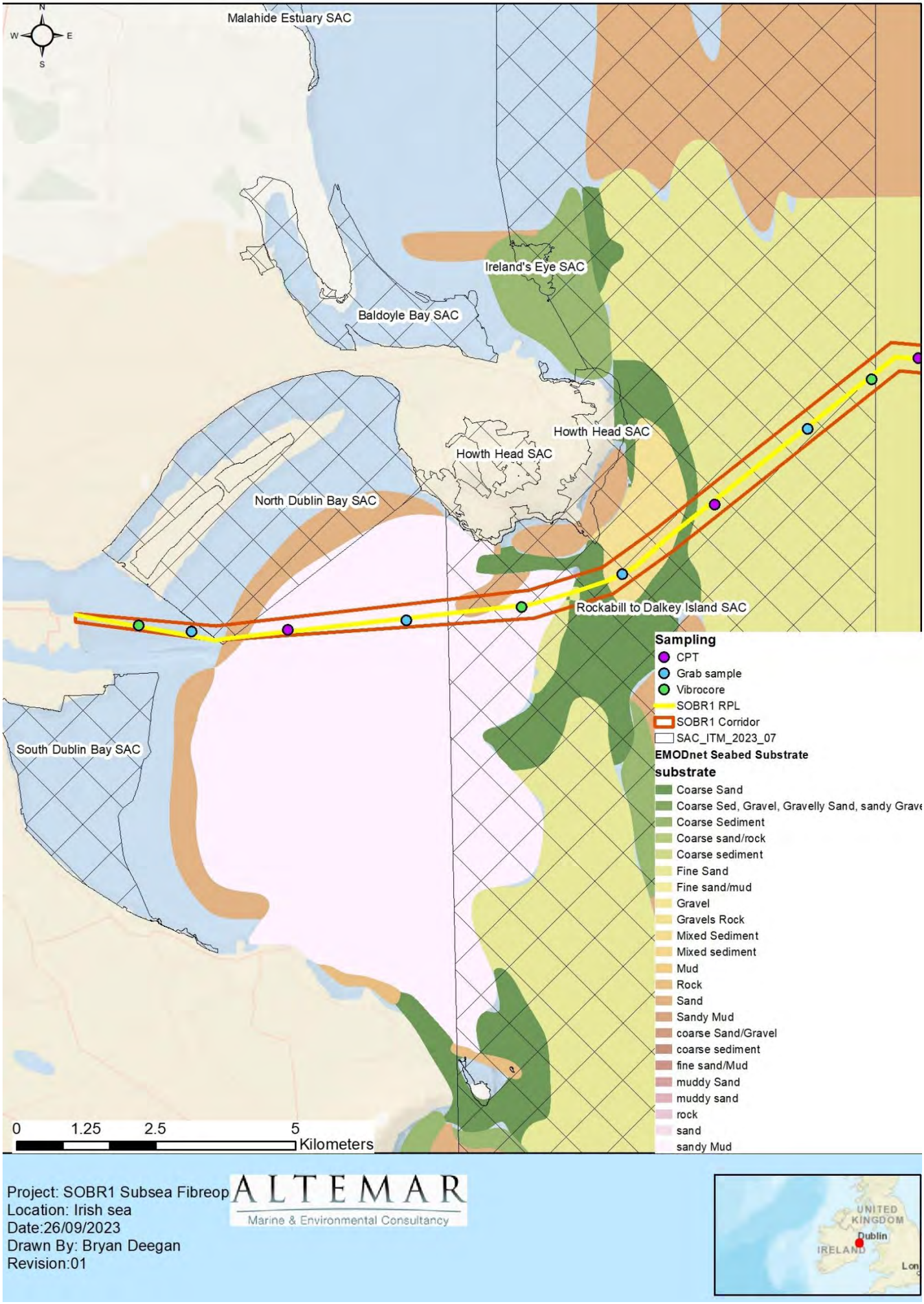


Figure 35. EMODnet Habitat map.

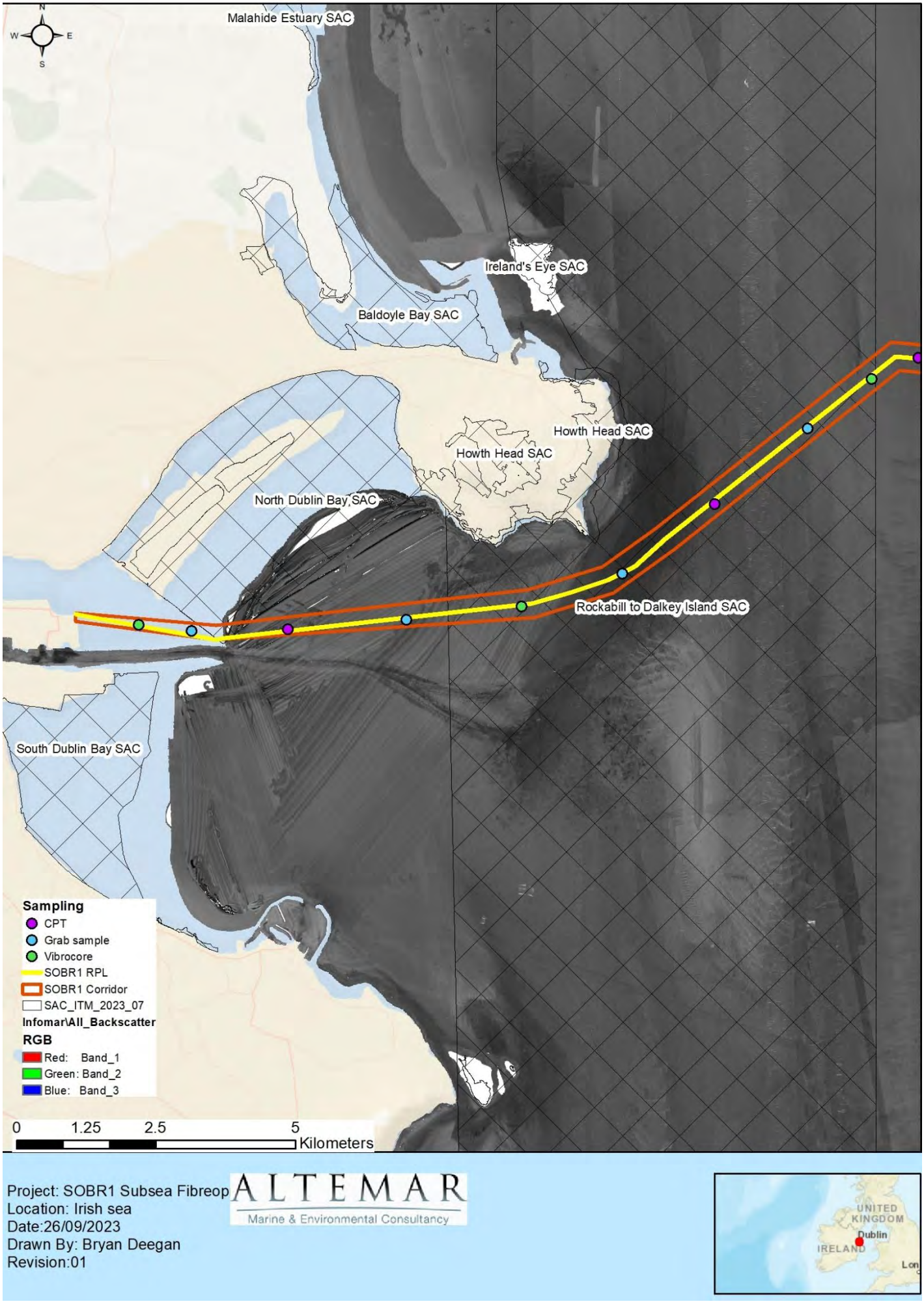


Figure 36. Seabed backscatter (Infomar)

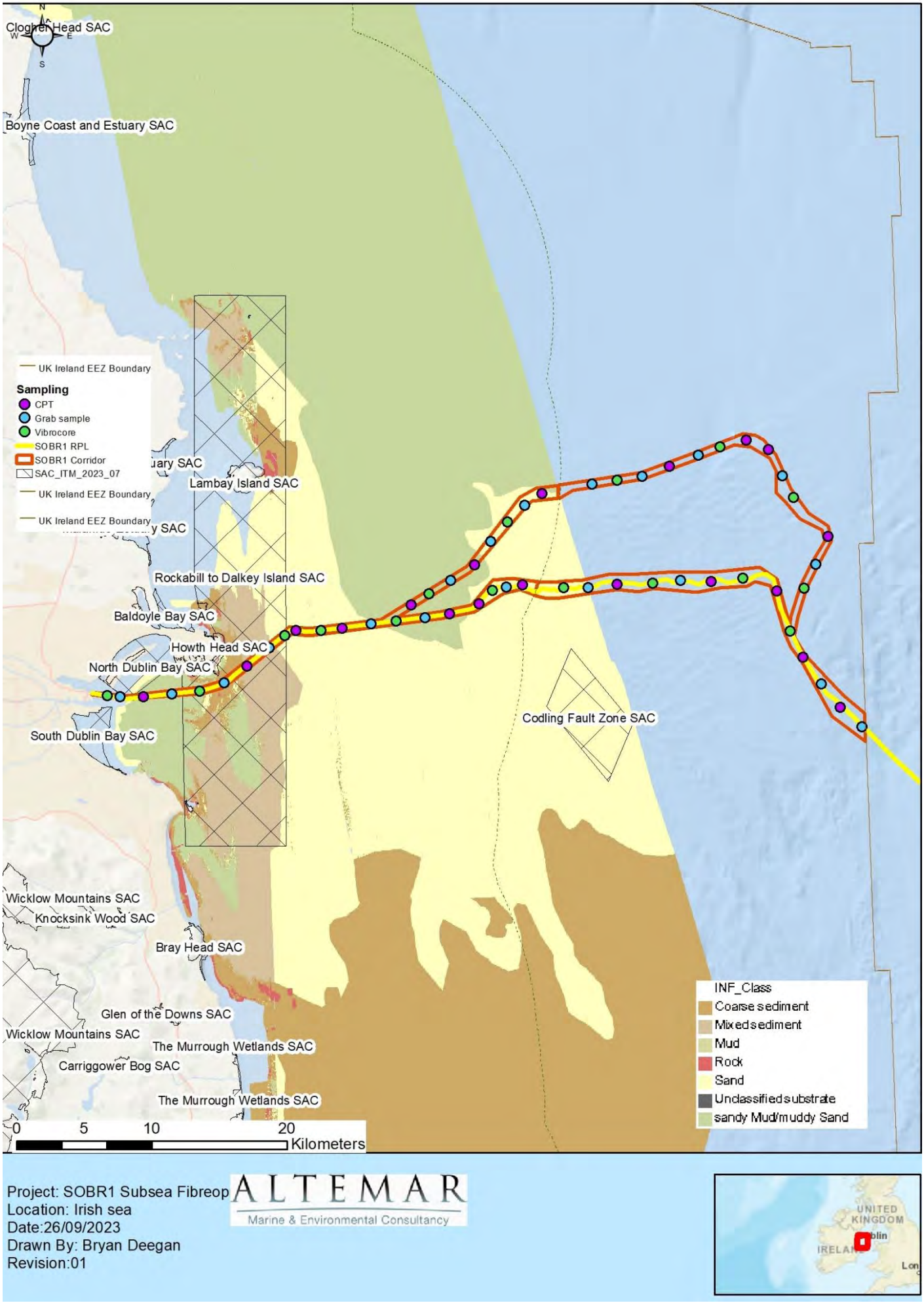


Figure 37. Infomar Habitat map.

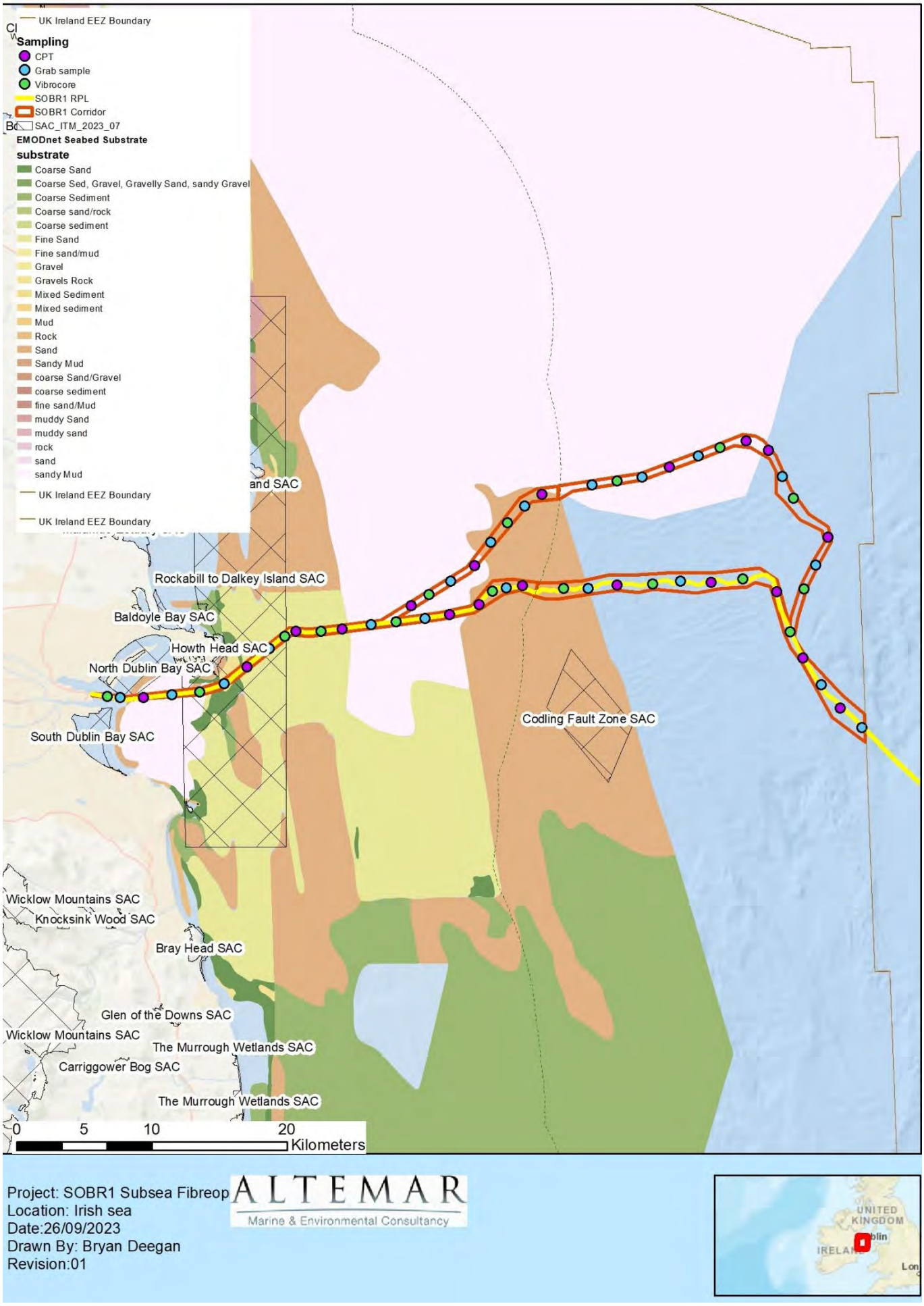


Figure 38. EMODnet Habitat map.

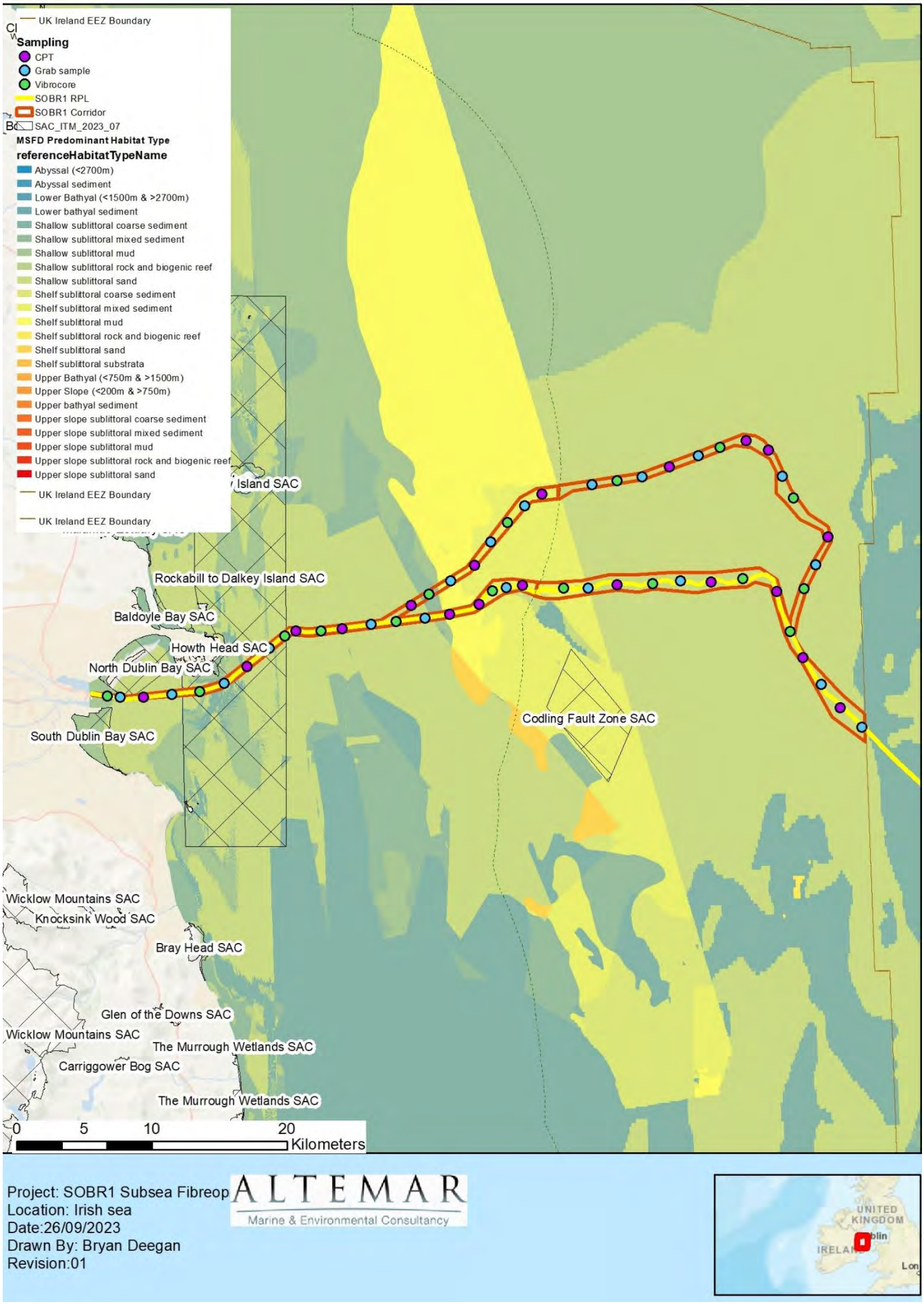
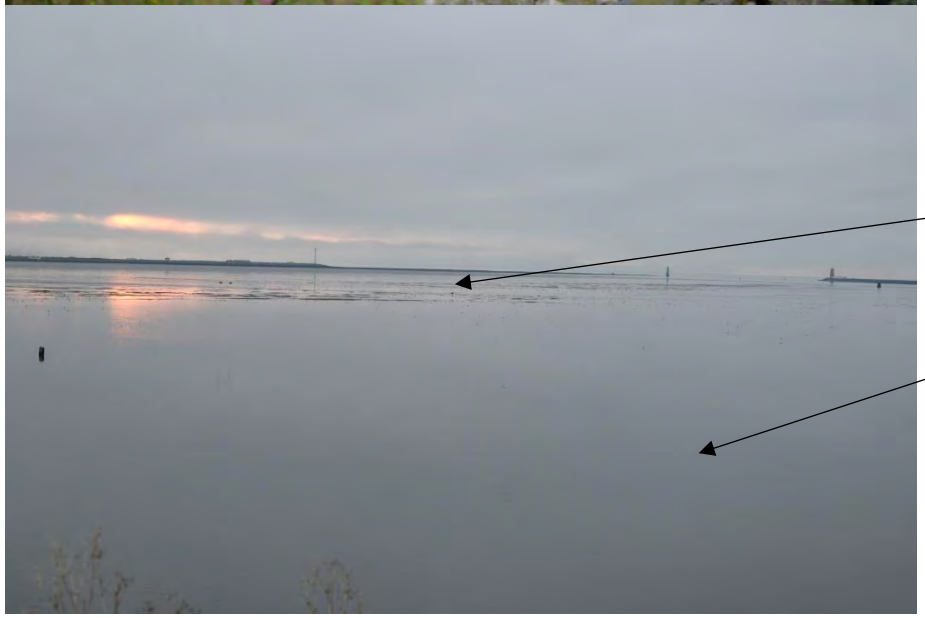


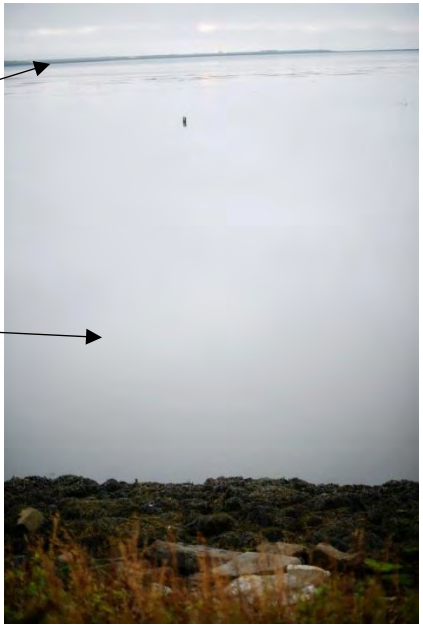
Figure 35. MSFD Habitat map.



Mudflats

Estuarine
River Tolka

Boulders



Plates 1-4. Landfall. (Clockwise from top left) Infill boulders(TL), infill berm (TR), Mudflats (BL) & River Tolka (BR)

Species

Flora

A 4m high berm of soil and reclaimed building material was located in the vicinity of the land fall area. The habitat in the landfall area, based on the Fossitt (2000) classification were built land, recolonising bare ground and sheltered rocky shores.

Species included butterfly-bush (*Buddleja davidii*), bramble (*Rubus fruticosus agg.*), dandelion (*Taraxacum spp.*), plantains (*Plantago spp.*), red valerian (*Centranthus ruber*), cleavers (*Galium aparine*), thistles (*Cirsium arvense* & *C. vulgare*), purple-loosestrife (*Lythrum salicaria*), Scarlet Pimpernel (*Anagallis arvensis*), red clover (*Trifolium pratense*), rape (*Brassica napus*) and docks (*Rumex sp.*), yarrow (*Achillea millefolium*) and sea mayweed (*Tripleurospermum maritimum*). The shore was dominated by knotted wrack (*Ascophyllum nodosum*), bladder wrack (*Fucus vesiculosus*) and gut weed (*Ulva intestinalis*). No protected or invasive species were noted on site.

Birds

No protected bird species were noted in the vicinity of or seen utilising the landfall area. The proposed terrestrial and intertidal survey works are not located within a SPA. The terrestrial and intertidal element of the survey works will be within Dublin Port. These terrestrial habitats in this area are highly disturbed and the intertidal habitat is proximate to a busy port and the dredged port channel (Figure 36). No birds were roosting on the shores during the site visit.

Amphibians

The common frog (*Rana temporaria*) was not observed in the surrounding terrestrial areas. NPWS records of rare and threatened species in addition to the NBDC sightings records were investigated and showed no records in proximity of the landfall or beach area. No drainage ditches were observed in the terrestrial element of the proposed survey works. No amphibians of conservation importance are recorded on NPWS data.

Mammals

No badger setts, otter holts or evidence of terrestrial mammals of conservation importance were seen in the vicinity of the landfall areas. Records of sightings of otter and hedgehog were noted in the vicinity of the landfall area based on the NBDC records. Grey Seal (*Halichoerus grypus*) and Common Seal (*Phoca vitulina*) have also been noted in the vicinity of the landfall area and along the cable route.

Cetacean Species

Figure 39 shows all cetacean species and Figure 40 shows monthly activity trends, in the vicinity of the proposed survey works, as recorded by IWDG sightings scheme. Cetacean activity has been seen in the vicinity of the proposed survey works. Species seen in the area include primarily harbour porpoise (*Phocoena phocoena*).

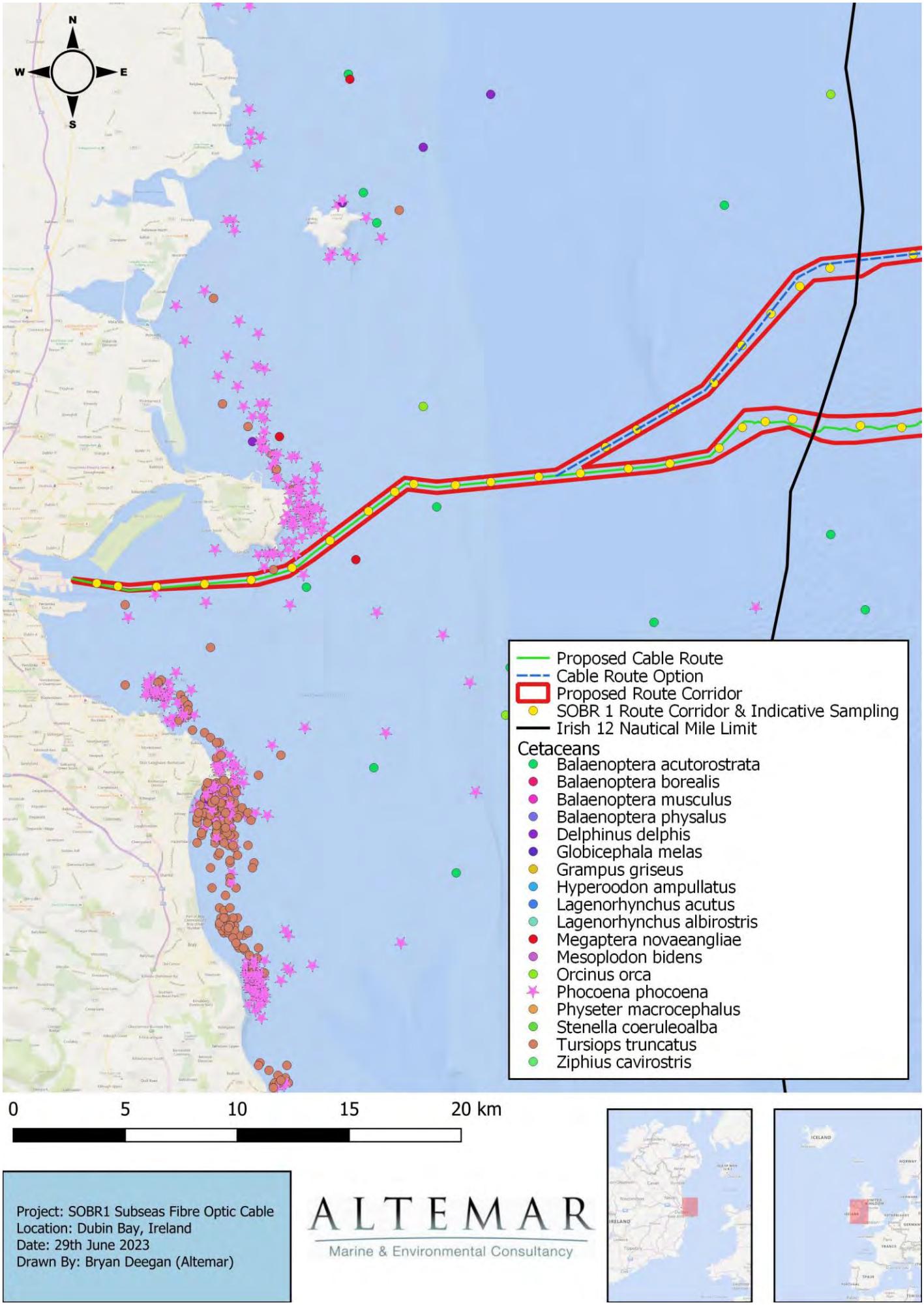


Figure 39. *Recorded Cetacean species sightings (Source IWDG sightings data) within the 12nm limit*

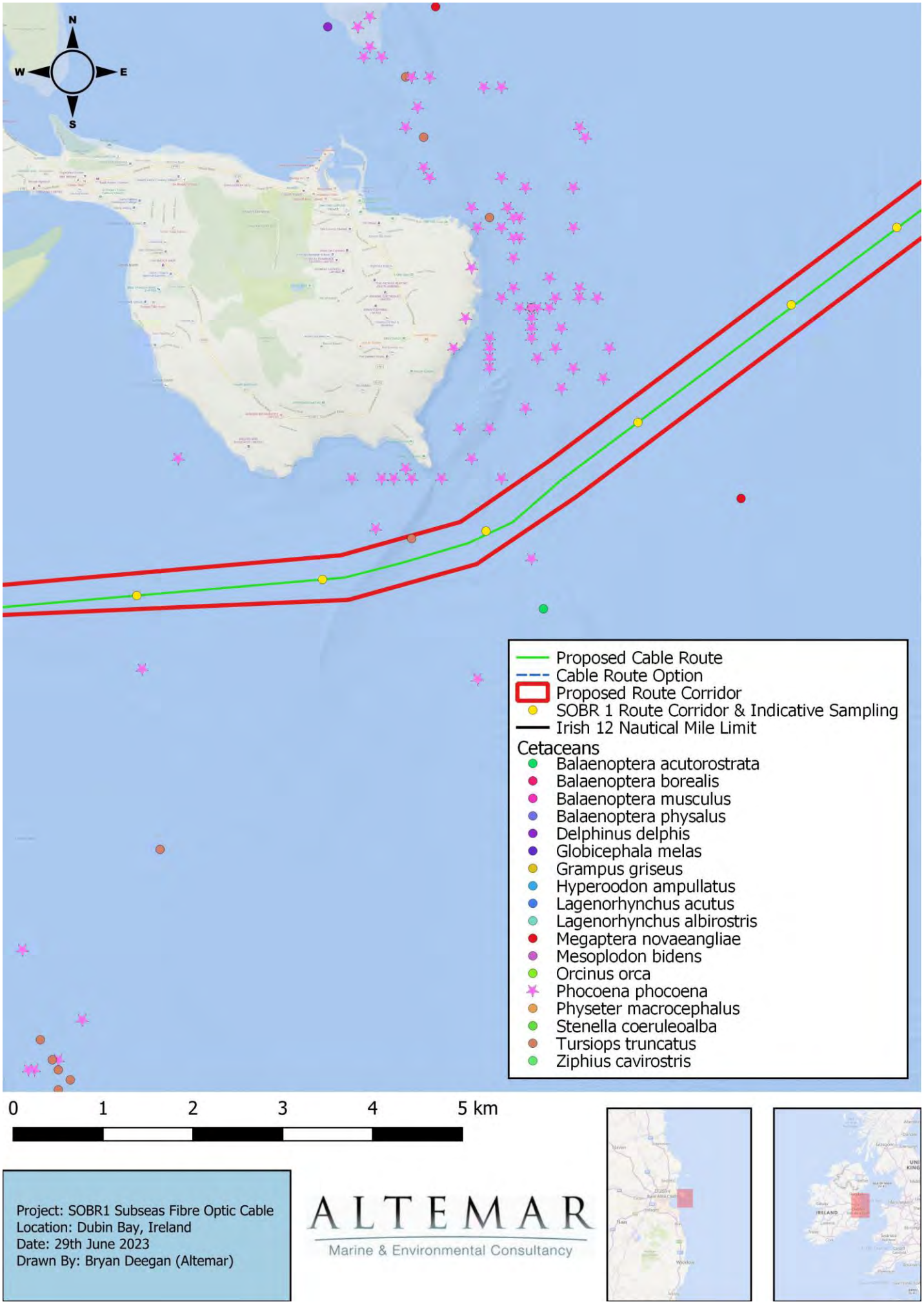


Figure 39. *Recorded Cetacean species sightings (Source IWDG sightings data) proximate to Howth Head*

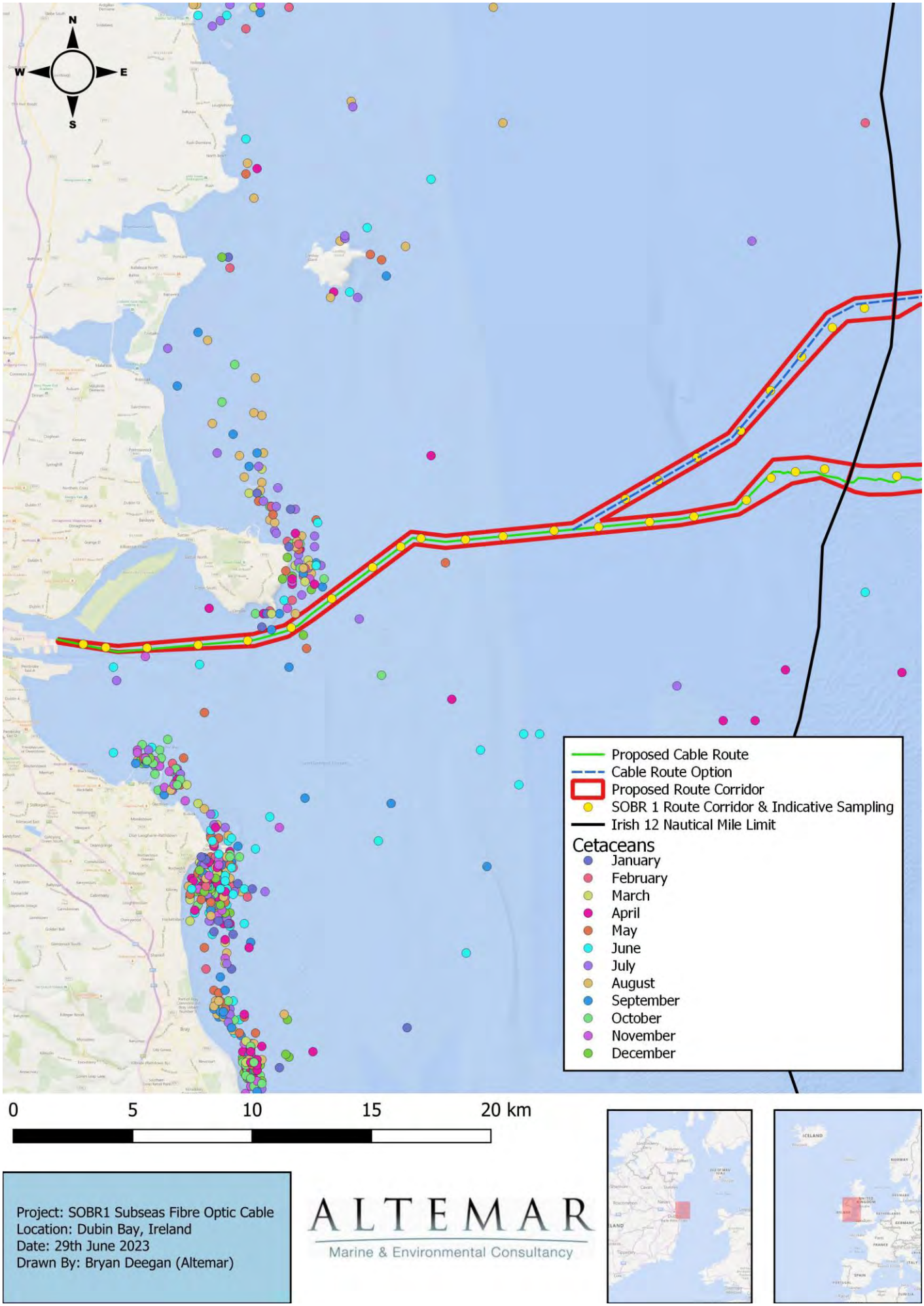


Figure 40. *Recorded Cetacean sightings (Source IWDG Sightings Data) recorded during the 12 months of the year within the 12nm limit*

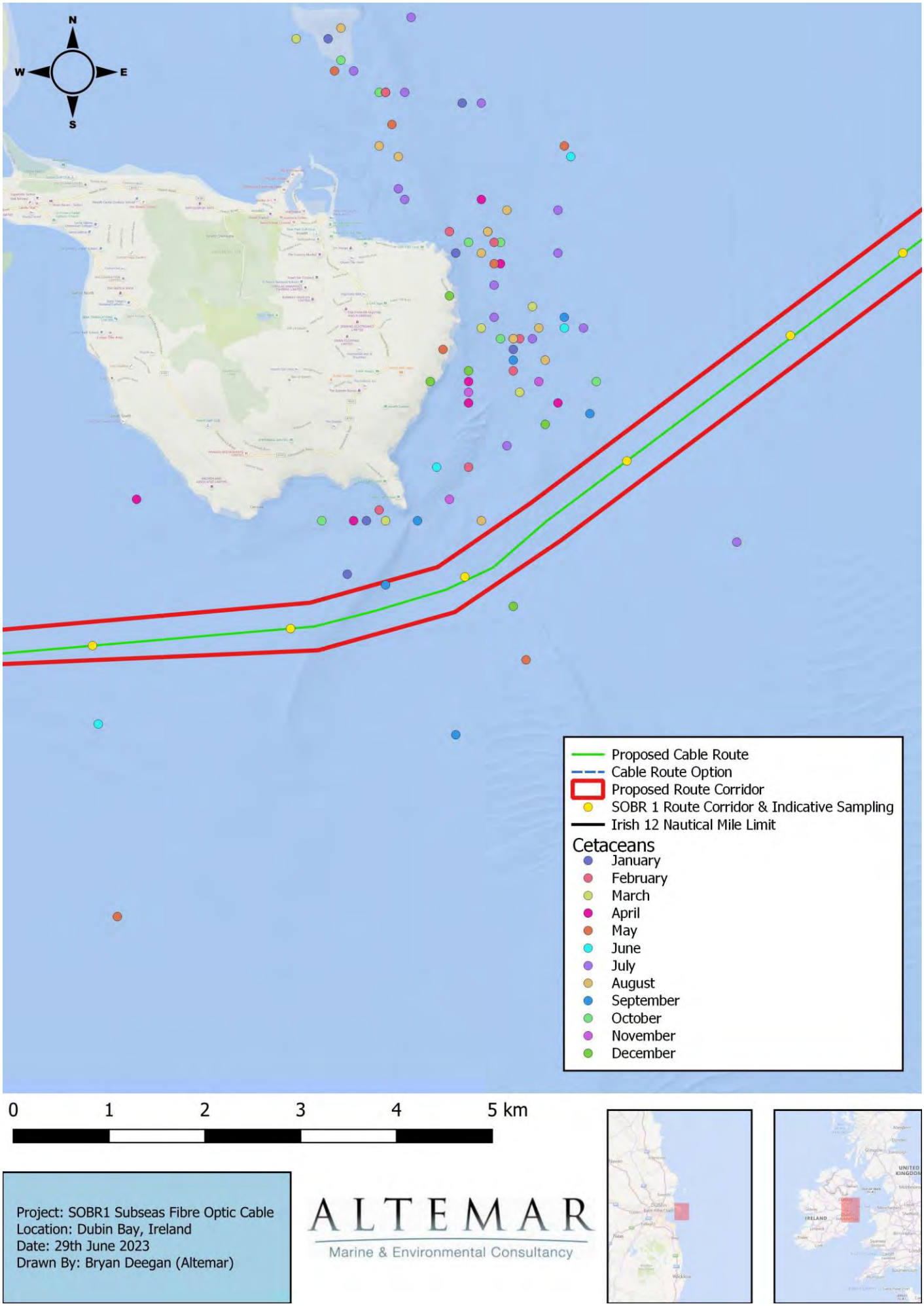
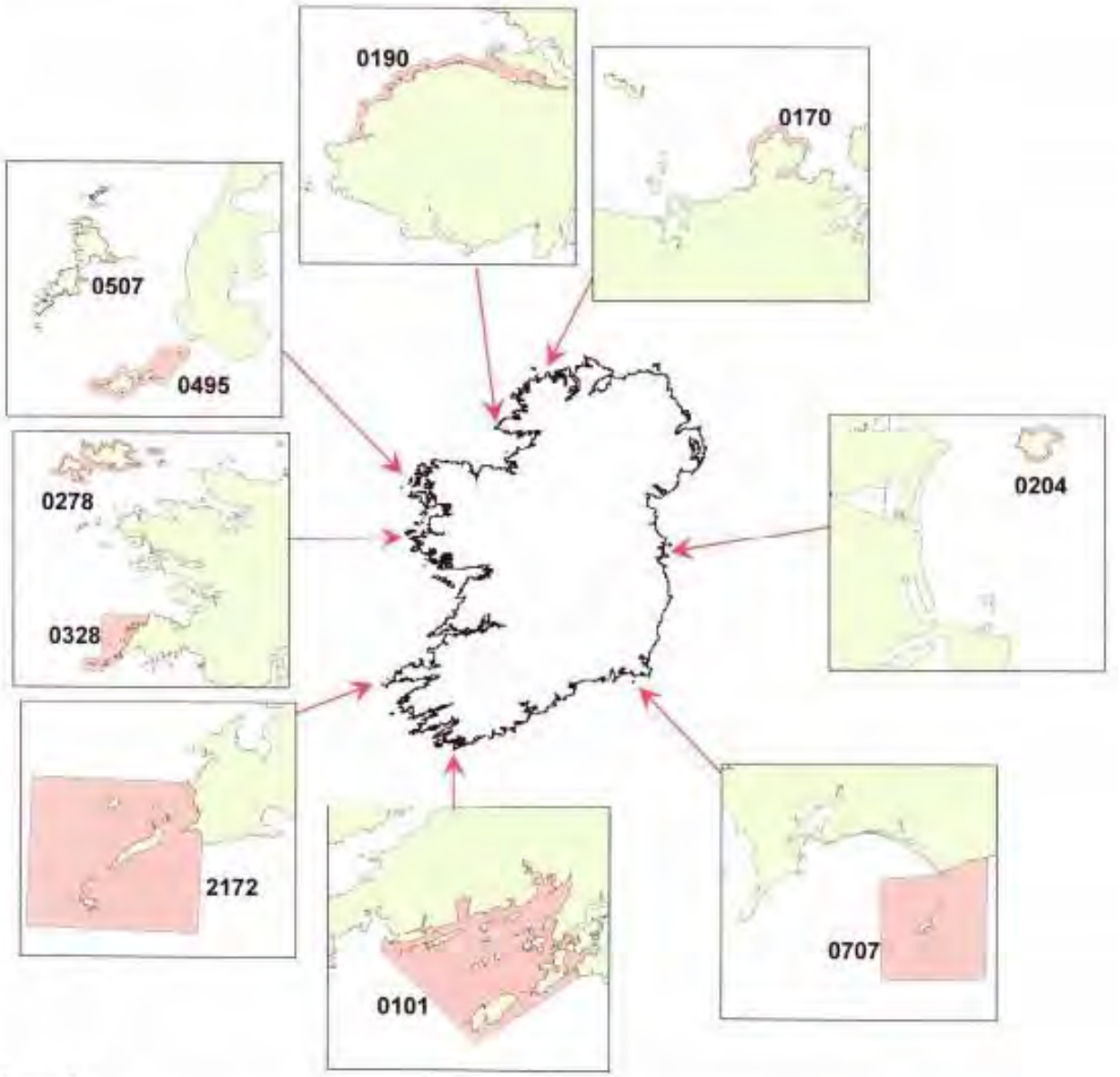


Figure 40. *Recorded Cetacean sightings (Source IWDG Sightings Data) recorded during the 12 months of the year proximate to Howth Head*



Legend:

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

Figure 41. *Conservation sites of Ireland containing Grey Seals*

Potential Effects

The marine and intertidal survey of a fibre-optic cable is a complex and challenging procedure. From the beginning of the planning stage to determining the final cable route, careful thought has gone into ensuring the longevity of the cable and uninterrupted service. This, in tandem with foreshore licencing and environmental legislation results in the routing of the cable in as stable an environment as possible that will have minimal impact on the environment and threat of anthropogenic disturbance. The laying of a cable within the 12nm limit, will involve burial in sediment, surface laying on hard substrate and elements of diver works in the shallow subtidal. The marine survey is to identify the optimal route for the cable. The survey elements will involve intertidal bar probes (by boat/diver) and acoustic/geophysical survey off shore.

The terrestrial activities will involve the movement of personnel and machinery on existing roads and a topographic survey (hand held) of the landfall area. No excavation is proposed in the terrestrial areas. The principal elements of the terrestrial activities are the facilitation of topographic surveys. Intertidal works involve bar probes during a single tide, where the intertidal area is covered by water. The presence of boats and personnel in the intertidal may temporally disturb wildlife. However, it is important to note that these works are within a busy port area that is accustomed to human and boat traffic. Minor disturbance of the sediments in the intertidal will occur during the bar probing but this effect would be deemed to be minor and localised.. Pollution generated from machinery/construction activities could potentially impact the intertidal and terrestrial habitats. Potential impacts on habitats and species and the extent of these impacts that could potentially be encountered during the construction phase are seen in Table 11a (habitats) and 11b (species).

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

Table 11a. Potential impacts on habitats during survey.

Habitat	Fossitt	Habitats Directive	Rating	Survey effects	Impact Significance in the absence of mitigation.
Low energy littoral rock	LR3	"Reef - 1170"	A	No geotechnical surveys will be carried out on reef habitat. Acoustic, geophysical surveys will not impact on this habitat.	Neutral/ localised/short-term/not significant. No mitigation is required.
Mud Shores	*LS4*		A	Works will take place during high tide. Minor localised disturbance will wake place.	Minor Adverse/ localised/short-term/not significant. Mitigation is required in relation potential pollution.
Circalittoral gravels and Sands	SS5		D	Temporary disturbance will occur during geotechnical sampling. Short term impacts would be expected on infauna due to compression/redistribution of sediments. No mitigation measures are required.	Minor Adverse/ localised/short-term/not significant.
Circalittoral Mixed sediments	SS8		D	Temporary disturbance will occur during geotechnical sampling. Short term impacts would be expected on infauna due to compression/redistribution of sediments. No mitigation measures are required.	Minor Adverse/ localised/short-term/not significant.
Built Land	BL		E	Works and including access will not impact on build land.	Neutral

Table 11b. Potential impacts on species during construction.

Species	Rating	Survey Effect	Impact Significance
Mammal-Cetaceans		A detailed section on the impact of the proposed survey follows this table. Subtidal survey works may be carried out in vicinity of cetaceans. Localised disturbance may occur due to the presence of the vessel and acoustic noise generated from survey works on the sea floor. Vessel speeds are slow (4kn). 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." Mitigation measures are required. The operations would comply with the NPWS (2014) "Guidance to manage the risk to marine mammals from man-made sound sources in Irish waters".	Minor Adverse/ localised/short-term/Not significant. Mitigation measures are required.
Mammal-Seals	A	A detailed section on the impact of the proposed survey follows this table. Subtidal survey works may be carried out in vicinity of seals. Localised disturbance may occur due to the presence of the vessel and acoustic noise generated from survey works on the sea floor. Vessel speeds are slow (4kn). 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." Mitigation measures are required. The operations would comply with the NPWS (2014) "Guidance to manage the risk to marine mammals from man-made sound sources in Irish waters".	Minor Adverse/ localised/short-term/Not significant. Mitigation measures are required.
Mammal-Bats	A	There was no evidence of bat species at this site. Survey works in the terrestrial and intertidal will be carried out during daylight hours and will not involve additional lighting or noise after dusk. It will not impact on the food source for bat species or habitats important for roosting.	Neutral
Mammals-Terrestrial	A-D	Survey works will be carried out during daylight hours and any impacts would be primarily due to disturbance. There was no evidence of terrestrial mammal species at this site. However, otter could be present in the marine environment close to the shore. Mitigation measures are required in relation to mammals.	Minor Adverse/ localised/short-term
Birds-Over wintering / Summer breeding	A	Survey works in the intertidal will be carried out during daylight hours and high tide when mudflats are covered. Impacts would be primarily due to disturbance. Based on the Waterbird Disturbance Mitigation Toolkit Informing Estuarine Planning & Construction Projects designed by Cutts et al. (2013)[1] the maximum likely distance at which disturbance will impact SCIs from this SPA is 300m (Cutts et al.,2013) from the proposed survey boundary. There	Minor Adverse/ localised/short-term/Not significant.

[1] https://gat04-live-1517c8a4486c41609369c68f30c8-aa81074.divio-media.org/filer_public/8f/bd/8fbdd7e9-ea6f-4474-869f-ec1e68a9c809/11367.pdf

Species	Rating	Survey Effect	Impact Significance
		are no SPAs located within 300m of the proposed terrestrial survey works. The intertidal and terrestrial works are within a busy port area. No significant noise impacts on protected bird species are predicted from the proposed survey works.	Mitigation measures are required.
Birds-residential	D	Survey works in the intertidal and terrestrial area will be carried out during daylight hours and impacts would be primarily due to disturbance. The works are in an existing highly disturbed environment.	Minor Adverse/ localised/short-term/Not significant. Mitigation measures are required.
Amphibians-Frogs	B	The intertidal or subtidal area is not a habitat for amphibian species. An ecologist will be on site to ensure species of conservation importance are not impacted.	Neutral
Terrestrial Flora	A-D	The terrestrial element of this project is solely in on existing build land located within Dublin Port.	Minor Adverse/ localised/short-term/Not significant. Mitigation measures are required
Marine algae	D	Intertidal marine algae are located proximate to the proposed survey works. Subtidal marine algae are primarily associated with hard substrata and will not be impacted by the proposed survey works. Subtidal geotechnical works (cores, grabs etc.) will not be in bedrock areas.	Neutral
Fish Species	A	Localised disturbance of marine species may occur due to survey activities. Vessel speeds are very slow and significant impacts on fish would be expected to be avoided during works. Important fishing areas and fishery areas are seen in Appendix II.	Minor Adverse/ localised/short-term. No mitigation measures are required.

Potential effects 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 12.

Table 12. *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	*Balaenidae (Balaena, Eubalaenidae spp.); Balaenopteridae (Balaenoptera physalus, B. musculus)*
		Balaenopteridae (Balaenoptera acutorostrata, B. bonaerensis, B. borealis, 1 B. edeni, B. omurai; Megaptera novaeangliae); Neobalenidae (Caperea);Eschrichtiidae (Eschrichtius)
High-frequency cetaceans	HF	*Physeteridae (Physeter); Ziphiidae (Berardius spp., Hyperoodon spp., Indopacetus, Mesoplodon spp., Tasmacetus, Ziphius); Delphinidae (Orcinus)*
		Delphinidae (Delphinus, Feresa, Globicephala spp., Grampus, 2 Lagenodelphis, Lagenorhynchus acutus, L. albirostris, L. obliquidens, L. obscurus, Lissodelphis spp., Orcaella spp., Peponocephala, Pseudorca, Sotalia spp., Sousa spp., Stenella spp., Steno, Tursiops spp.); Montodontidae (Delphinapterus, Monodon); Plantanistidae (Plantanista)
Very high frequency cetaceans	VHF	*Delphinidae (Cephalorhynchus spp.; Lagenorhynchus cruciger, L. australis); Phocoenidae (Neophocaena spp., Phocoena spp., Phocoenoides); Iniidae (Inia); Kogiidae (Kogia); Lipotidae (Lipotes); Pontoporiidae (Pontoporia)*
Phocid carnivores in water	PCW	*Phocidae (Cystophora, Erignathus, Halichoerus, Histriophoca, Hydrurga,Leptonychotes, Lobodon, Mirounga spp., Monachus, Neomonachus, Ommatophoca, Pagophilus, Phoca spp., Pusa 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 13). 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 14). The updated figures for PTS and TTS for are outlined in Table 15.

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 13. 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 14. Onset of PTS in Marine mammals

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

[1]Impulsive: 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).

[2]Non-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 15. Southall *et al.* (2019) TTS- and PTS-onset thresholds for marine mammals exposed to impulsive noise: SEL thresholds in dB re 1 μPa^2s under water and dB re $(20\ \mu Pa)^2s$; 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 μPa^2s)	Weighted SELcum (dB re 1 μPa^2s)
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 16.

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 16a. 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 16b. 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 12. 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.

Mitigation Measures & Monitoring

Specific controls will be incorporated into the proposed development project to minimise the potential negative impacts on the ecology within the Zone of Influence (ZoI) within / proximate to the subject site are outlined in below.

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 designated conservation sites, species or the site-specific conservation objectives. However, following the precautionary principle, mitigation measures have been developed to minimise the ecological impacts of the project, in relation to Natura 2000 Annex habitats and species. This is primarily 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 will be prepared in consultation with an ecologist and the site should be fully reinstated post works.

Reinstatement

Reinstatement of the terrestrial and intertidal habitat should be carried out to pre-construction conditions.

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. A spill kit will be on board the vessel.

Adverse Effects likely to occur from the project (post mitigation)

Standard and specific mitigation measures are proposed. These would ensure that any of the proposed survey works do not adversely affect any of the habitats or fauna proximate to the survey area. However, early implementation of ecological supervision and consultation with NPWS, prior to surveying, is seen as an important element to the project.

With the successful implementation of standard and specific mitigation measures to limit impacts on the biodiversity, no significant impacts are foreseen from the survey works of the proposed project on terrestrial or aquatic ecology. Residual impacts of the proposed project will be localised to the immediate vicinity of the proposed works.

The mitigation proposed for the development satisfactorily addresses the mitigation of potential impacts on terrestrial biodiversity and aquatic biodiversity through the application of the standard controls as outlined above. In particular, mitigation measures to ensure compliance with the Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Waters. It is essential that these measures outlined are complied with, to ensure that the proposed survey does not have environmental impacts and significant impacts on local biodiversity.

Residual effect: Minor Adverse/ localised/short-term/Not significant.

Cumulative 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 were assessed. The proposed cable survey route is in an area that experiences significant, constant vessel activity (due to proximity to Dublin Port). The survey works would not be seen to have an impact on water quality of the area including impacting the water quality status.

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

Table 18. *In combination effects evaluated.*

Ref. No.	Address	Proposal
3872/20	Irish Bitumen Storage Limited, Alexandra Road, Dublin Port, Dublin 1, D01 V0V2	The site is adjacent to Breakwater Road and Jetty Road. The development consists of removal of twelve bitumen & lubricant oil storage tanks with total capacity 3,105m3, removal of the associated equipment and removal of a control room building, followed by the installation of a new bitumen storage tank of 28m in diameter and 13.45m in height with a volume of approximately 8,275m3 and installation of a pump platform.
3625/20	Poolbeg Generating Station, Pigeon House Road, Dublin 4	Planning permission for development on a c. 5.3 ha site located within the existing Poolbeg Generating Station, Pigeon House Road, Dublin 4 (Eircode D04 XD82), which is licenced by the Environmental Protection Agency (EPA) under an Industrial Emissions (IE) Licence [Ref. P0577-03]. The development will consist of: (a) The demolition of three existing disused modern buildings with a combined floor area of 3,240 sq.m. comprising: (1) a single storey [up to 3.6 m high], c. 166 sq.m. Safety Centre (Pavilion) building; (2) a single storey [up to 4.5 m high], c. 463 sq. m. Store building; (3) a multi-storey [up to 20 m high], c. 2,611 sq.m. Store / Workshop building; (b) Works including: (1) remediation and cladding of exposed northern façade of 5-storey [up to 20.4 m high], redundant former Administration building; (2) cladding of exposed western façade of turbine hall building on eastern boundary of development site; (3) ancillary site clearance, grading and surfacing; (c) Construction and operation of a 75 MW capacity battery energy storage system (BESS) facility within a secured compound including the following elements: (1) Up to 24 battery container unit arrangements comprising: 24 Concrete plinths (c. 110 sq. m. , c. 0.5 m high) typically supporting battery containers (c. 2.6 m high); air conditioning (A/C) unit (c. 1.8 m high); inverter unit (c. 3.8 m high); battery transformer unit (c. 3.3 m high); ring main unit (RMU) (c. 3.3 m high); (2) a c. 126 sq. m., c. 4.7 m high control building; (3) industrial/ electrical plant including: (i) 3 lightning monopoles (c. 20 m high); (ii) SCADA communication mast (c. 18 m high); (iii) VAR support unit on concrete plinth (c. 24 sq. m., c. 3.4 m high); (iv) 2 bunded house transformers (c. 19.8 sq. m., c. 3.2 m high); (v) spare parts storage container (c. 36 sq. m., c. 2.6 m high); (vi) fenced transformer compound (c. 1,309 sq. m., c. 5.6 m high); (vii) cable trays (and associated service connections); (viii) pole mounted security cameras (c. 8.3 m high); (4) Removal of existing fencing and gates, and installation of: various boundary and internal fencing and gates with different treatments including palisade specification (c. 2.6 m high), and chainlink specification (c. 2.7 m high); (5) ancillary development works including provision of areas of hardstanding, internal access roads, onsite drainage and attenuation, temporary construction laydown areas; and connections to site services networks including: telecommunications, electrical, water supply, surface water drainage/ attenuation, and ancillary cabling. The primary access will be via the existing Poolbeg Generating Station entrance at Pigeon House Road with a temporary construction access via the existing entrance off the road immediately south of the Poolbeg Generating Station.
3711/18	Lands at Berth 47A, adjacent to Pigeon House Road, Dublin 4, north of the Ringsend	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

Ref. No.	Address	Proposal
	Wastewater Treatment Works.	use of lands for the storage of port-related maintenance and service equipment, construction project materials, contractor's site compound and project cargo; amendments to boundaries; and all associated services and site development works.
3638/18	Former Calor Yard and Ferry Terminals 1 and 2, Dublin Port, Dublin 1	The development will consist of a unified State services facility including: 2 no. Inspection Sheds (each 207sq.m and 7.5m in height), 2 no. single storey State Service office blocks (each 266sq.m and 3.5m in height), 5 no. Immigration Control Booths with a total floor area of 66sq.m and including canopy (293sq.m and 7.7m in height) and 4 no. gateways, control point comprising canopy (216sq.m and 7.7m in height) and 4 no. gateways, 24 no. staff car parking spaces, 20 no. car parking spaces, 18 no. HGV parking spaces, new 20m vehicular access onto Tolka Quay Road, 4 no. CCTV poles (18m high), new lighting (including 3 no. lighting columns 30m high and 8 no. lighting columns 12m high), 2.4m palisade fencing along sections of the northern and eastern site boundary and Alexandra Road, demolition of existing boundary wall along Tolka Quay Road and boundary fencing along Alexandra Road and, all associated site works. The development also includes modifications to check-in facilities and internal roads and circulation which will consist of: Demolition of existing freight office (612sq.m and 9.8m in height) and 3 no. check in booths with a total floor area of 32sq.m and associated site works and resurfacing to tie in with adjacent stacking areas, removal of Terminal Road West including associated fencing and resurfacing to tie in with adjacent stacking areas, realignment and lane alteration of Terminal Road South at junction with Terminal Road West; provision of signage gantry on Terminal Road South, extension of HGV check-in area including 6 no. booths with a total area of 60sq.m, 6 no. weighbridges and canopy (416sq.m and 7.8m in height). Associated site works including drainage, utility services, fencing, gates and bollards. All development to take place on a site of approx. 7.8 hectares.
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;

Ref. No.	Address	Proposal
		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.

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

Table 19. *Foreshore licence applications in Dublin*

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
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,	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	Applied

Reference	Title	Year	Location	Activity	Status
	Wicklow, and Dublin			conservation, environmental status and in this particular case to support the Environmental Impact Assessment Report for the proposed Mac Lir Offshore Wind Farm.	
FS007363	Greystones (OWL) Windfarm Ltd. proposing to develop windfarm off Dublin/Wicklow	2022	Off Counties Wicklow and Dublin	Greystones OWL Windfarm Limited is proposing to develop an offshore wind farm at a site off the Wicklow/Dublin coast. Greystones OWL Windfarm Limited is seeking to undertake a variety of marine surveys at the proposed site to inform the specific location, design and layout of the proposed offshore wind farm and export cable route to shore.	Applied
FS007546	Site Investigations for proposed Offshore Wind Farm, off counties Wicklow and Dublin	2022	Off counties Wicklow and Dublin	The main aims and objectives of the proposed activities are to: • Provide up to date detailed bathymetric mapping of the seabed; • Provide further information on the soil stability and morphology of the seabed; • Provide detailed information on ground conditions and geology; • Obtain up to date wind resource and metocean data for the site; and • To generate environmental and ecological data to inform the EIA and AA for the Codling Wind Park project.	Determination
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

Reference	Title	Year	Location	Activity	Status
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 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).	Determination
FS007188	Site Investigations for the proposed	2021	Off the coast of County Dublin and Wicklow	Geotechnical and geophysical site investigations and ecological, wind, wave and current monitoring to provide further	Determination

Reference	Title	Year	Location	Activity	Status
	Dublin Array Offshore Wind Farm			data to refine wind farm design, cable routing, landfall design and associated installation methodologies for the proposed Dublin Array offshore wind farm.	
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

The potential impacts of the proposed cable route survey are Temporary (i.e. Effects lasting less than a year) 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). 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 the survey for a marine fibre optic cable in subtidal and intertidal habitats. As can be seen from using the Best Available Techniques and mitigation measures during survey, considerable effort has gone into minimising the potential environmental impact of the project. "*Generally all mitigation measures applied for individual cables also contribute to reduction of cumulative impacts*" (OSPAR, 2012).

From a review of the above, it is concluded that no projects in the vicinity of the proposed project would be seen to have a significant in combination effect on Natura 2000 sites.

Residual Impacts and Conclusion

The mitigation proposed for the survey works satisfactorily addresses the mitigation of potential impacts on the sensitive receptors through the application of standard controls. The overall impact on the ecology of the proposed development will result in a short term minor adverse not significant residual effect on the ecology of the area and locality overall.

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Appendix I-Recorded species, associated designations and grid references

Date of Record	Species Name	Designation
Survey Area - Polygon		
02/08/1998	*Arctic Tern (Sterna paradisaea)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
10/08/1998	*Atlantic Puffin (Fratercula arctica)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
03/04/2021	*Black Guillemot (Cepphus grylle)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
13/02/1998	*Black-headed Gull (Larus ridibundus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List*
29/11/2016	*Black-legged Kittiwake (Rissa tridactyla)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
03/08/2012	*Common Guillemot (Uria aalge)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
10/08/1998	*Common Tern (Sterna hirundo)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
16/08/1987	*European Shag (Phalacrocorax aristotelis)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
10/08/1998	*European Storm-petrel (Hydrobates pelagicus)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
08/06/2001	*Great Black-backed Gull (Larus marinus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
21/09/1997	*Great Cormorant (Phalacrocorax carbo)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
03/04/2021	*Great Northern Diver (Gavia immer)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species*
06/09/1995	*Great Skua (Stercorarius skua)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
08/08/1998	*Herring Gull (Larus argentatus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List*
03/06/2016	*Lesser Black-backed Gull (Larus fuscus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*

Date of Record	Species Name	Designation
05/07/2016	*Manx Shearwater (Puffinus puffinus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
21/09/1997	*Mew Gull (Larus canus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
19/01/2017	*Northern Gannet (Morus bassanus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
03/08/2012	*Razorbill (Alca torda)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
16/08/1987	*Sandwich Tern (Sterna sandvicensis)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
12/10/2009	*Basking Shark (Cetorhinus maximus)*	*Threatened Species: OSPAR Convention*
31/03/2010	*Spotted Ray (Raja montagui)*	*Threatened Species: OSPAR Convention*
13/03/2008	*Thornback Ray (Raja clavata)*	*Threatened Species: OSPAR Convention*
13/09/2014	*Bottle-nosed Dolphin (Tursiops truncatus)*	*Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex II || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts*
29/11/2014	*Common Dolphin (Delphinus delphis)*	*Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts*
25/07/2017	*Common Porpoise (Phocoena phocoena)*	*Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex II || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts || Threatened Species: OSPAR Convention*
22/05/2016	*Minke Whale (Balaenoptera acutorostrata)*	*Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts*
O23		
04/12/2019	*Wireweed (Sargassum muticum)*	*Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)*
18/08/2020	*Common Frog (Rana temporaria)*	*Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex V || Protected Species: Wildlife Acts*
31/12/1968	*Smooth Newt (Lissotriton vulgaris)*	*Protected Species: Wildlife Acts*
24/05/2014	*Arctic Tern (Sterna paradisaea)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
10/06/1999	*Atlantic Puffin (Fratercula arctica)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
29/02/1984	*Barn Owl (Tyto alba)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List*

Date of Record	Species Name	Designation
14/07/2021	*Barn Swallow (Hirundo rustica)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
14/01/2023	*Bar-tailed Godwit (Limosa lapponica)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
01/05/2021	*Black Guillemot (Cepphus grylle)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
20/08/2012	*Black Tern (Chlidonias niger)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species*
16/03/2021	*Black-headed Gull (Larus ridibundus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List*
26/06/2020	*Black-legged Kittiwake (Rissa tridactyla)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
05/02/2023	*Black-tailed Godwit (Limosa limosa)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
29/02/1984	*Black-throated Diver (Gavia arctica)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
21/02/2023	*Brent Goose (Branta bernicla)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
15/05/2016	*Common Coot (Fulica atra)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section II Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
19/04/2020	*Common Eider (Somateria mollissima)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section II Bird Species || Protected Species: EU Birds Directive >> Annex III, Section II Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
31/12/2011	*Common Goldeneye (Bucephala clangula)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section II Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
31/07/1972	*Common Grasshopper Warbler (Locustella naevia)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
14/01/2023	*Common Greenshank (Tringa nebularia)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
26/06/2020	*Common Guillemot (Uria aalge)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*

Date of Record	Species Name	Designation
05/02/2023	*Common Kestrel (Falco tinnunculus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
31/12/2011	*Common Kingfisher (Alcedo atthis)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
05/02/2023	*Common Linnet (Carduelis cannabina)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
23/05/2014	*Common Pheasant (Phasianus colchicus)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section I Bird Species*
31/12/2011	*Common Pochard (Aythya ferina)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section II Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
16/02/2023	*Common Redshank (Tringa totanus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List*
31/12/2011	*Common Sandpiper (Actitis hypoleucos)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
31/12/2011	*Common Scoter (Melanitta nigra)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section II Bird Species || Protected Species: EU Birds Directive >> Annex III, Section III Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List*
16/02/2023	*Common Shelduck (Tadorna tadorna)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
17/12/2016	*Common Snipe (Gallinago gallinago)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section III Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
14/01/2023	*Common Starling (Sturnus vulgaris)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
11/08/2022	*Common Swift (Apus apus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
24/05/2015	*Common Tern (Sterna hirundo)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
04/05/2015	*Common Wood Pigeon (Columba palumbus)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section I Bird Species*
31/07/1972	*Corn Crake (Crex crex)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List*
15/01/2023	*Dunlin (Calidris alpina)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened*

Date of Record	Species Name	Designation
		Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
05/02/2023	*Eurasian Curlew (Numenius arquata)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section II Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List*
16/02/2023	*Eurasian Oystercatcher (Haematopus ostralegus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
16/02/2023	*Eurasian Teal (Anas crecca)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section II Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
31/12/2011	*Eurasian Tree Sparrow (Passer montanus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
16/02/2023	*Eurasian Wigeon (Anas penelope)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section II Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
31/12/2011	*Eurasian Woodcock (Scolopax rusticola)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section III Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
16/03/2021	*European Golden Plover (Pluvialis apricaria)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Protected Species: EU Birds Directive >> Annex II, Section II Bird Species || Protected Species: EU Birds Directive >> Annex III, Section III Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List*
12/01/2019	*European Shag (Phalacrocorax aristotelis)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
09/06/2012	*European Turtle Dove (Streptopelia turtur)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
31/12/2011	*Gadwall (Anas strepera)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
26/06/2020	*Great Black-backed Gull (Larus marinus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
26/06/2020	*Great Cormorant (Phalacrocorax carbo)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
13/01/2018	*Great Crested Grebe (Podiceps cristatus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
01/05/2021	*Great Northern Diver (Gavia immer)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species*
31/12/2011	*Greater Scaup (Aythya marila)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section II Bird Species ||*

Date of Record	Species Name	Designation
		Protected Species: EU Birds Directive >> Annex III, Section III Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
05/02/2023	*Grey Plover (Pluvialis squatarola)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
31/12/2011	*Hen Harrier (Circus cyaneus)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
14/01/2023	*Herring Gull (Larus argentatus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List*
24/05/2015	*House Martin (Delichon urbicum)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
13/07/2019	*House Sparrow (Passer domesticus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
31/12/2011	*Jack Snipe (Lymnocryptes minimus)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section III Bird Species*
31/12/1846	*Kentish Plover (Charadrius alexandrinus)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species*
08/05/2021	*Lesser Black-backed Gull (Larus fuscus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
05/02/2023	*Little Egret (Egretta garzetta)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species*
07/01/2023	*Little Grebe (Tachybaptus ruficollis)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
13/01/2018	*Little Gull (Larus minutus)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species*
31/12/2001	*Little Tern (Sternula albifrons)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
31/12/2011	*Long-tailed Duck (Clangula hyemalis)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section II Bird Species*
15/01/2023	*Mallard (Anas platyrhynchos)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section I Bird Species*
13/01/2018	*Manx Shearwater (Puffinus puffinus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
29/08/2012	*Mediterranean Gull (Larus melanocephalus)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
16/01/2019	*Merlin (Falco columbarius)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*

Date of Record	Species Name	Designation
05/02/2023	*Mew Gull (Larus canus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
14/01/2023	*Mute Swan (Cygnus olor)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
30/12/2022	*Northern Gannet (Morus bassanus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
14/01/2023	*Northern Lapwing (Vanellus vanellus)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section II Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List*
05/02/2023	*Northern Pintail (Anas acuta)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section II Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List*
05/02/2023	*Northern Shoveler (Anas clypeata)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section III Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List*
19/04/2021	*Northern Wheatear (Oenanthe oenanthe)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
26/06/2020	*Peregrine Falcon (Falco peregrinus)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species*
26/06/2020	*Razorbill (Alca torda)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
14/01/2023	*Red Knot (Calidris canutus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List*
14/01/2023	*Red-breasted Merganser (Mergus serrator)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section II Bird Species*
10/09/1957	*Red-necked Phalarope (Phalaropus lobatus)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List*
13/01/2018	*Red-throated Diver (Gavia stellata)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
29/08/2012	*Ringed Plover (Charadrius hiaticula)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
19/02/2020	*Rock Pigeon (Columba livia)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species*
29/08/2012	*Roseate Tern (Sterna dougallii)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*

Date of Record	Species Name	Designation
01/05/2020	*Rose-ringed Parakeet (Psittacula krameri)*	*Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species*
11/01/2018	*Ruff (Philomachus pugnax)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
10/07/2016	*Sand Martin (Riparia riparia)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
24/05/2014	*Sandwich Tern (Sterna sandvicensis)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
02/03/2016	*Short-eared Owl (Asio flammeus)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
16/02/2023	*Sky Lark (Alauda arvensis)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
31/12/1880	*Snowy Owl (Bubo scandiaca)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
08/09/2010	*Spotted Flycatcher (Muscicapa striata)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
22/05/2015	*Stock Pigeon (Columba oenas)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
14/01/2023	*Tufted Duck (Aythya fuligula)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section II Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
12/04/2016	*Twite (Carduelis flavirostris)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List*
31/12/2011	*Water Rail (Rallus aquaticus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
31/12/2011	*Whooper Swan (Cygnus cygnus)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
31/07/1991	*Yellow Wagtail (Motacilla flava)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
31/12/2011	*Yellowhammer (Emberiza citrinella)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List*
24/07/2014	*Atlantic Cod (Gadus morhua)*	*Threatened Species: OSPAR Convention*
30/06/1843	*Short-snouted Seahorse (Hippocampus hippocampus)*	*Threatened Species: OSPAR Convention*
14/07/2013	*Basking Shark (Cetorhinus maximus)*	*Threatened Species: OSPAR Convention*
31/07/2018	*Spotted Ray (Raja montagui)*	*Threatened Species: OSPAR Convention*
19/04/2021	*Thornback Ray (Raja clavata)*	*Threatened Species: OSPAR Convention*

Date of Record	Species Name	Designation
11/03/2020	*Elminius modestus*	*Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species*
07/07/2020	*Arthurdendyus triangulatus*	*Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species*
24/05/2014	*American Skunk-cabbage (Lysichiton americanus)*	*Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species || Invasive Species: Invasive Species >> EU Regulation No. 1143/2014 || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)*
23/08/2020	*Autumn Lady's-tresses (Spiranthes spiralis)*	*Threatened Species: Near threatened*
18/08/2020	*Bird's-foot (Ornithopus perpusillus)*	*Threatened Species: Least concern*
23/05/2014	*Brazilian Giant-rhubarb (Gunnera manicata)*	*Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)*
10/07/2022	*Butterfly-bush (Buddleja davidii)*	*Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species*
24/05/2014	*Canadian Waterweed (Elodea canadensis)*	*Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)*
08/06/2013	*Cherry Laurel (Prunus laurocerasus)*	*Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species*
06/09/2019	*Common Cord-grass (Spartina anglica)*	*Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)*
31/12/1986	*Curved Hard-grass (Parapholis incurva)*	*Threatened Species: Endangered*
30/08/2020	*Evergreen Oak (Quercus ilex)*	*Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species*
18/06/2020	*Giant Hogweed (Heracleum mantegazzianum)*	*Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)*
07/07/2020	*Giant-rhubarb (Gunnera tinctoria)*	*Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)*
08/06/2013	*Himalayan Honeysuckle (Leycesteria formosa)*	*Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species*
31/12/1986	*Hottentot-fig (Carpobrotus edulis)*	*Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)*
23/11/2022	*Japanese Knotweed (Fallopia japonica)*	*Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)*
24/09/2018	*Japanese Rose (Rosa rugosa)*	*Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species*
06/08/2022	*Lesser Centaury (Centaurium pulchellum)*	*Threatened Species: Endangered*
24/05/2014	*Little-robin (Geranium purpureum)*	*Threatened Species: Endangered*
31/12/1905	*Meadow Barley (Hordeum secalinum)*	*Threatened Species: Endangered*
19/07/2020	*Narrow-leaved Ragwort (Senecio inaequidens)*	*Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species*
15/06/2020	*Pale Flax (Linum bienne)*	*Threatened Species: Near threatened*
31/12/1986	*Prostrate Broom (Cytisus scoparius subsp. maritimus)*	*Threatened Species: Vulnerable*
18/11/2018	*Rhododendron ponticum*	*Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)*

Date of Record	Species Name	Designation
24/05/2014	*Salmonberry (Rubus spectabilis)*	*Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)*
04/05/1972	*Saltmarsh Flat-sedge (Blysmus rufus)*	*Threatened Species: Near threatened*
31/12/1833	*Sea Pea (Lathyrus japonicus)*	*Threatened Species: Data deficient*
30/12/2022	*Sea-buckthorn (Hippophae rhamnoides)*	*Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)*
31/12/1891	*Sea-kale (Crambe maritima)*	*Threatened Species: Near threatened*
13/08/2018	*Slender Thistle (Carduus tenuiflorus)*	*Threatened Species: Near threatened*
08/06/2013	*Slender Tufted-sedge (Carex acuta)*	*Threatened Species: Near threatened*
15/04/2022	*Spanish Bluebell (Hyacinthoides hispanica)*	*Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)*
07/05/2019	*Spring Vetch (Vicia lathyroides)*	*Threatened Species: Least concern*
08/06/2013	*Strawberry-tree (Arbutus unedo)*	*Threatened Species: Near threatened*
08/05/2021	*Sycamore (Acer pseudoplatanus)*	*Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species*
08/05/2022	*Three-cornered Garlic (Allium triquetrum)*	*Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)*
02/09/2022	*Traveller's-joy (Clematis vitalba)*	*Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species*
08/06/2013	*Turkey Oak (Quercus cerris)*	*Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species*
01/08/2020	*Wild Clary (Salvia verbenaca)*	*Threatened Species: Least concern*
31/12/1930	*Agabus (Gaurodytes) conspersus*	*Threatened Species: Endangered*
21/05/2023	*Harlequin Ladybird (Harmonia axyridis)*	*Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)*
31/12/1936	*Helophorus (Helophorus) fulgidicollis*	*Threatened Species: Vulnerable*
31/12/1900	*Heterocerus flexuosus*	*Threatened Species: Data deficient*
28/10/1945	*Ochthebius (Asiobates) auriculatus*	*Threatened Species: Near threatened*
31/12/1900	*Ochthebius (Asiobates) bicolon*	*Threatened Species: Vulnerable*
19/08/1942	*Ochthebius (Ochthebius) marinus*	*Threatened Species: Near threatened*
26/06/2015	*Dark Green Fritillary (Argynnis aglaja)*	*Threatened Species: Vulnerable*
03/09/1972	*Gatekeeper (Pyronia tithonus)*	*Threatened Species: Near threatened*
10/08/2021	*Grayling (Hipparchia semele)*	*Threatened Species: Near threatened*
27/05/2021	*Marsh Fritillary (Euphydryas aurinia)*	*Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex II || Threatened Species: Vulnerable*
01/06/2020	*Small Blue (Cupido minimus)*	*Threatened Species: Endangered*
11/06/2021	*Small Heath (Coenonympha pamphilus)*	*Threatened Species: Near threatened*

Date of Record	Species Name	Designation
10/08/2021	*Wall (Lasiommata megera)*	*Threatened Species: Endangered*
15/08/2005	*Andrena (Cnemidandrena) denticulata*	*Threatened Species: Vulnerable*
15/08/2003	*Andrena (Cnemidandrena) fuscipes*	*Threatened Species: Vulnerable*
04/05/2008	*Andrena (Melandrena) nigroaenea*	*Threatened Species: Vulnerable*
29/06/1973	*Andrena (Micrandrena) semilaevis*	*Threatened Species: Vulnerable*
01/04/2006	*Bombus (Bombus) cryptarum*	*Threatened Species: Data deficient*
17/06/2022	*Colletes (Colletes) similis*	*Threatened Species: Near threatened*
28/07/1923	*Gipsy Cuckoo Bee (Bombus (Psithyrus) bohemicus)*	*Threatened Species: Near threatened*
21/07/1950	*Great Yellow Bumble Bee (Bombus (Subterraneobombus) distinguendus)*	*Threatened Species: Endangered*
28/07/1923	*Halictus (Seladonia) tumulorum*	*Threatened Species: Near threatened*
09/09/1972	*Hill Cuckoo Bee (Bombus (Psithyrus) rupestris)*	*Threatened Species: Endangered*
01/08/2022	*Large Red Tailed Bumble Bee (Bombus (Melanobombus) lapidarius)*	*Threatened Species: Near threatened*
17/06/2022	*Moss Carder-bee (Bombus (Thoracombus) muscorum)*	*Threatened Species: Near threatened*
22/07/2008	*Neat Mining Bee (Lasioglossum (Evylaeus) nitidiusculum)*	*Threatened Species: Vulnerable*
30/05/2005	*Nomada panzeri*	*Threatened Species: Near threatened*
01/07/1925	*Northern Colletes (Colletes (Colletes) floralis)*	*Threatened Species: Vulnerable*
24/05/2014	*Cladonia portentosa*	*Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex V*
31/12/1885	*Bearded Pawwort (Barbilophozia barbata)*	*Threatened Species: Critically Endangered*
23/05/2014	*Bifid Crestwort (Lophocolea bidentata)*	*Threatened Species: Least concern*
23/05/2014	*Blueish Veilwort (Metzgeria violacea)*	*Threatened Species: Least concern*
31/12/1895	*Bog Germanderwort (Riccardia latifrons)*	*Threatened Species: Least concern*
31/12/1893	*Bog Notchwort (Cladopodiella fluitans)*	*Threatened Species: Least concern*
23/05/2014	*Bog-moss Flapwort (Odontoschisma sphagni)*	*Threatened Species: Least concern*
31/12/1893	*Bristly Fingerwort (Kurzia pauciflora)*	*Threatened Species: Least concern*
31/12/1893	*Chain Pincerwort (Cephalozia catenulata)*	*Threatened Species: Least concern*
23/05/2014	*Chiloscyphus polyanthos*	*Threatened Species: Least concern*
31/12/1896	*Comb Notchwort (Anastrophyllum minutum)*	*Threatened Species: Least concern*
15/09/2007	*Common Threadwort (Cephaloziella divaricata)*	*Threatened Species: Least concern*
23/05/2014	*Creeping Fingerwort (Lepidozia reptans)*	*Threatened Species: Least concern*

Date of Record	Species Name	Designation
31/12/1897	*Crescent-cup Liverwort (Lunularia cruciata)*	*Threatened Species: Least concern*
19/03/2010	*Delicate Germanderwort (Riccardia multifida)*	*Threatened Species: Least concern*
23/05/2014	*Dilated Scalewort (Frullania dilatata)*	*Threatened Species: Least concern*
08/06/2013	*Endive Pellia (Pellia endiviifolia)*	*Threatened Species: Least concern*
31/12/2001	*Fairy Beads (Microlejeunea ulicina)*	*Threatened Species: Least concern*
31/12/1893	*Forcipated Pincerwort (Cephalozia connivens)*	*Threatened Species: Least concern*
29/05/2012	*Greasewort (Aneura pinguis)*	*Threatened Species: Least concern*
23/05/2014	*Greater Whipwort (Bazzania trilobata)*	*Threatened Species: Least concern*
31/12/1893	*Grove Earwort (Scapania nemorea)*	*Threatened Species: Least concern*
31/12/1876	*Hemisphaeric Liverwort (Reboulia hemisphaerica)*	*Threatened Species: Least concern*
31/12/1893	*Hill Notchwort (Lophozia sudetica)*	*Threatened Species: Least concern*
31/12/1894	*Holt Notchwort (Cladopodiella francisci)*	*Threatened Species: Vulnerable*
15/09/2007	*Inflated Notchwort (Gymnocolea inflata)*	*Threatened Species: Least concern*
25/02/2012	*Jagged Germanderwort (Riccardia chamedryfolia)*	*Threatened Species: Least concern*
23/05/2014	*Lesser Featherwort (Plagiochila porelloides)*	*Threatened Species: Least concern*
30/04/1895	*Lesser Notchwort (Lophozia bicrenata)*	*Threatened Species: Least concern*
31/12/1891	*Matchstick Flapwort (Odontoschisma denudatum)*	*Threatened Species: Least concern*
31/12/2001	*Moon-leaved Pincerwort (Cephalozia lunulifolia)*	*Threatened Species: Least concern*
31/12/1879	*Narrow Mushroom-headed Liverwort (Preissia quadrata)*	*Threatened Species: Least concern*
31/12/1975	*Nees' Pellia (Pellia neesiana)*	*Threatened Species: Least concern*
23/05/2014	*Notched Pouchwort (Calypogeia arguta)*	*Threatened Species: Least concern*
23/05/2014	*Overleaf Pellia (Pellia epiphylla)*	*Threatened Species: Least concern*
11/06/2009	*Petalwort (Petalophyllum ralfsii)*	*Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex II || Protected Species: Flora Protection Order || Protected Species: Flora Protection Order >> Flora Protection Order 2015 Schedule C (Liverworts || Threatened Species: Least concern*
31/12/1895	*Rock Fingerwort (Lepidozia cupressina)*	*Threatened Species: Least concern*
31/12/1893	*Rock Veilwort (Metzgeria conjugata)*	*Threatened Species: Least concern*
31/12/2001	*Sea Scalewort (Frullania teneriffae)*	*Threatened Species: Least concern*
31/12/2001	*Spotty Scalewort (Frullania fragilifolia)*	*Threatened Species: Least concern*
31/12/1892	*Spurred Threadwort (Cephaloziella elachista)*	*Threatened Species: Data deficient*

Date of Record	Species Name	Designation
31/07/1956	*St Winifrid's Other Moss (Chiloscyphus pallescens)*	*Threatened Species: Least concern*
31/12/1895	*Straggling Pouchwort (Saccogyna viticulosa)*	*Threatened Species: Least concern*
15/09/2007	*Thick-set Earwort (Scapania compacta)*	*Threatened Species: Least concern*
19/03/2010	*Top Notchwort (Leiocolea turbinata)*	*Threatened Species: Least concern*
23/05/2014	*Trunk Pawwort (Barbilophozia attenuata)*	*Threatened Species: Least concern*
15/09/2007	*Tumid Notchwort (Lophozia ventricosa)*	*Threatened Species: Least concern*
19/03/2010	*Two-horned Pincerwort (Cephalozia bicuspidata)*	*Threatened Species: Least concern*
31/12/1895	*Variable-leaved Crestwort (Lophocolea heterophylla)*	*Threatened Species: Least concern*
23/05/2014	*Western Earwort (Scapania gracilis)*	*Threatened Species: Least concern*
31/12/1893	*Western Frostwort (Gymnomitrion crenulatum)*	*Threatened Species: Least concern*
23/05/2014	*Western Pouncewort (Lejeunea lamacerina)*	*Threatened Species: Least concern*
19/03/2010	*White Earwort (Diplophyllum albicans)*	*Threatened Species: Least concern*
31/12/1893	*Wood-rust (Nowellia curvifolia)*	*Threatened Species: Least concern*
07/10/2018	*Bottle-nosed Dolphin (Tursiops truncatus)*	*Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex II || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts*
17/10/2017	*Common Dolphin (Delphinus delphis)*	*Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts*
07/02/2021	*Common Porpoise (Phocoena phocoena)*	*Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex II || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts || Threatened Species: OSPAR Convention*
29/09/2022	*Common Seal (Phoca vitulina)*	*Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex II || Protected Species: EU Habitats Directive >> Annex V || Protected Species: Wildlife Acts*
01/10/2019	*Fin Whale (Balaenoptera physalus)*	*Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts*
10/04/2023	*Grey Seal (Halichoerus grypus)*	*Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex II || Protected Species: EU Habitats Directive >> Annex V || Protected Species: Wildlife Acts*
01/01/1860	*Minke Whale (Balaenoptera acutorostrata)*	*Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts*
31/12/1837	*Northern Bottlenose Whale (Hyperoodon ampullatus)*	*Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts*
05/12/2013	*Pygmy Sperm Whale (Kogia breviceps)*	*Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts*

Date of Record	Species Name	Designation
12/06/2015	*Risso's Dolphin (Grampus griseus)*	*Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts*
17/12/1901	*White-beaked Dolphin (Lagenorhynchus albirostris)*	*Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts*
17/06/2022	*Common Garden Snail (Cornu aspersum)*	*Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species*
19/04/2021	*Common Oyster (Ostrea edulis)*	*Threatened Species: OSPAR Convention*
01/04/2006	*Common Whorl Snail (Vertigo (Vertigo) pygmaea)*	*Threatened Species: Near threatened*
17/08/2022	*Dog Whelk (Nucella lapillus)*	*Threatened Species: OSPAR Convention*
30/06/1934	*English Chrysalis Snail (Leiostyla (Leiostyla) anglica)*	*Threatened Species: Vulnerable*
31/12/1910	*Field Slug (Deroceras (Deroceras) agreste)*	*Threatened Species: Data deficient*
31/12/1910	*Heath Snail (Helicella itala)*	*Threatened Species: Vulnerable*
16/04/2022	*Icelandic Cyprine (Arctica islandica)*	*Threatened Species: OSPAR Convention*
31/12/1910	*Keeled Slug (Tandonia sowerbyi)*	*Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species*
31/12/1940	*Lesser Bulin (Merdigera obscura)*	*Threatened Species: Endangered*
30/06/1934	*Marsh Whorl Snail (Vertigo (Vertigo) antivertigo)*	*Threatened Species: Vulnerable*
01/04/2006	*Moss Chrysalis Snail (Pupilla (Pupilla) muscorum)*	*Threatened Species: Endangered*
31/12/1910	*Prickly Snail (Acanthinula aculeata)*	*Threatened Species: Near threatened*
30/06/1934	*Striated Whorl Snail (Vertigo (Vertigo) substriata)*	*Threatened Species: Near threatened*
31/12/1940	*Tree Snail (Balea (Balea) perversa)*	*Threatened Species: Vulnerable*
08/11/1993	*Ventrosia ventrosa*	*Threatened Species: Vulnerable*
30/08/2020	*White Snail (Theba pisana)*	*Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species*
09/09/1992	*Wrinkled Snail (Candidula intersecta)*	*Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species*
30/06/1919	*Alpine Rock-moss (Andreaea alpina)*	*Threatened Species: Least concern*
14/10/1975	*Amblystegium serpens var. salinum*	*Threatened Species: Least concern*
15/09/2007	*Amblystegium serpens var. serpens*	*Threatened Species: Least concern*
23/05/2014	*Anomalous Bristle-moss (Orthotrichum anomalum)*	*Threatened Species: Least concern*
07/03/1993	*Awl-leaved Screw-moss (Tortula subulata)*	*Threatened Species: Least concern*
14/09/2007	*Baltic Bryum (Bryum marratii)*	*Threatened Species: Least concern*
07/09/2009	*Big Shaggy-moss (Rhytidiadelphus triquetrus)*	*Threatened Species: Least concern*
23/05/2014	*Bird's-claw Beard-moss (Barbula unguiculata)*	*Threatened Species: Least concern*
15/09/2007	*Bristly Haircap (Polytrichum piliferum)*	*Threatened Species: Least concern*

Date of Record	Species Name	Designation
03/06/2008	*Bristly Pottia (Tortula viridifolia)*	*Threatened Species: Least concern*
23/05/2014	*Broom Fork-moss (Dicranum scoparium)*	*Threatened Species: Least concern*
15/09/2007	*Bryum dichotomum*	*Threatened Species: Least concern*
25/02/2012	*Bryum pseudotriquetrum var. pseudotriquetrum*	*Threatened Species: Least concern*
23/05/2014	*Cape Thread-moss (Orthodontium lineare)*	*Threatened Species: Least concern*
23/05/2014	*Capillary Thread-moss (Bryum capillare)*	*Threatened Species: Least concern*
03/10/2008	*Cernuous Thread-moss (Bryum uliginosum)*	*Protected Species: Flora Protection Order || Protected Species: Flora Protection Order >> Flora Protection Order 2015 Schedule B (Mosses) || Threatened Species: Endangered*
15/09/2007	*Clustered Feather-moss (Rhynchostegium confertum)*	*Threatened Species: Least concern*
15/09/2007	*Common Aloe-moss (Aloina aloides)*	*Threatened Species: Least concern*
31/12/1915	*Common Bladder-moss (Physcomitrium pyriforme)*	*Threatened Species: Least concern*
23/05/2014	*Common Cord-moss (Funaria hygrometrica)*	*Threatened Species: Least concern*
23/05/2014	*Common Feather-moss (Eurhynchium praelongum)*	*Threatened Species: Least concern*
23/05/2014	*Common Pincushion (Dicranoweisia cirrata)*	*Threatened Species: Least concern*
15/09/2007	*Common Pottia (Tortula truncata)*	*Threatened Species: Least concern*
23/05/2014	*Common Striated Feather-moss (Eurhynchium striatum)*	*Threatened Species: Least concern*
23/05/2014	*Common Tamarisk-moss (Thuidium tamariscinum)*	*Threatened Species: Least concern*
31/12/1892	*Compact Bog-moss (Sphagnum compactum)*	*Threatened Species: Least concern*
31/12/1872	*Compact Swan-neck Moss (Campylopus brevipilus)*	*Threatened Species: Least concern*
15/09/2007	*Curly Crisp-moss (Trichostomum crispulum)*	*Threatened Species: Least concern*
15/09/2007	*Cylindric Beard-moss (Didymodon insulanus)*	*Threatened Species: Least concern*
31/12/1877	*Don's Thread-moss (Bryum donianum)*	*Threatened Species: Least concern*
23/05/2014	*Dotted Thyme-moss (Rhizomnium punctatum)*	*Threatened Species: Least concern*
31/12/1892	*Dusky Fork-moss (Dicranum fuscescens)*	*Threatened Species: Least concern*
31/12/1879	*Dwarf Haircap (Pogonatum nanum)*	*Threatened Species: Endangered*

Date of Record	Species Name	Designation
23/05/2014	*Elegant Silk-moss (Pseudotaxiphyllum elegans)*	*Threatened Species: Least concern*
23/05/2014	*Fallacious Beard-moss (Didymodon fallax)*	*Threatened Species: Least concern*
31/12/1865	*Feathery Bog-moss (Sphagnum cuspidatum)*	*Threatened Species: Least concern*
31/12/1858	*Felted Thyme-moss (Rhizomnium pseudopunctatum)*	*Threatened Species: Near threatened*
23/05/2014	*Fern-leaved Hook-moss (Cratoneuron filicinum)*	*Threatened Species: Least concern*
14/09/2007	*Fertile Feather-moss (Drepanocladus polygamus)*	*Threatened Species: Least concern*
23/05/2014	*Fissidens taxifolius var. taxifolius*	*Threatened Species: Least concern*
31/12/1856	*Floating Hook-moss (Warnstorfia fluitans)*	*Threatened Species: Least concern*
23/05/2014	*Fox-tail Feather-moss (Thamnobryum alopecurum)*	*Threatened Species: Least concern*
31/12/1888	*Giant Spear-moss (Calliergon giganteum)*	*Threatened Species: Least concern*
31/12/1872	*Glass-wort Feather-moss (Scleropodium tourettii)*	*Protected Species: Flora Protection Order || Protected Species: Flora Protection Order >> Flora Protection Order 2015 Schedule B (Mosses) || Threatened Species: Endangered*
04/04/2010	*Great Plait-moss (Hypnum lacunosum var. lacunosum)*	*Threatened Species: Least concern*
23/05/2014	*Grey-cushioned Grimmia (Grimmia pulvinata)*	*Threatened Species: Least concern*
31/12/1850	*Heart-leaved Spear-moss (Calliergon cordifolium)*	*Threatened Species: Least concern*
23/05/2014	*Heath Plait-moss (Hypnum jutlandicum)*	*Threatened Species: Least concern*
23/05/2014	*Heath Star Moss (Campylopus introflexus)*	*Threatened Species: Least concern*
07/03/1993	*Heim's Pottia (Hennediella heimii)*	*Threatened Species: Least concern*
23/05/2014	*Hooded Bristle-moss (Orthotrichum cupulatum)*	*Threatened Species: Least concern*
31/12/1852	*Hooked Scorpion-moss (Scorpidium scorpioides)*	*Threatened Species: Least concern*
15/09/2007	*Hornschuch's Beard-moss (Pseudocrossidium hornschuchianum)*	*Threatened Species: Least concern*
23/05/2014	*Intermediate Screw-moss (Syntrichia intermedia)*	*Threatened Species: Least concern*
23/05/2014	*Isothecium myosuroides var. myosuroides*	*Threatened Species: Least concern*

Date of Record	Species Name	Designation
23/05/2014	*Juniper Haircap (Polytrichum juniperinum)*	*Threatened Species: Least concern*
25/02/2012	*Kneiff's Hook-moss (Drepanocladus aduncus)*	*Threatened Species: Least concern*
31/12/1905	*Large Hook-moss (Drepanocladus lycopodioides)*	*Threatened Species: Vulnerable*
23/05/2014	*Lateral Cryphaea (Cryphaea heteromalla)*	*Threatened Species: Least concern*
23/05/2014	*Lesser Bird's-claw Beard-moss (Barbula convoluta)*	*Threatened Species: Least concern*
14/09/2007	*Many-seasoned Thread-moss (Bryum intermedium)*	*Protected Species: Flora Protection Order || Protected Species: Flora Protection Order >> Flora Protection Order 2015 Schedule B (Mosses) || Threatened Species: Endangered*
14/09/2007	*Megapolitan Feather-moss (Rhynchostegium megapolitanum)*	*Threatened Species: Near threatened*
23/05/2014	*Neat Feather-moss (Scleropodium purum)*	*Threatened Species: Least concern*
15/09/2007	*Nodding Thread-moss (Pohlia nutans)*	*Threatened Species: Least concern*
29/05/2012	*Olive Beard-moss (Didymodon tophaceus)*	*Threatened Species: Least concern*
15/09/2007	*Pink-fruited Thread-moss (Pohlia melanodon)*	*Threatened Species: Least concern*
23/05/2014	*Pointed Spear-moss (Calliergonella cuspidata)*	*Threatened Species: Least concern*
15/09/2007	*Potato Bryum (Bryum bornholmense)*	*Threatened Species: Near threatened*
15/09/2007	*Red Beard-moss (Bryoerythrophyllum recurvirostrum)*	*Threatened Species: Least concern*
03/06/2008	*Redshank (Ceratodon purpureus)*	*Threatened Species: Least concern*
23/05/2014	*Red-stemmed Feather-moss (Pleurozium schreberi)*	*Threatened Species: Least concern*
31/12/1857	*Rib-leaf Moss (Tortula atrovirens)*	*Threatened Species: Near threatened*
31/12/1856	*Rigid Aloe-moss (Aloina rigida)*	*Threatened Species: Regionally Extinct*
23/05/2014	*Rigid Beard-moss (Didymodon rigidulus)*	*Threatened Species: Least concern*
29/05/2012	*River Feather-moss (Brachythecium rivulare)*	*Threatened Species: Least concern*
23/05/2014	*Rough-stalked Feather-moss (Brachythecium rutabulum)*	*Threatened Species: Least concern*
31/12/1881	*Rusty Swan-neck Moss (Campylopus flexuosus)*	*Threatened Species: Least concern*
25/02/2012	*Sand Feather-moss (Brachythecium mildeanum)*	*Threatened Species: Least concern*
15/09/2007	*Seaside Grimmia (Schistidium maritimum)*	*Threatened Species: Least concern*

Date of Record	Species Name	Designation
17/11/2004	*Shady Beard-moss (Didymodon umbrosus)*	*Threatened Species: Vulnerable*
23/05/2014	*Shining Hookeria (Hookeria lucens)*	*Threatened Species: Least concern*
31/12/1857	*Sickle-leaved Hook-moss (Sanionia uncinata)*	*Threatened Species: Least concern*
15/09/2007	*Silky Forklet-moss (Dicranella heteromalla)*	*Threatened Species: Least concern*
23/05/2014	*Silky Wall Feather-moss (Homalothecium sericeum)*	*Threatened Species: Least concern*
23/05/2014	*Silver-moss (Bryum argenteum)*	*Threatened Species: Least concern*
14/10/1975	*Small-bud Bryum (Bryum gemmiferum)*	*Threatened Species: Least concern*
23/05/2014	*Spiral Extinguisher-moss (Encalypta streptocarpa)*	*Threatened Species: Least concern*
23/05/2014	*Springy Turf-moss (Rhytidiadelphus squarrosus)*	*Threatened Species: Least concern*
07/03/1860	*Starke's Pottia (Microbryum starckeanum)*	*Threatened Species: Regionally Extinct*
31/12/1854	*Straw Spear-moss (Straminergon stramineum)*	*Threatened Species: Least concern*
23/05/2014	*Supine Plait-moss (Hypnum cupressiforme var. resupinatum)*	*Threatened Species: Least concern*
24/05/2014	*Swan's-neck Thyme-moss (Mnium hornum)*	*Threatened Species: Least concern*
23/05/2014	*Swartz's Feather-moss (Oxyrrhynchium hians)*	*Threatened Species: Least concern*
23/05/2014	*Tender Feather-moss (Rhynchostegiella tenella)*	*Threatened Species: Least concern*
23/05/2014	*Thickpoint Grimmia (Schistidium crassipilum)*	*Threatened Species: Least concern*
15/09/2007	*Variable Crisp-moss (Trichostomum brachydontium)*	*Threatened Species: Least concern*
15/09/2007	*Variable Forklet-moss (Dicranella varia)*	*Threatened Species: Least concern*
31/12/1879	*Velvet Feather-moss (Brachytheciastrum velutinum)*	*Threatened Species: Endangered*
23/05/2014	*Wall Screw-moss (Tortula muralis)*	*Threatened Species: Least concern*
03/06/2008	*Wall Thread-moss (Bryum radiculosum)*	*Threatened Species: Least concern*
14/09/2007	*Warne's Thread-moss (Bryum warneum)*	*Protected Species: Flora Protection Order || Protected Species: Flora Protection Order >> Flora Protection Order 2015 Schedule B (Mosses) || Threatened Species: Endangered*
23/05/2014	*Waved Silk-moss (Plagiothecium undulatum)*	*Threatened Species: Least concern*

Date of Record	Species Name	Designation
31/12/1861	*Wedge-leaved Screw-moss (Tortula cuneifolia)*	*Threatened Species: Critically Endangered*
03/06/2008	*Weissia controversa var. controversa*	*Threatened Species: Least concern*
15/09/2007	*White-tipped Bristle-moss (Orthotrichum diaphanum)*	*Threatened Species: Least concern*
23/05/2014	*Whitish Feather-moss (Brachythecium albicans)*	*Threatened Species: Least concern*
29/05/2012	*Whorled Tufa-moss (Eucladium verticillatum)*	*Threatened Species: Least concern*
31/12/1879	*Wilson's Pottia (Tortula wilsonii)*	*Threatened Species: Regionally Extinct*
23/05/2014	*Wood Bristle-moss (Orthotrichum affine)*	*Threatened Species: Least concern*
15/09/2007	*Yellow Crisp-moss (Tortella flavovirens)*	*Threatened Species: Least concern*
14/09/2007	*Yellow Feather-moss (Homalothecium lutescens)*	*Threatened Species: Least concern*
15/09/2007	*Zygodon viridissimus var. viridissimus*	*Threatened Species: Least concern*
23/03/2023	*Common Lizard (Zootoca vivipara)*	*Protected Species: Wildlife Acts*
22/12/1968	*Kemp's Ridley (Lepidochelys kempii)*	*Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts*
30/06/2004	*Loggerhead Turtle (Caretta caretta)*	*Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex II || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts*
08/06/2013	*Red-eared Terrapin (Trachemys scripta)*	*Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species || Invasive Species: Invasive Species >> EU Regulation No. 1143/2014*
23/05/2014	*Brown Long-eared Bat (Plecotus auritus)*	*Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts*
15/11/2015	*Brown Rat (Rattus norvegicus)*	*Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)*
08/01/2023	*Eastern Grey Squirrel (Sciurus carolinensis)*	*Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> EU Regulation No. 1143/2014 || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)*
17/09/2017	*Eurasian Badger (Meles meles)*	*Protected Species: Wildlife Acts*
20/01/2023	*Eurasian Pygmy Shrew (Sorex minutus)*	*Protected Species: Wildlife Acts*
28/09/2017	*Eurasian Red Squirrel (Sciurus vulgaris)*	*Protected Species: Wildlife Acts*
05/05/1980	*European Otter (Lutra lutra)*	*Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex II || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts*
27/06/2018	*European Rabbit (Oryctolagus cuniculus)*	*Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species*

Date of Record	Species Name	Designation
31/08/2005	*Feral Ferret (Mustela furo)*	*Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species*
28/11/2015	*House Mouse (Mus musculus)*	*Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species*
07/06/2013	*Lesser Noctule (Nyctalus leisleri)*	*Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts*
24/10/2020	*Pine Marten (Martes martes)*	*Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex V || Protected Species: Wildlife Acts*
23/05/2014	*Pipistrelle (Pipistrellus pipistrellus sensu lato)*	*Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts*
23/05/2014	*Soprano Pipistrelle (Pipistrellus pygmaeus)*	*Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts*
27/07/2022	*West European Hedgehog (Erinaceus europaeus)*	*Protected Species: Wildlife Acts*
O33		
12/08/1997	*Arctic Tern (Sterna paradisaea)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
05/07/2016	*Atlantic Puffin (Fratercula arctica)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
31/12/2011	*Barn Swallow (Hirundo rustica)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
26/04/2021	*Black Guillemot (Cepphus grylle)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
19/01/2017	*Black-headed Gull (Larus ridibundus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List*
26/04/2021	*Black-legged Kittiwake (Rissa tridactyla)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
26/04/2021	*Common Guillemot (Uria aalge)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
30/07/2015	*Common Kestrel (Falco tinnunculus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
31/12/2011	*Common Linnet (Carduelis cannabina)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
31/12/2011	*Common Redshank (Tringa totanus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List*
31/12/2011	*Common Snipe (Gallinago gallinago)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section III Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
31/07/1972	*Common Starling (Sturnus vulgaris)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*

Date of Record	Species Name	Designation
31/07/1972	*Common Swift (Apus apus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
02/08/1998	*Common Tern (Sterna hirundo)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
29/02/1984	*Eurasian Curlew (Numenius arquata)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section II Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List*
31/12/2011	*Eurasian Oystercatcher (Haematopus ostralegus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
31/12/2011	*European Shag (Phalacrocorax aristotelis)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
26/04/2021	*Great Black-backed Gull (Larus marinus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
26/04/2021	*Great Cormorant (Phalacrocorax carbo)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
26/04/2021	*Herring Gull (Larus argentatus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List*
31/07/1972	*House Martin (Delichon urbicum)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
26/04/2021	*Lesser Black-backed Gull (Larus fuscus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
19/01/2017	*Little Gull (Larus minutus)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species*
05/07/2016	*Manx Shearwater (Puffinus puffinus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
07/08/1997	*Merlin (Falco columbarius)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
31/12/2011	*Mew Gull (Larus canus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
19/01/2017	*Northern Gannet (Morus bassanus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
31/07/1972	*Northern Wheatear (Oenanthe oenanthe)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
24/05/2014	*Razorbill (Alca torda)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
29/02/1984	*Red Knot (Calidris canutus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List*
29/02/1984	*Red-billed Chough (Pyrrhocorax pyrrhocorax)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*

Date of Record	Species Name	Designation
29/02/1984	*Red-throated Diver (Gavia stellata)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
31/12/2011	*Rock Pigeon (Columba livia)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species*
05/07/2016	*Roseate Tern (Sterna dougallii)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
19/09/2016	*Sandwich Tern (Sterna sandvicensis)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
29/02/1984	*Sky Lark (Alauda arvensis)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
06/09/1988	*Sooty Shearwater (Puffinus griseus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List*
31/07/1972	*Stock Pigeon (Columba oenas)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
20/07/1997	*Twite (Carduelis flavirostris)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List*
21/09/2009	*Basking Shark (Cetorhinus maximus)*	*Threatened Species: OSPAR Convention*
31/12/1999	*Prostrate Broom (Cytisus scoparius subsp. maritimus)*	*Threatened Species: Vulnerable*
15/08/1982	*Grayling (Hipparchia semele)*	*Threatened Species: Near threatened*
04/06/2016	*Small Heath (Coenonympha pamphilus)*	*Threatened Species: Near threatened*
24/05/2014	*Wall (Lasiommata megera)*	*Threatened Species: Endangered*
15/08/2003	*Andrena (Cnemidandrena) fuscipes*	*Threatened Species: Vulnerable*
15/08/2003	*Halictus (Seladonia) tumulorum*	*Threatened Species: Near threatened*
28/06/1973	*Large Red Tailed Bumble Bee (Bombus (Melanobombus) lapidarius)*	*Threatened Species: Near threatened*
15/09/2015	*Bottle-nosed Dolphin (Tursiops truncatus)*	*Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex II || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts*
18/08/2012	*Common Dolphin (Delphinus delphis)*	*Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts*
02/12/2020	*Common Porpoise (Phocoena phocoena)*	*Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex II || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts || Threatened Species: OSPAR Convention*
20/08/2003	*Grey Seal (Halichoerus grypus)*	*Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex II || Protected Species: EU Habitats Directive >> Annex V || Protected Species: Wildlife Acts*
12/07/2010	*Humpback Whale (Megaptera novaeangliae)*	*Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts*
10/06/2020	*Minke Whale (Balaenoptera acutorostrata)*	*Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts*

Date of Record	Species Name	Designation
15/06/2021	*West European Hedgehog (Erinaceus europaeus)*	*Protected Species: Wildlife Acts*
O43		
12/08/1997	*Arctic Tern (Sterna paradisaea)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
20/08/1996	*Atlantic Puffin (Fratercula arctica)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
14/12/1987	*Black-headed Gull (Larus ridibundus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List*
19/01/2017	*Black-legged Kittiwake (Rissa tridactyla)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
03/06/2011	*Common Guillemot (Uria aalge)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
19/01/2017	*Common Scoter (Melanitta nigra)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section II Bird Species || Protected Species: EU Birds Directive >> Annex III, Section III Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List*
03/06/2011	*Common Tern (Sterna hirundo)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
03/06/2011	*European Shag (Phalacrocorax aristotelis)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
24/08/1992	*European Storm-petrel (Hydrobates pelagicus)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
17/09/2016	*Great Black-backed Gull (Larus marinus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
03/06/2011	*Great Cormorant (Phalacrocorax carbo)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
11/09/1998	*Great Skua (Stercorarius skua)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
03/06/2011	*Herring Gull (Larus argentatus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List*
18/08/1994	*Lesser Black-backed Gull (Larus fuscus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
19/09/2016	*Manx Shearwater (Puffinus puffinus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
26/01/1988	*Mew Gull (Larus canus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
19/01/2017	*Northern Gannet (Morus bassanus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*

Date of Record	Species Name	Designation
03/06/2011	*Razorbill (Alca torda)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
12/08/1997	*Sandwich Tern (Sterna sandvicensis)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
27/09/2020	*Basking Shark (Cetorhinus maximus)*	*Threatened Species: OSPAR Convention*
20/03/2013	*Spotted Ray (Raja montagui)*	*Threatened Species: OSPAR Convention*
19/03/2009	*Spurdog (Squalus acanthias)*	*Threatened Species: OSPAR Convention*
20/03/2013	*Thornback Ray (Raja clavata)*	*Threatened Species: OSPAR Convention*
18/10/2003	*Common Dolphin (Delphinus delphis)*	*Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts*
24/10/2015	*Common Porpoise (Phocoena phocoena)*	*Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex II || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts || Threatened Species: OSPAR Convention*
25/08/2007	*Grey Seal (Halichoerus grypus)*	*Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex II || Protected Species: EU Habitats Directive >> Annex V || Protected Species: Wildlife Acts*
20/04/2013	*Minke Whale (Balaenoptera acutorostrata)*	*Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts*
O53		
11/09/1998	*Arctic Tern (Sterna paradisaea)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
05/07/2016	*Atlantic Puffin (Fratercula arctica)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
21/09/1997	*Black-headed Gull (Larus ridibundus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List*
19/01/2017	*Black-legged Kittiwake (Rissa tridactyla)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
10/03/2012	*Common Guillemot (Uria aalge)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
11/09/1998	*Common Tern (Sterna hirundo)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
24/07/1998	*European Storm-petrel (Hydrobates pelagicus)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
17/09/2016	*Great Black-backed Gull (Larus marinus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
02/11/2011	*Great Skua (Stercorarius skua)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
08/06/2001	*Herring Gull (Larus argentatus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List*

Date of Record	Species Name	Designation
17/09/2016	*Lesser Black-backed Gull (Larus fuscus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
17/09/2016	*Manx Shearwater (Puffinus puffinus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
21/09/1997	*Mew Gull (Larus canus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
19/09/2016	*Northern Gannet (Morus bassanus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
10/03/2012	*Razorbill (Alca torda)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
10/03/2012	*Sky Lark (Alauda arvensis)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
21/09/1997	*Sooty Shearwater (Puffinus griseus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List*
11/11/2004	*Spotted Ray (Raja montagui)*	*Threatened Species: OSPAR Convention*
11/11/2004	*Spurdog (Squalus acanthias)*	*Threatened Species: OSPAR Convention*
27/08/2011	*Bottle-nosed Dolphin (Tursiops truncatus)*	*Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex II || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts*
21/06/2014	*Common Dolphin (Delphinus delphis)*	*Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts*
26/09/2015	*Common Porpoise (Phocoena phocoena)*	*Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex II || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts || Threatened Species: OSPAR Convention*
11/10/2015	*Killer Whale (Orcinus orca)*	*Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts*
01/07/2020	*Minke Whale (Balaenoptera acutorostrata)*	*Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts*
O54		
02/08/1998	*Arctic Tern (Sterna paradisaea)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
05/07/2016	*Atlantic Puffin (Fratercula arctica)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
19/01/2017	*Black-legged Kittiwake (Rissa tridactyla)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
08/06/2001	*Common Guillemot (Uria aalge)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
02/08/1998	*Common Tern (Sterna hirundo)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
02/08/1998	*European Storm-petrel (Hydrobates pelagicus)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*

Date of Record	Species Name	Designation
17/09/2016	*Great Black-backed Gull (Larus marinus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
02/09/1981	*Great Skua (Stercorarius skua)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
22/05/2016	*Herring Gull (Larus argentatus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List*
17/09/2016	*Lesser Black-backed Gull (Larus fuscus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
05/07/2016	*Little Tern (Sternula albifrons)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
17/09/2016	*Manx Shearwater (Puffinus puffinus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
21/09/1997	*Mew Gull (Larus canus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
19/09/2016	*Northern Gannet (Morus bassanus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
08/06/2001	*Razorbill (Alca torda)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
17/09/2016	*Roseate Tern (Sterna dougallii)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
20/09/1993	*Spotted Ray (Raja montagui)*	*Threatened Species: OSPAR Convention*
20/09/1993	*Thornback Ray (Raja clavata)*	*Threatened Species: OSPAR Convention*
27/09/2020	*Common Dolphin (Delphinus delphis)*	*Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts*
29/11/2016	*Common Porpoise (Phocoena phocoena)*	*Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex II || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts || Threatened Species: OSPAR Convention*
25/07/2018	*Minke Whale (Balaenoptera acutorostrata)*	*Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts*
O63		
11/09/1998	*Arctic Tern (Sterna paradisaea)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
08/08/1998	*Atlantic Puffin (Fratercula arctica)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
13/02/1998	*Black-headed Gull (Larus ridibundus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List*
19/01/2017	*Black-legged Kittiwake (Rissa tridactyla)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
09/05/2000	*Common Guillemot (Uria aalge)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
18/08/1994	*Common Tern (Sterna hirundo)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened*

Date of Record	Species Name	Designation
		Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
11/07/1995	*European Storm-petrel (Hydrobates pelagicus)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
17/09/2016	*Great Black-backed Gull (Larus marinus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
12/08/1997	*Great Skua (Stercorarius skua)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
25/02/2016	*Herring Gull (Larus argentatus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List*
21/09/1997	*Lesser Black-backed Gull (Larus fuscus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern – Amber List*
05/07/2016	*Manx Shearwater (Puffinus puffinus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern – Amber List*
17/09/2016	*Northern Gannet (Morus bassanus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
02/11/1999	*Razorbill (Alca torda)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
11/09/1998	*Sooty Shearwater (Puffinus griseus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List*
26/07/2008	*Bottle-nosed Dolphin (Tursiops truncatus)*	*Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex II || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts*
25/07/2018	*Common Dolphin (Delphinus delphis)*	*Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts*
22/05/2016	*Common Porpoise (Phocoena phocoena)*	*Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex II || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts || Threatened Species: OSPAR Convention*
21/08/2010	*Grey Seal (Halichoerus grypus)*	*Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex II || Protected Species: EU Habitats Directive >> Annex V || Protected Species: Wildlife Acts*
25/05/2013	*Minke Whale (Balaenoptera acutorostrata)*	*Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts*
17/07/2013	*Risso's Dolphin (Grampus griseus)*	*Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts*
O64		
02/09/1981	*Arctic Tern (Sterna paradisaea)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
02/08/1983	*Atlantic Puffin (Fratercula arctica)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern – Amber List*
29/11/2016	*Black-legged Kittiwake (Rissa tridactyla)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern – Amber List*
09/05/2000	*Common Guillemot (Uria aalge)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern – Amber List*

Date of Record	Species Name	Designation
10/08/1998	*European Storm-petrel (Hydrobates pelagicus)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
02/11/1999	*Great Black-backed Gull (Larus marinus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern – Amber List*
10/08/1998	*Herring Gull (Larus argentatus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List*
17/09/2016	*Lesser Black-backed Gull (Larus fuscus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern – Amber List*
05/07/2016	*Manx Shearwater (Puffinus puffinus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern – Amber List*
05/07/2016	*Northern Gannet (Morus bassanus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
09/05/2000	*Razorbill (Alca torda)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern – Amber List*
04/06/2012	*Common Dolphin (Delphinus delphis)*	*Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts*
22/05/2016	*Common Porpoise (Phocoena phocoena)*	*Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex II || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts || Threatened Species: OSPAR Convention*
22/05/2016	*Minke Whale (Balaenoptera acutorostrata)*	*Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts*
O72		
08/08/1998	*Black-legged Kittiwake (Rissa tridactyla)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern – Amber List*
08/08/1998	*Common Guillemot (Uria aalge)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern – Amber List*
02/05/1994	*Lesser Black-backed Gull (Larus fuscus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern – Amber List*
08/08/1998	*Manx Shearwater (Puffinus puffinus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern – Amber List*
08/08/1998	*Northern Gannet (Morus bassanus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
08/08/1998	*Razorbill (Alca torda)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern – Amber List*
29/11/2016	*Common Porpoise (Phocoena phocoena)*	*Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex II || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts || Threatened Species: OSPAR Convention*
10/06/2012	*Humpback Whale (Megaptera novaeangliae)*	*Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts*
O73		
27/08/2011	*Arctic Tern (Sterna paradisaea)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*

Date of Record	Species Name	Designation
27/08/2011	*Atlantic Puffin (Fratercula arctica)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
22/05/2016	*Black-legged Kittiwake (Rissa tridactyla)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
27/08/2011	*Common Guillemot (Uria aalge)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
27/08/2011	*Common Tern (Sterna hirundo)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
27/08/2011	*European Golden Plover (Pluvialis apricaria)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Protected Species: EU Birds Directive >> Annex II, Section II Bird Species || Protected Species: EU Birds Directive >> Annex III, Section III Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List*
27/08/2011	*European Shag (Phalacrocorax aristotelis)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
08/08/1998	*European Storm-petrel (Hydrobates pelagicus)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
19/06/2012	*Great Black-backed Gull (Larus marinus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
27/08/2011	*Great Skua (Stercorarius skua)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
27/08/2011	*Herring Gull (Larus argentatus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List*
08/08/1998	*Lesser Black-backed Gull (Larus fuscus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern – Amber List*
19/06/2012	*Manx Shearwater (Puffinus puffinus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern – Amber List*
19/06/2012	*Northern Gannet (Morus bassanus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
27/08/2011	*Razorbill (Alca torda)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern – Amber List*
15/11/2004	*Spotted Ray (Raja montagui)*	*Threatened Species: OSPAR Convention*
15/11/2004	*Thornback Ray (Raja clavata)*	*Threatened Species: OSPAR Convention*
25/05/2013	*Bottle-nosed Dolphin (Tursiops truncatus)*	*Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex II || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts*
02/12/2019	*Common Dolphin (Delphinus delphis)*	*Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts*
22/08/2015	*Common Porpoise (Phocoena phocoena)*	*Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex II || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts || Threatened Species: OSPAR Convention*
25/07/2009	*Grey Seal (Halichoerus grypus)*	*Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex II || Protected Species: EU Habitats Directive >> Annex V || Protected Species: Wildlife Acts*

Date of Record	Species Name	Designation
25/07/2015	*Minke Whale (Balaenoptera acutorostrata)*	*Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts*
O74		
10/08/1998	*Arctic Tern (Sterna paradisaea)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
10/08/1998	*Atlantic Puffin (Fratercula arctica)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
10/08/1998	*Black-headed Gull (Larus ridibundus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List*
25/02/2016	*Black-legged Kittiwake (Rissa tridactyla)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
10/08/1998	*Common Guillemot (Uria aalge)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
10/08/1998	*Common Tern (Sterna hirundo)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern – Amber List*
10/08/1998	*European Storm-petrel (Hydrobates pelagicus)*	*Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
24/08/1992	*Great Black-backed Gull (Larus marinus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern – Amber List*
10/08/1998	*Herring Gull (Larus argentatus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List*
10/08/1998	*Lesser Black-backed Gull (Larus fuscus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern – Amber List*
09/07/215	*Manx Shearwater (Puffinus puffinus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern – Amber List*
10/08/1998	*Northern Gannet (Morus bassanus)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List*
10/08/1998	*Razorbill (Alca torda)*	*Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern – Amber List*
25/02/2016	*Common Porpoise (Phocoena phocoena)*	*Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex II || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts || Threatened Species: OSPAR Convention*

Appendix II-Fisheries Areas

Spawning and nursery grounds proximate to the proposed foreshore survey area are seen in Figures 1-18.

Spawning Grounds

As outlined by Ellis et al. (2012)[1] "*There are numerous modes of reproduction in fishes, and broadcast spawning, which involves shedding the eggs and sperm into the water column, is one of the more frequent strategies (Balon, 1984). Such species may have more extensive spawning grounds than those species which deposit eggs on the sea floor or on biogenic structures. The presence of eggs and larvae of broadcast spawners can be indicative of spawning grounds, although it should be noted that later larval stages may have been advected away from the spawning site. Mature fish with running eggs or sperm can also be indicative of spawning grounds, although these data were not used in the current project, as not all areas have surveys at the right time of year in order to assess the spawning state*."

Nursery Grounds

As outlined by Ellis et al. (2012)[1] "*The grounds where juveniles are found are termed nursery grounds. It has been suggested that nursery grounds are those sites where juveniles occur at higher densities, have reduced rates of predation and have faster growth rates than in other habitats, which should result in nursery grounds providing a greater relative contribution to adult recruitment in comparison to non-nursery ground habitats (see Beck et al., 2003; Heupel et al., 2007). Whilst field data are available to highlight areas where juveniles occur at higher densities, comparable data to confirm that they avoid predation more successfully, have enhanced growth rates and provide greater relative contributions to recruitment are generally lacking*."

Conclusions

The proposed survey route options pass through known cod nursery and spawning grounds. These nursery grounds span for much of the Irish coastline and therefore the grounds in which the survey works will take place are not of specific importance to this species. These spawning grounds span a large proportion of the Irish east coast, and so any disturbances to spawning activity due to the proposed surveys should not be significant. The spawning period for cod ranges from January through April.

The proposed inshore survey route options pass through known haddock nursery and spawning grounds. Haddock nursery grounds span large areas off the east and south coasts, as well as smaller areas off the west and northwest coasts. The grounds in which the survey works will take place are therefore not of specific importance to this species. There is the potential for minor disturbances to haddock within their spawning grounds. These spawning grounds span a similar area and location to known nursery grounds, and so any disturbances to spawning activity due to the proposed surveys should not be significant. The spawning period for haddock ranges from February through May, and so to avoid disturbance to spawning haddock, survey activities should be undertaken outside of this period.

The proposed inshore survey route options pass through known horse mackerel nursery grounds. Horse mackerel nursery grounds span a large proportion of Irish waters, including the entirety of the Irish Sea, and so the grounds in which the survey works will take place are therefore not of specific importance to this species.

The proposed foreshore survey route options pass through known whiting nursery and spawning grounds. These nursery grounds span for the majority of the northern Irish Sea and therefore the grounds in which the survey works will take place are not of specific importance to this species. There is the potential for minor disturbances to whiting within their spawning grounds. These spawning grounds span a large proportion of the north Irish Sea, and so any disturbances to spawning activities from the proposed surveys should not be significant. The spawning period for whiting ranges from February through June.

The proposed survey alternative route option to the north passes through known *Nephrops norvegicus* (Dublin Bay Prawn) grounds (FU15 Western Irish Sea). The proposed alternative survey route to the north passes just within the southern fringe of these nephrops grounds, and so the grounds in which the survey works will take place are therefore not of specific importance to this species. Nephrops reproduction takes place throughout the months of August and September.

The proposed survey route options pass through the range of wild Atlantic salmon. Atlantic salmon native to rivers draining into the Irish Sea, Celtic Sea and English Channel utilise the Irish Sea as transitional habitat both as smolts out-migrating from rivers towards their feeding grounds and as adults returning to their natal streams. Atlantic salmon will be present within the proposed survey routes year-round, peaking in June when out-migrating smolts overlap with adults returning to spawn. Due to the extent of the range of Atlantic salmon, it is unlikely that the proposed works will have any significant impact on Atlantic Salmon.

The proposed survey works would not be expected to result in the direct mortality of fish species due to the slow-moving nature of the survey vessel which operates on a 24hr basis. The survey would not be expected to have any long-lasting effects on any habitats of significant importance to any of the aforementioned fish species. The risk of short-term disturbance to known fish breeding areas through which the proposed routes pass is highest between January and September.

References

Ellis, J.R., Milligan, S.P., Readdy, L., Taylor, N. and Brown, M.J. (2011). *Science Series Spawning and nursery grounds of selected fish species in UK waters*. [online] Available at: https://www.cefas.co.uk/publications/techrep/TechRep147.pdf.

Farmer A.S.D. (1974).*Reproduction in Nephrops norvegicus (Decapoda: Nephropidae)*. https://doi.org/10.1111/j.1469-7998.1974.tb03150.x

Green, A., Honkanen, H.M., Ramsden, P. *et al. Evidence of long-distance coastal sea migration of Atlantic salmon, Salmo salar, smolts from northwest England (River Derwent).* Anim Biotelemetry **10**, 3 (2022). https://doi.org/10.1186/s40317-022-00274-2

Barry J, Kennedy RJ, Rosell R, Roche WK. *Atlantic salmon smolts in the Irish Sea: First evidence of a northerly migration trajectory.* Fish Manag Ecol. 2020;00:1–6. https://doi.org/10.1111/fme.12433

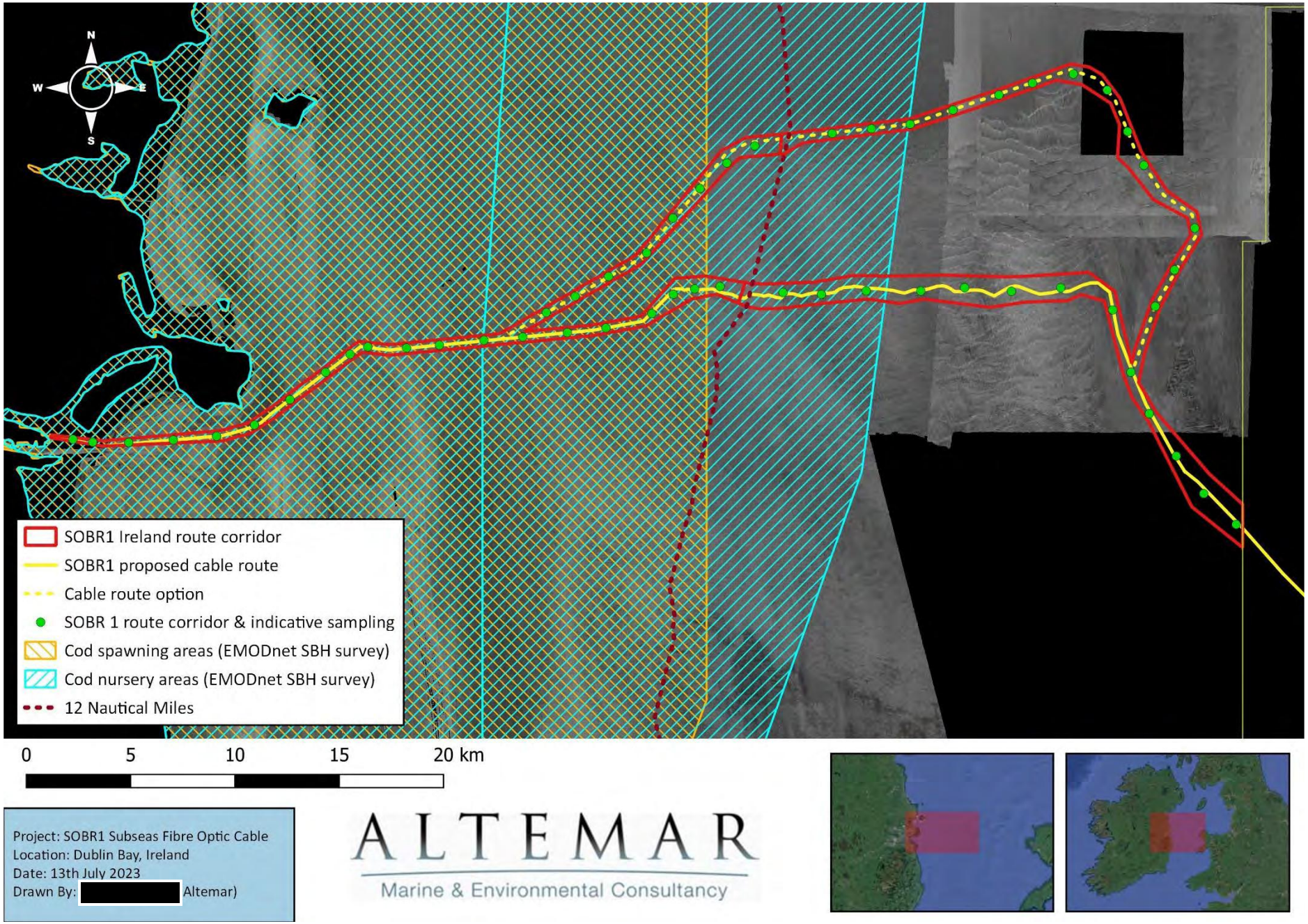

Figure 1. *Cod spawning and nursery grounds proximate to the proposed foreshore survey*

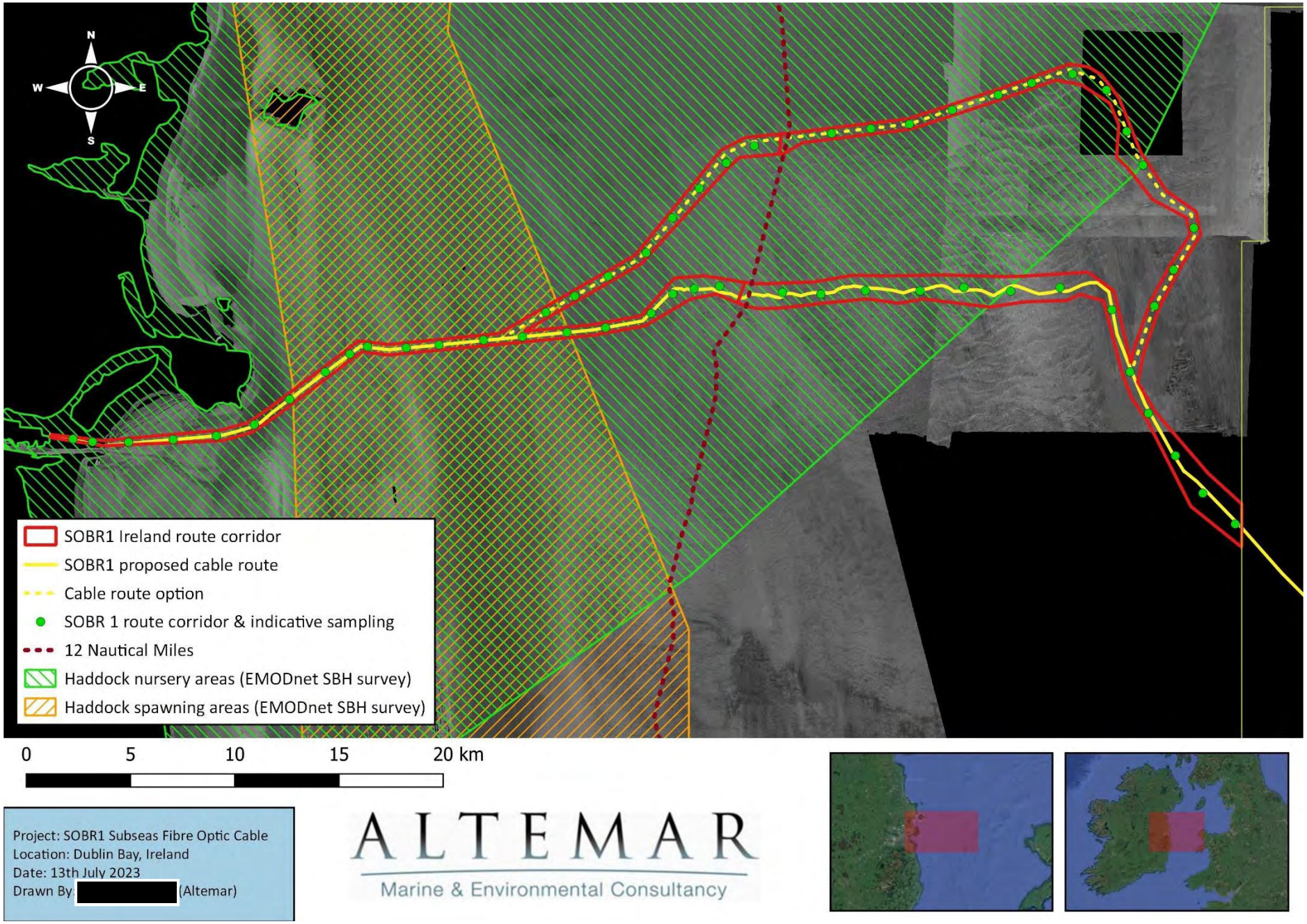

Figure 2. *Haddock spawn and nursery grounds proximate to the proposed foreshore survey*

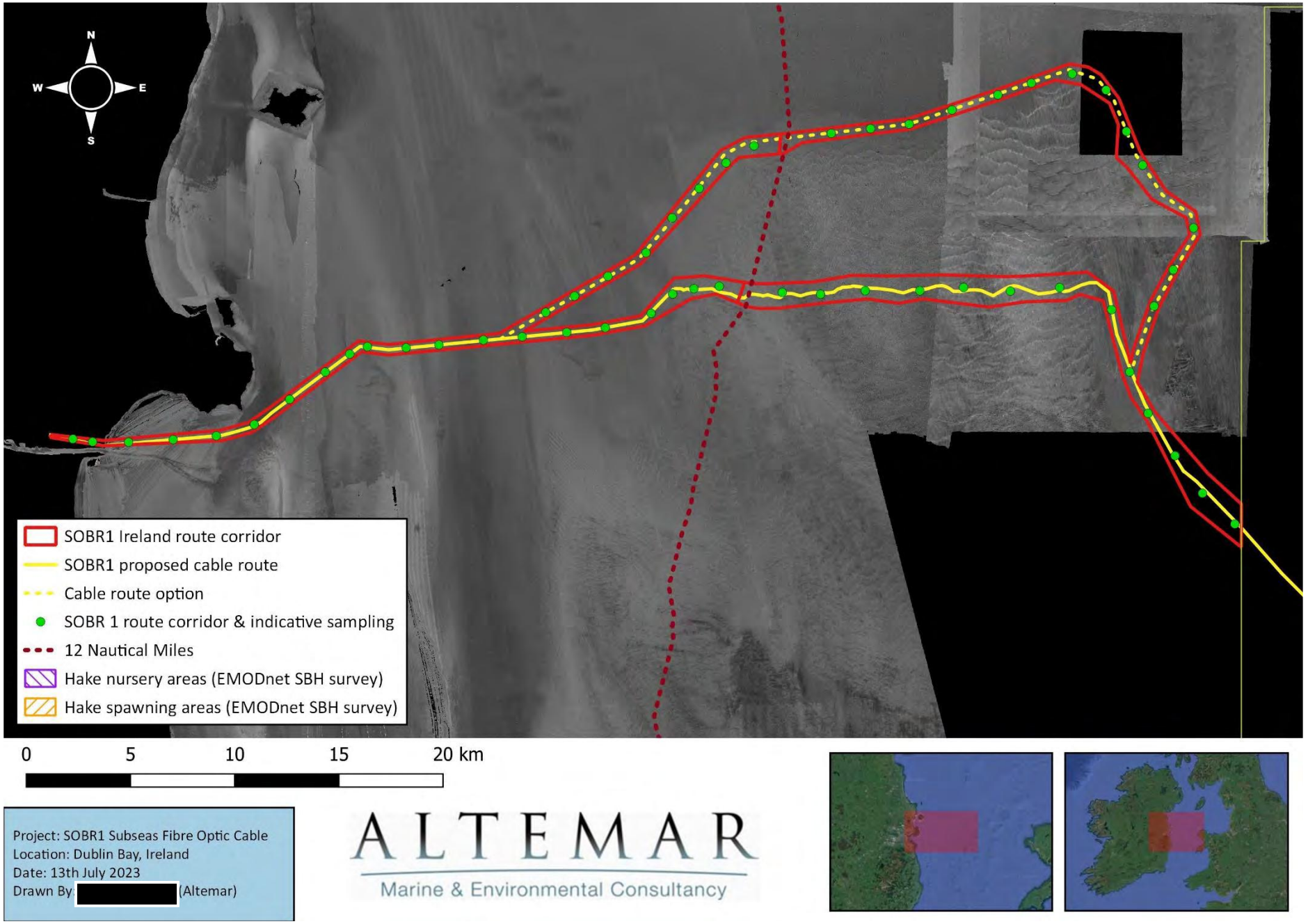

Figure 3. *Hake spawn and nursery grounds proximate to the proposed foreshore survey area*

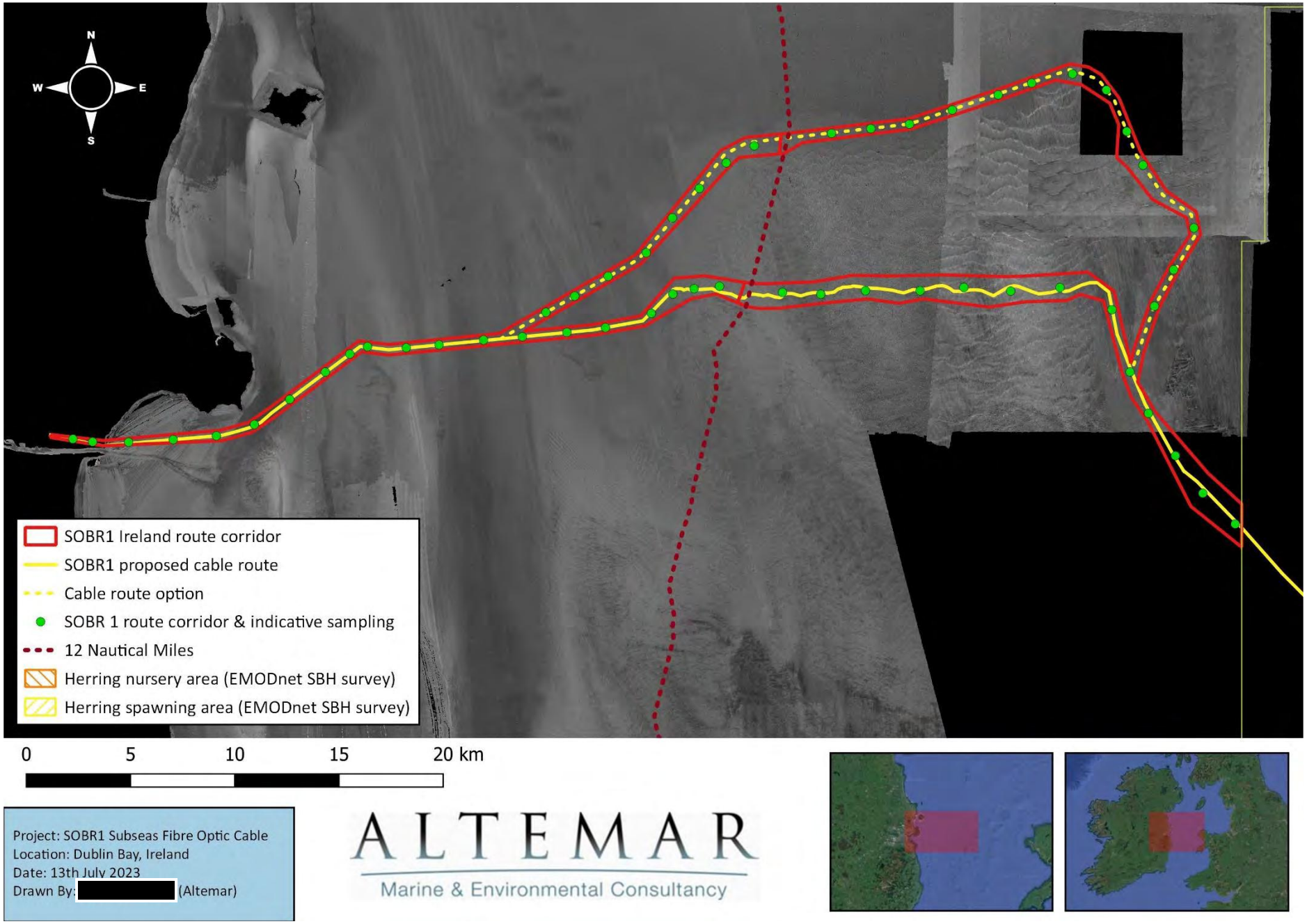

Figure 4. *Herring spawn and nursery grounds proximate to the proposed foreshore survey*

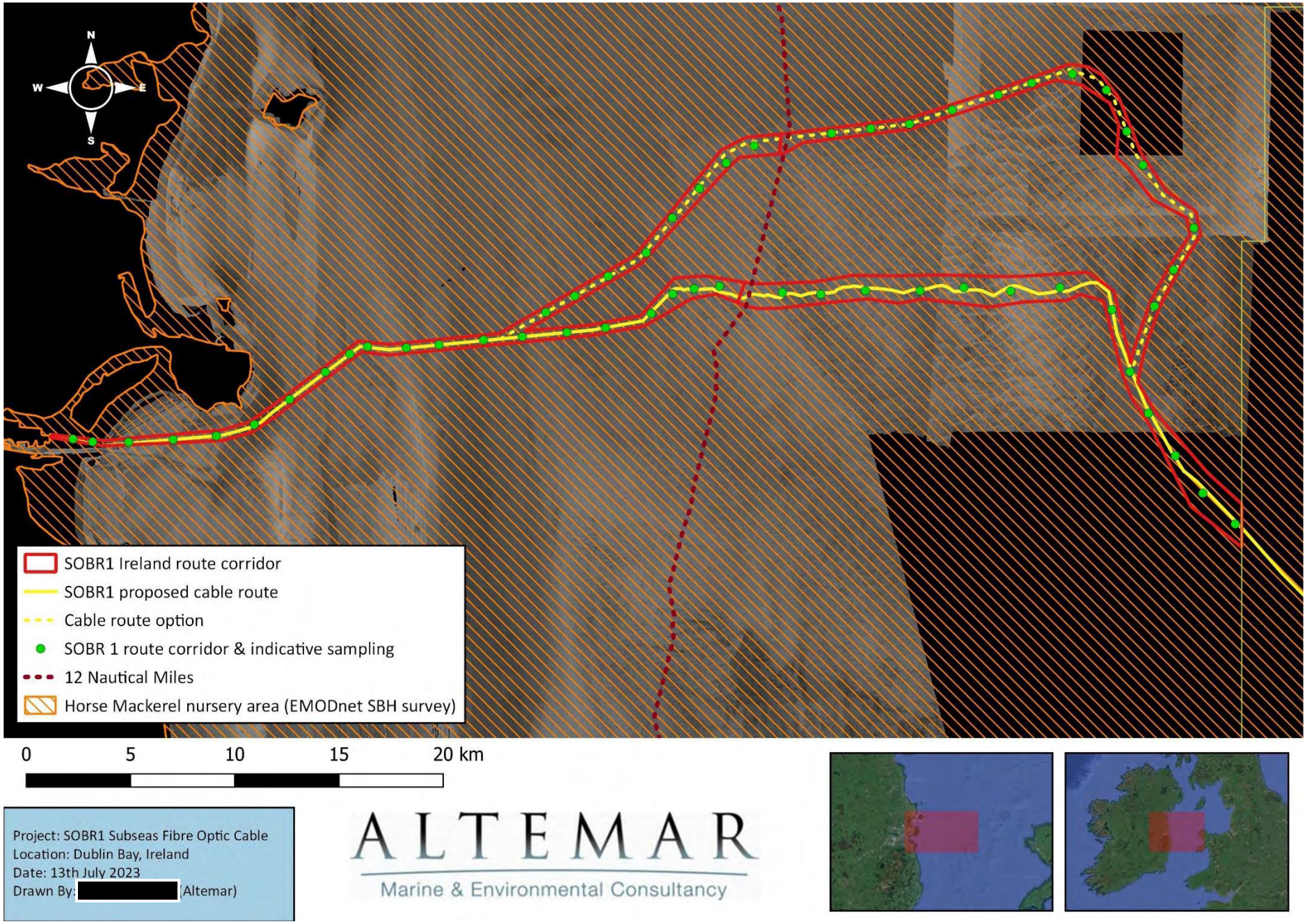

Figure 5. *Horse Mackerel spawn and nursery grounds proximate to the proposed foreshore*

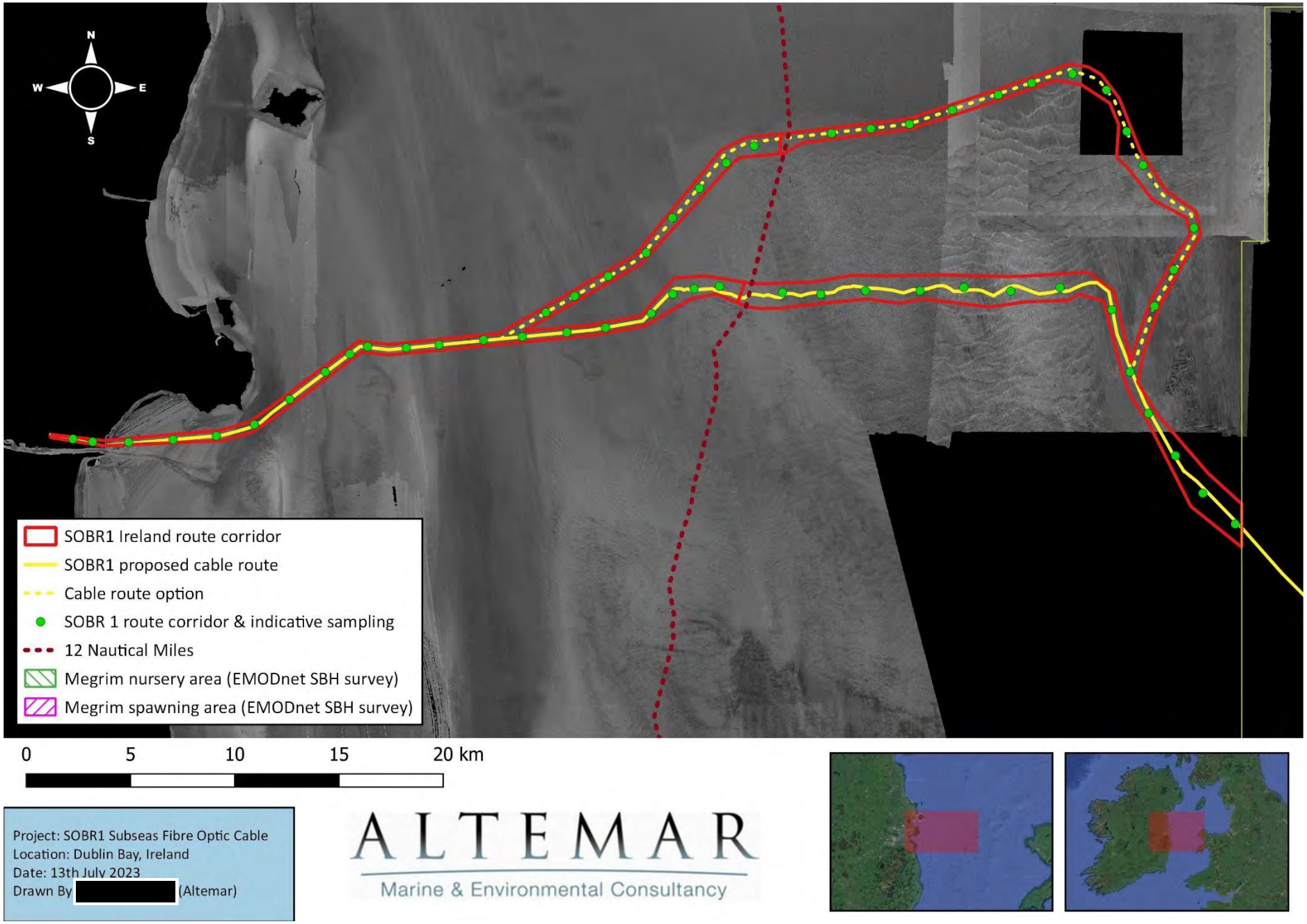

Figure 6. *Megrim spawn and nursery grounds proximate to the proposed foreshore survey*

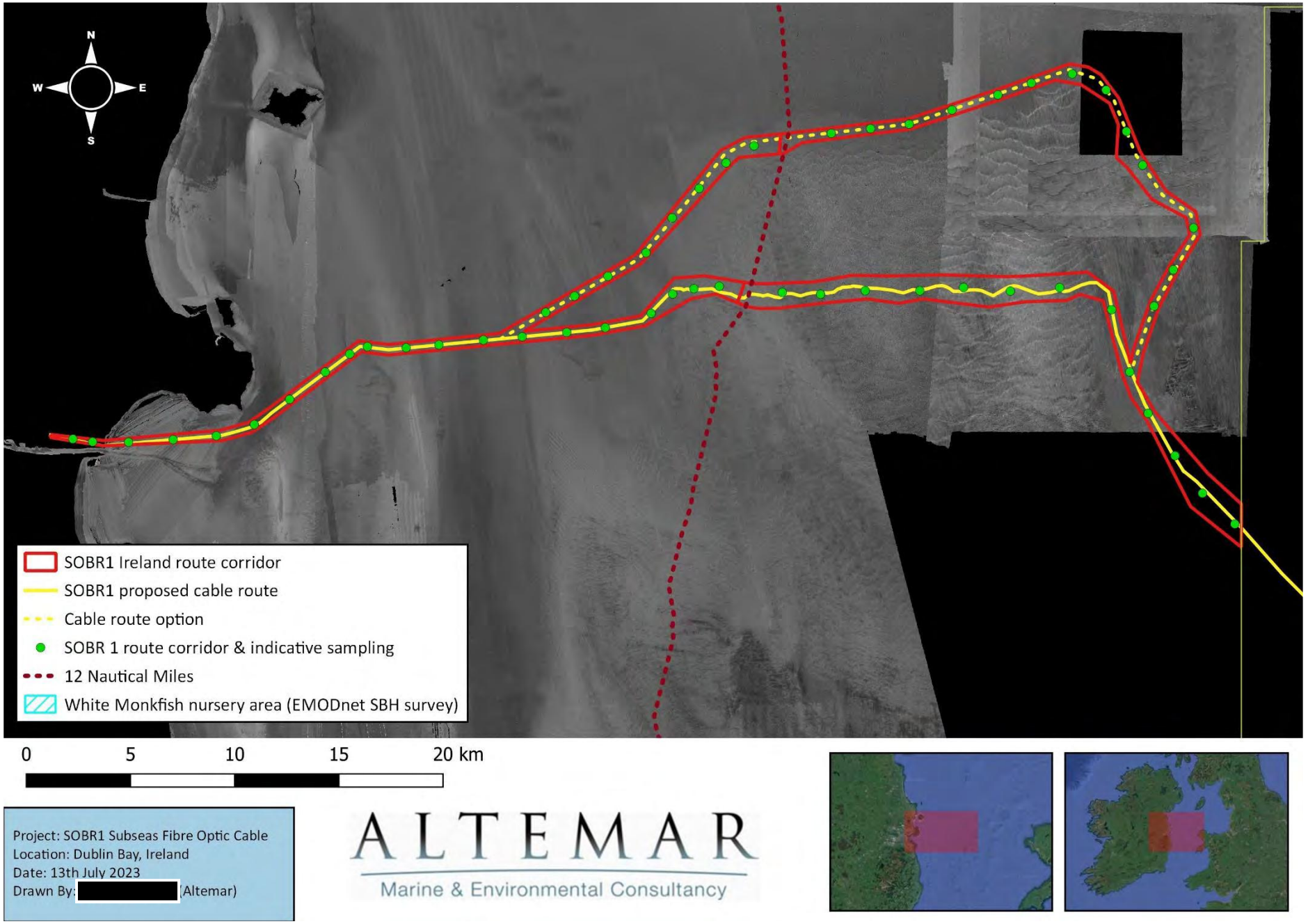

Figure 7. *White Monkfish nursery grounds proximate to the proposed foreshore survey area*

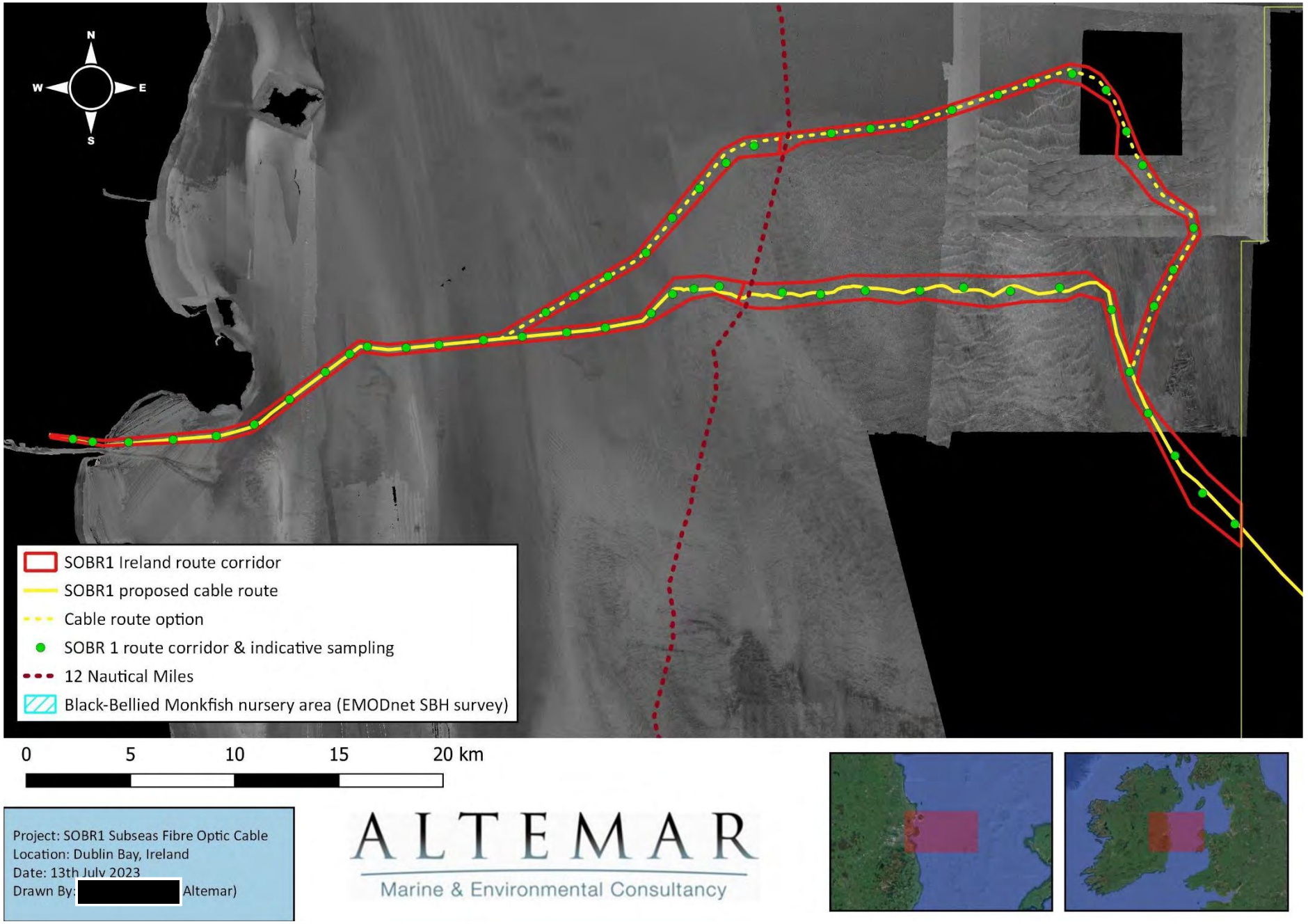

Figure 8. *Black-Bellied Monkfish nursery grounds proximate to the proposed foreshore survey*

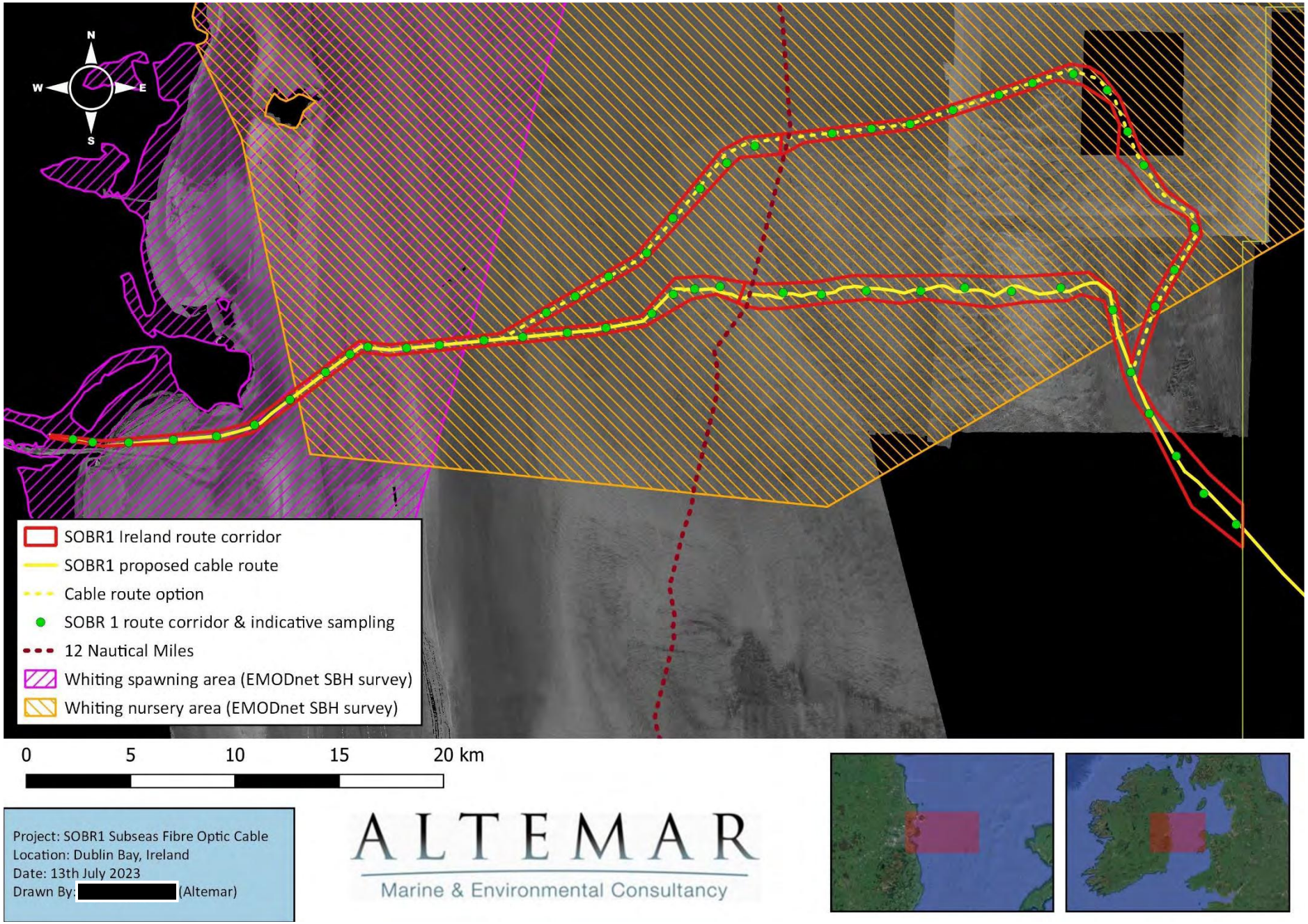

Figure 9. *Whiting spawn and nursery grounds proximate to the proposed foreshore survey*

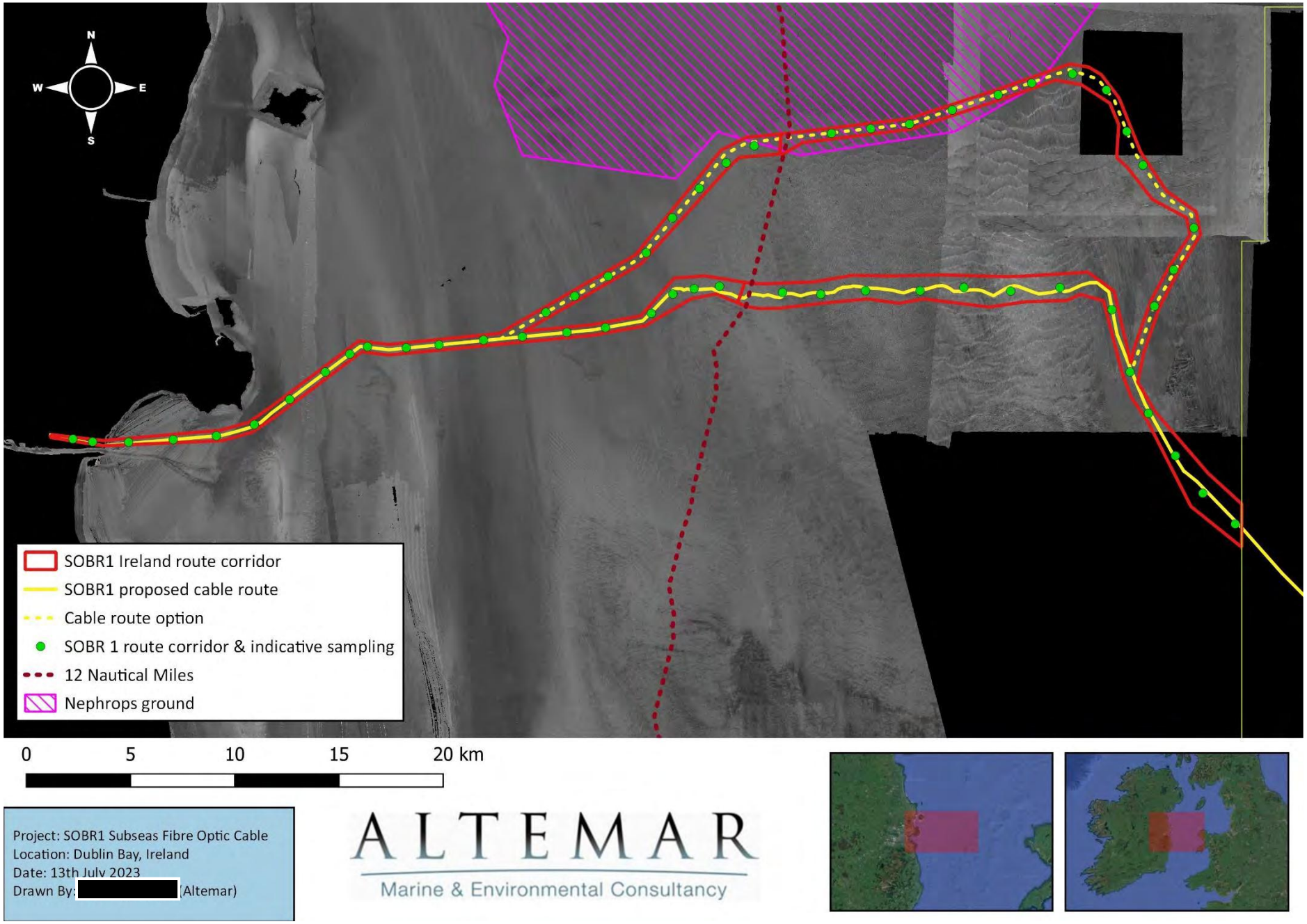

Figure 10. *Nephrops grounds proximate to the proposed foreshore survey area*

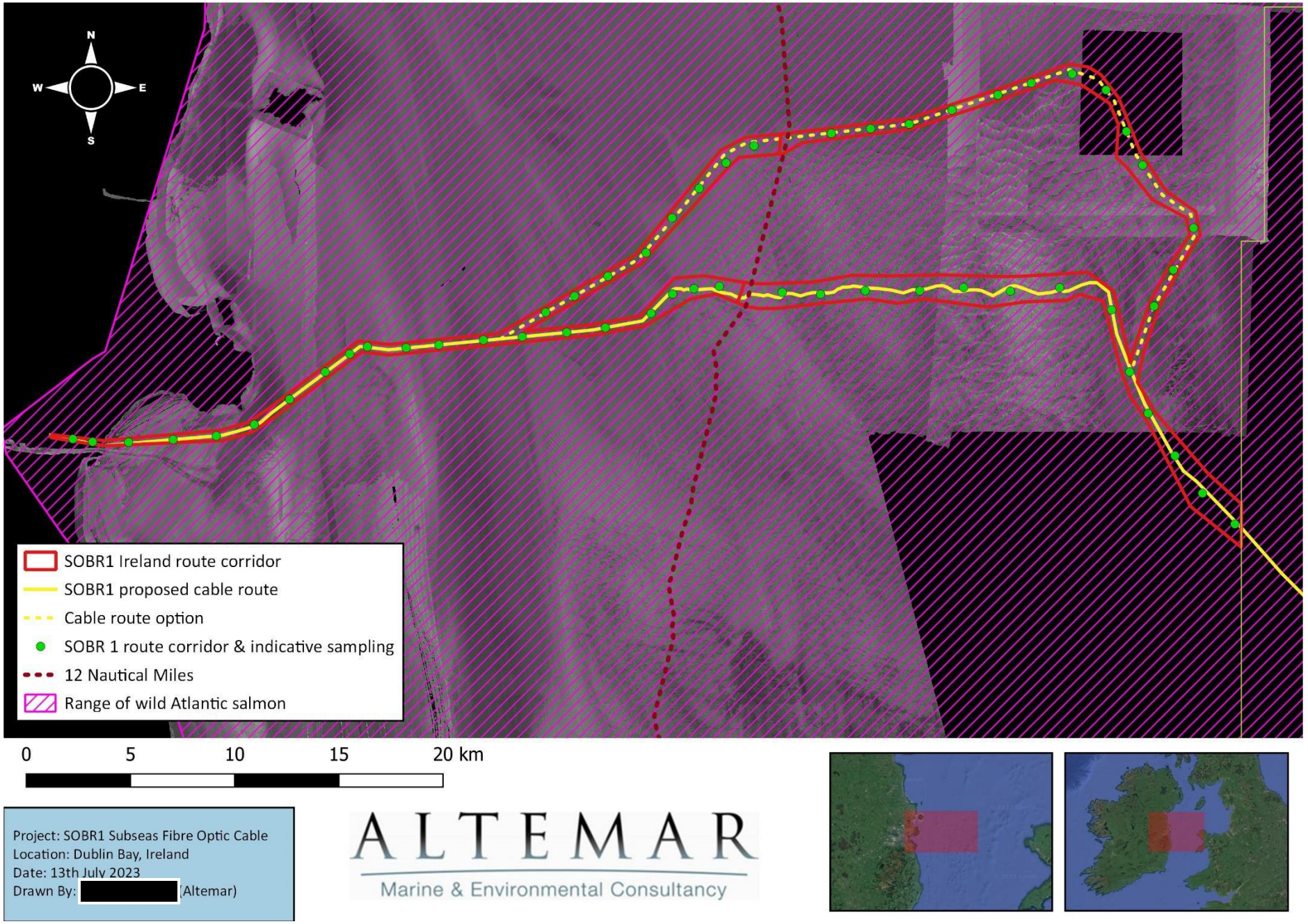

Figure 11. *Range of Atlantic Salmon proximate to the proposed foreshore survey area*

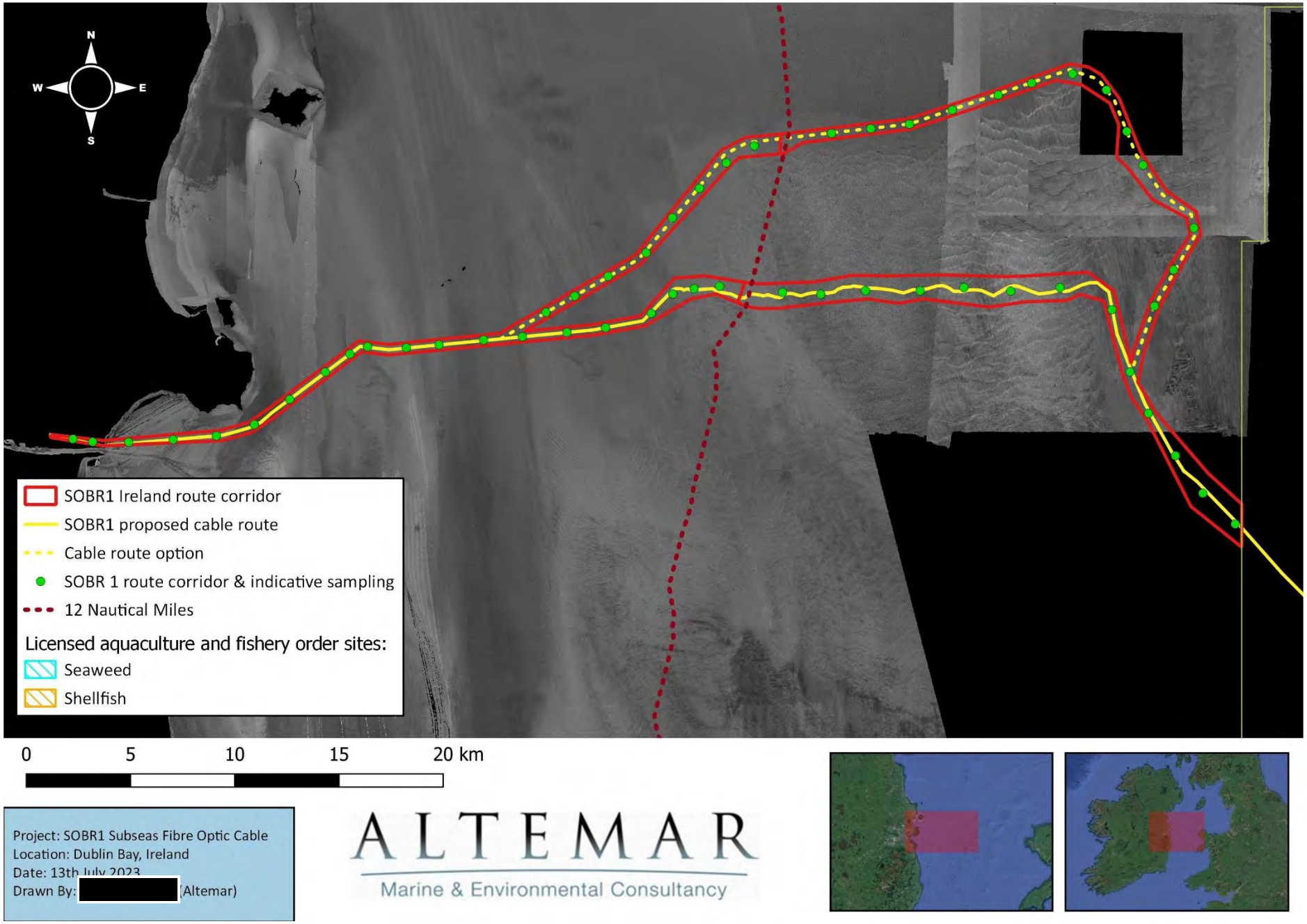

Figure 12. *Licensed aquaculture and fishery order sites proximate to the proposed foreshore survey area*

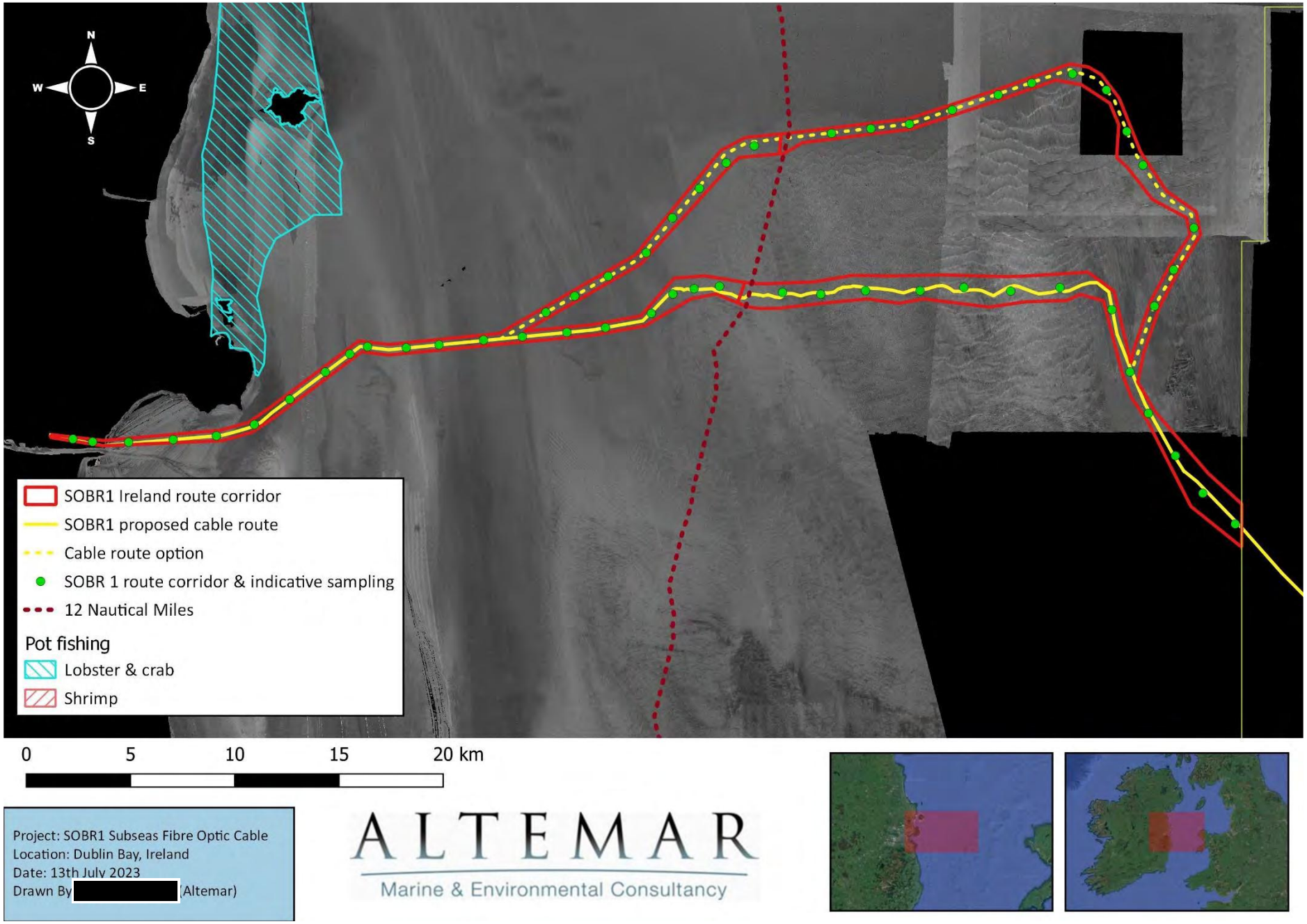

Figure 13. *Pot fishing proximate to the proposed foreshore survey area*

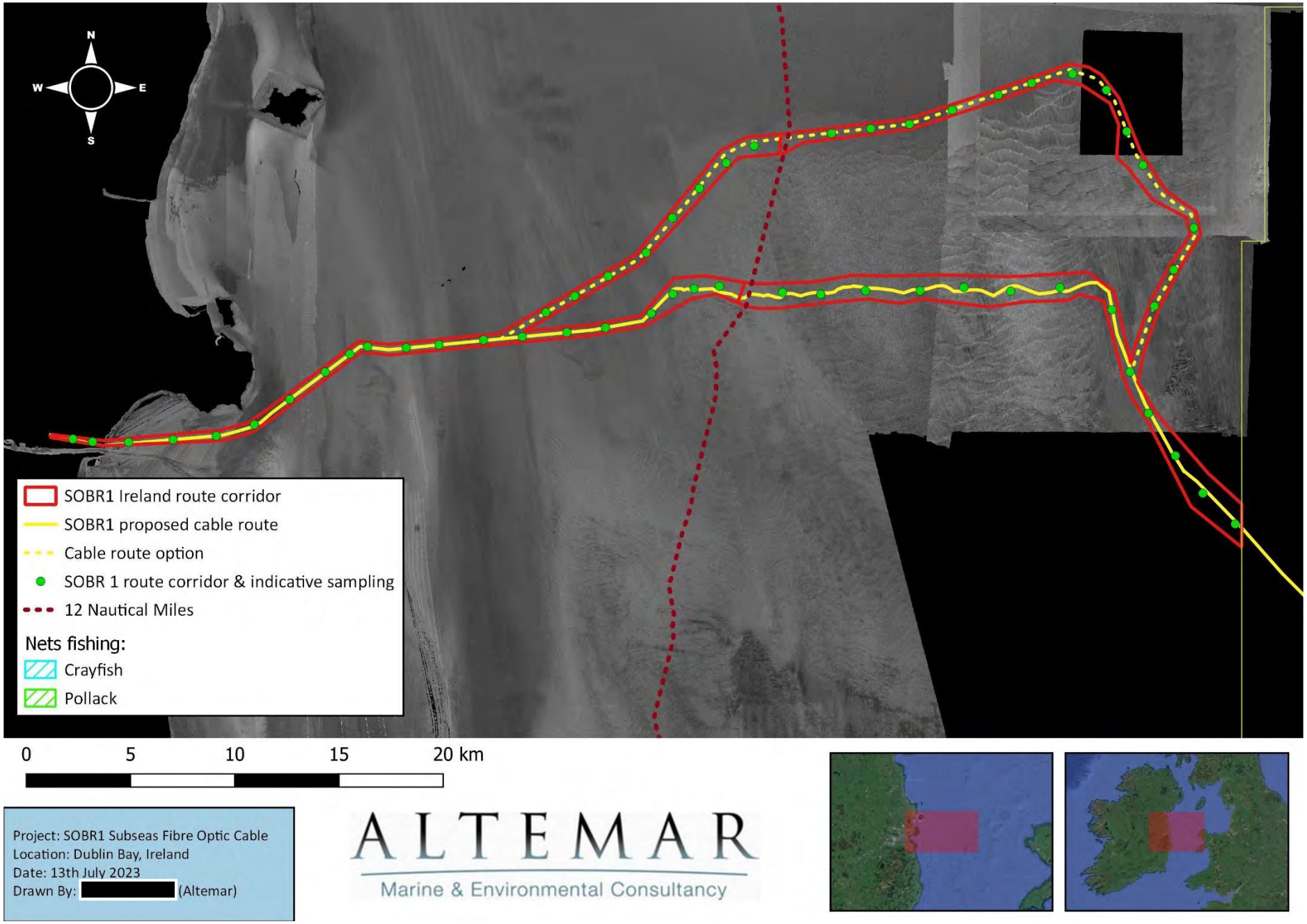

Figure 14. *Nets fishing proximate to the proposed foreshore survey area*

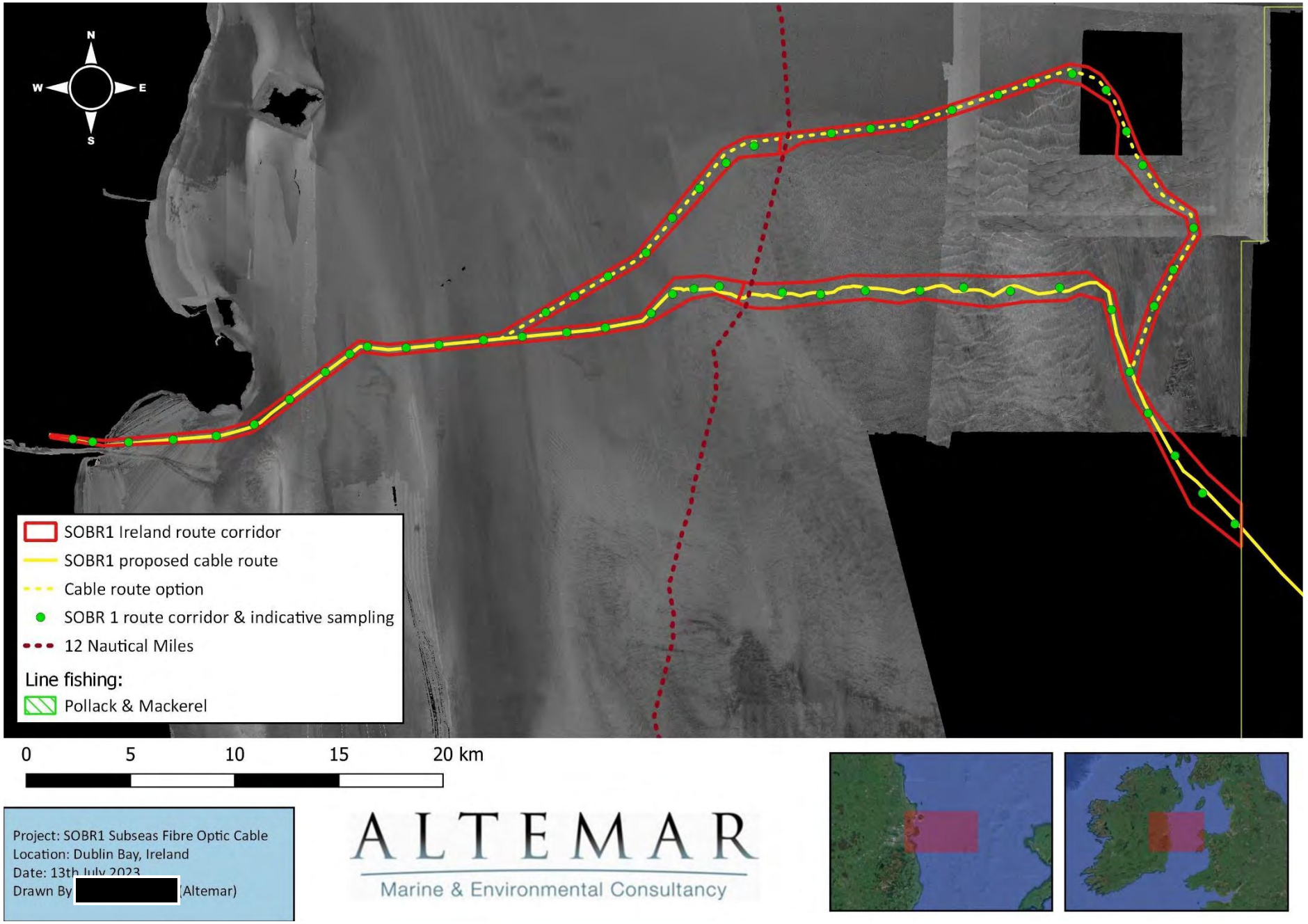

Figure 15. *Line fishing proximate to the proposed foreshore survey area*

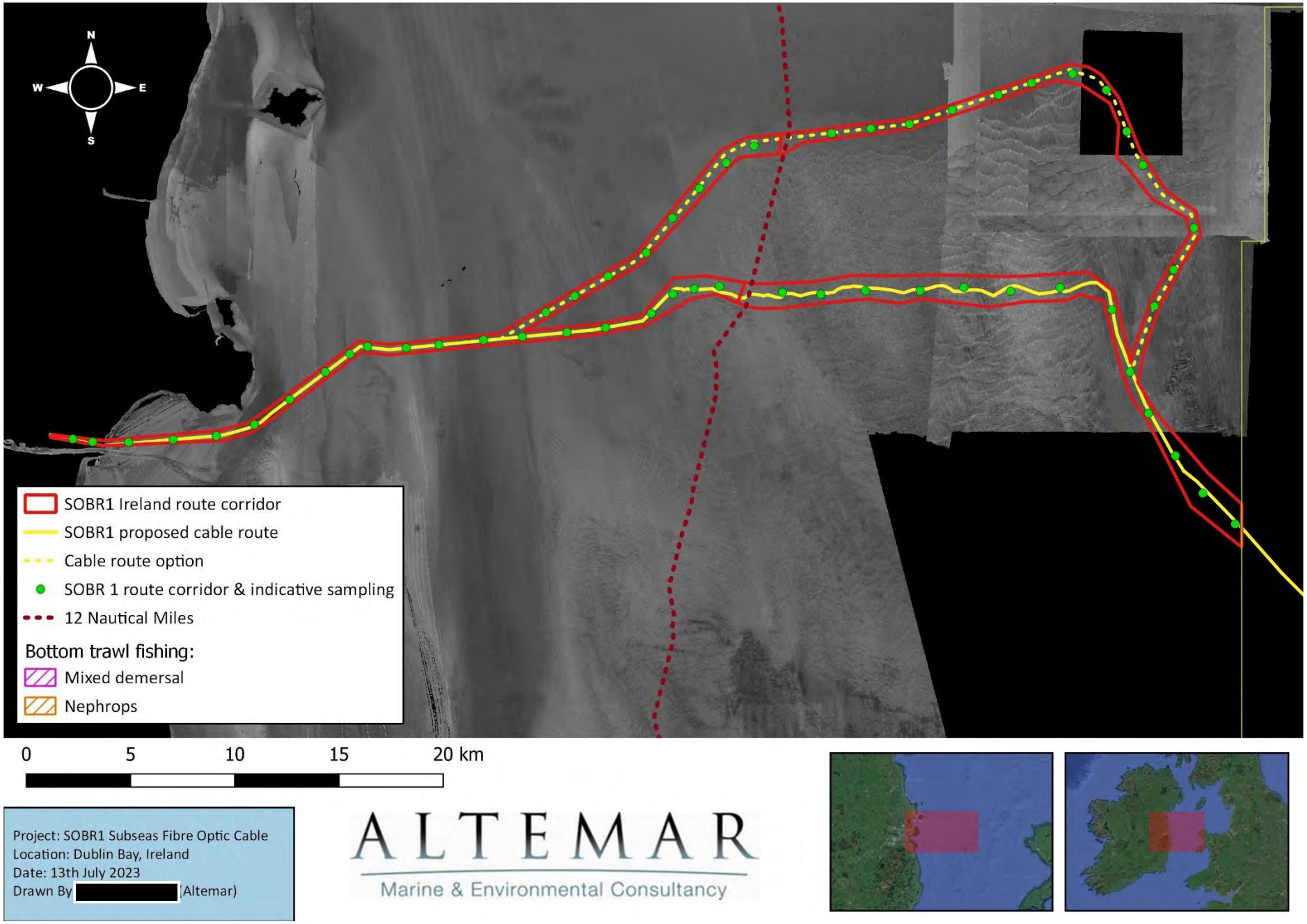

Figure 16. *Bottom trawl fishing proximate to the proposed foreshore survey area*

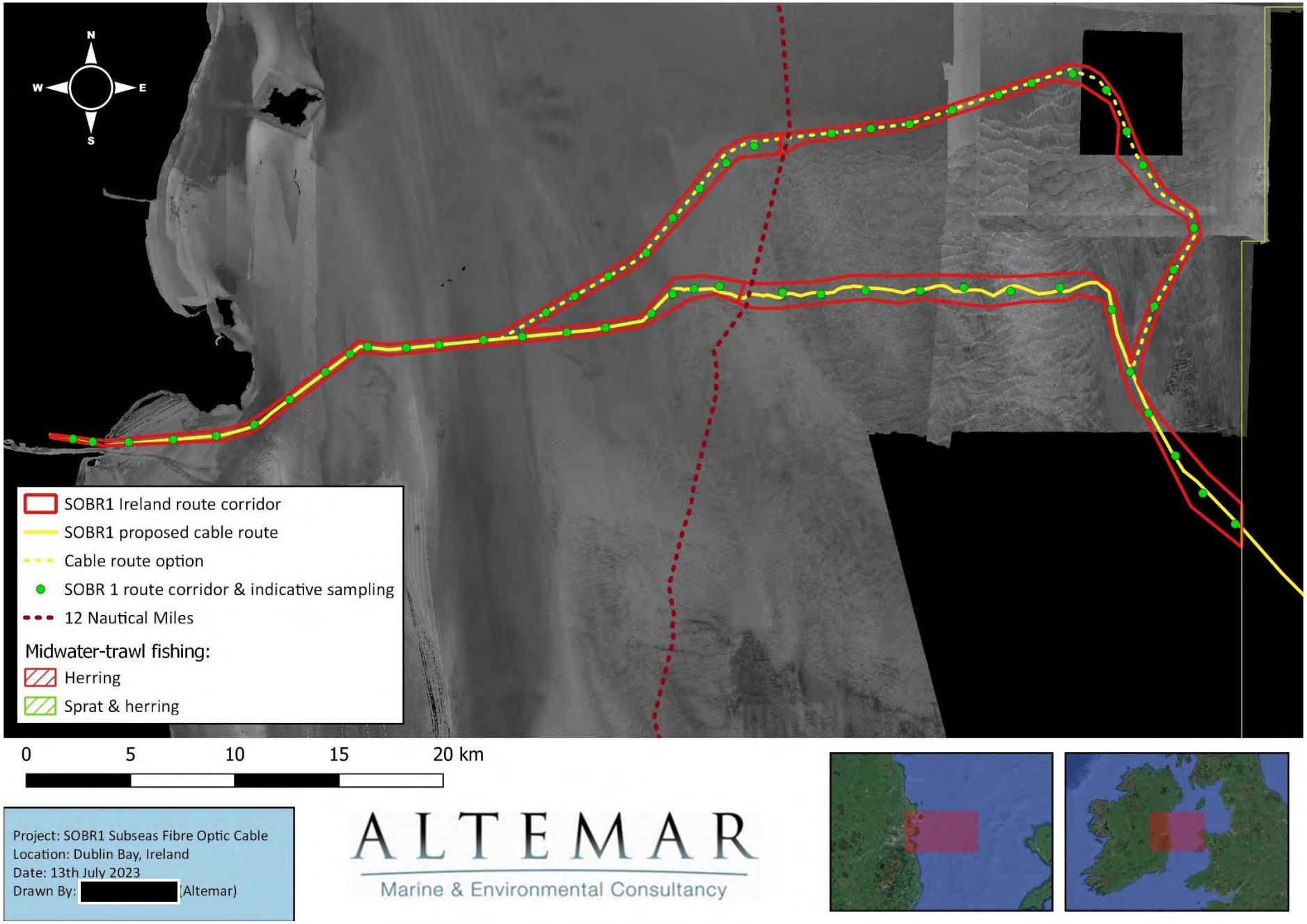

Figure 17. *Midwater trawl fishing proximate to the proposed foreshore survey area*

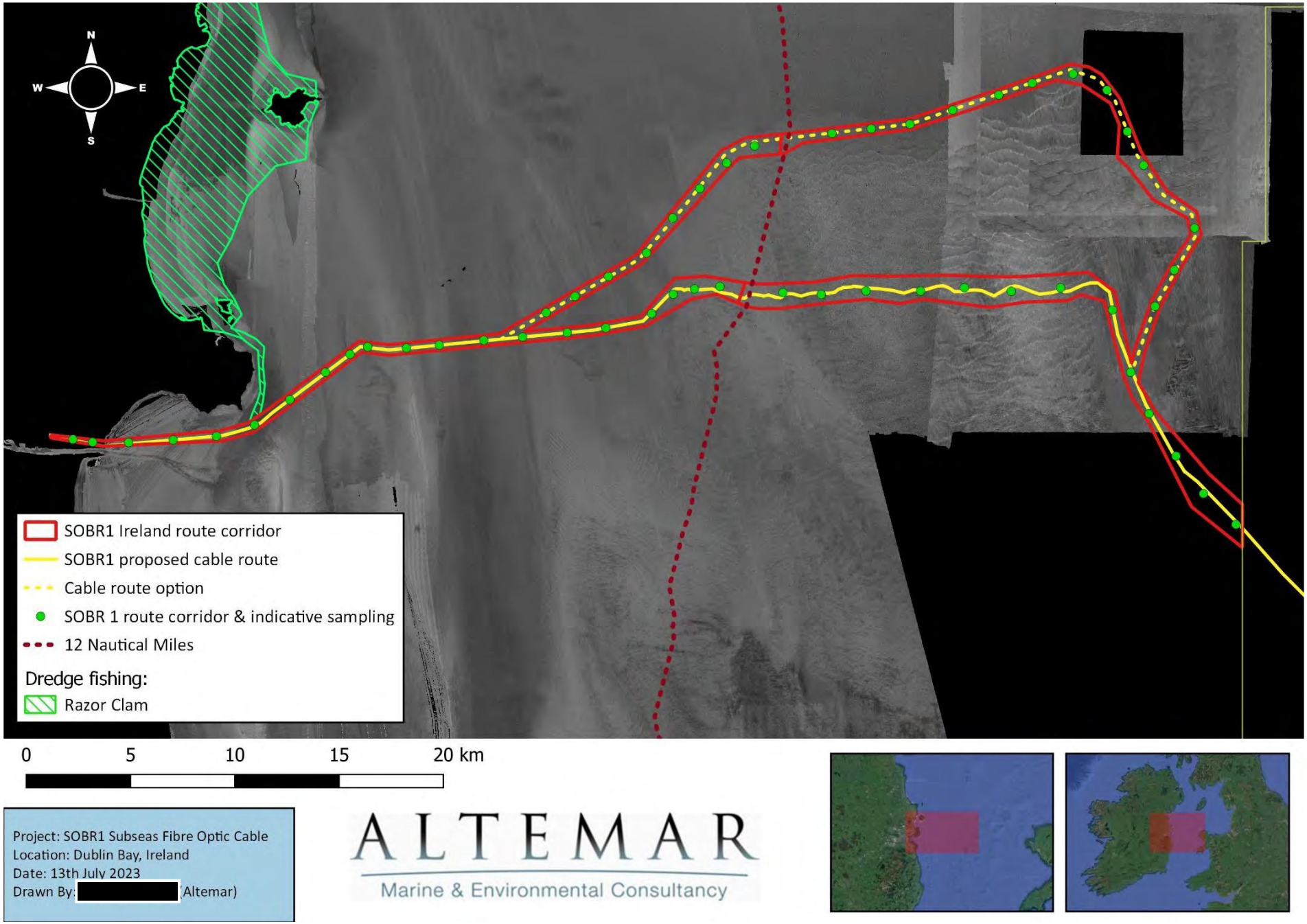

Figure 18. *Dredge fishing proximate to the proposed foreshore survey area*

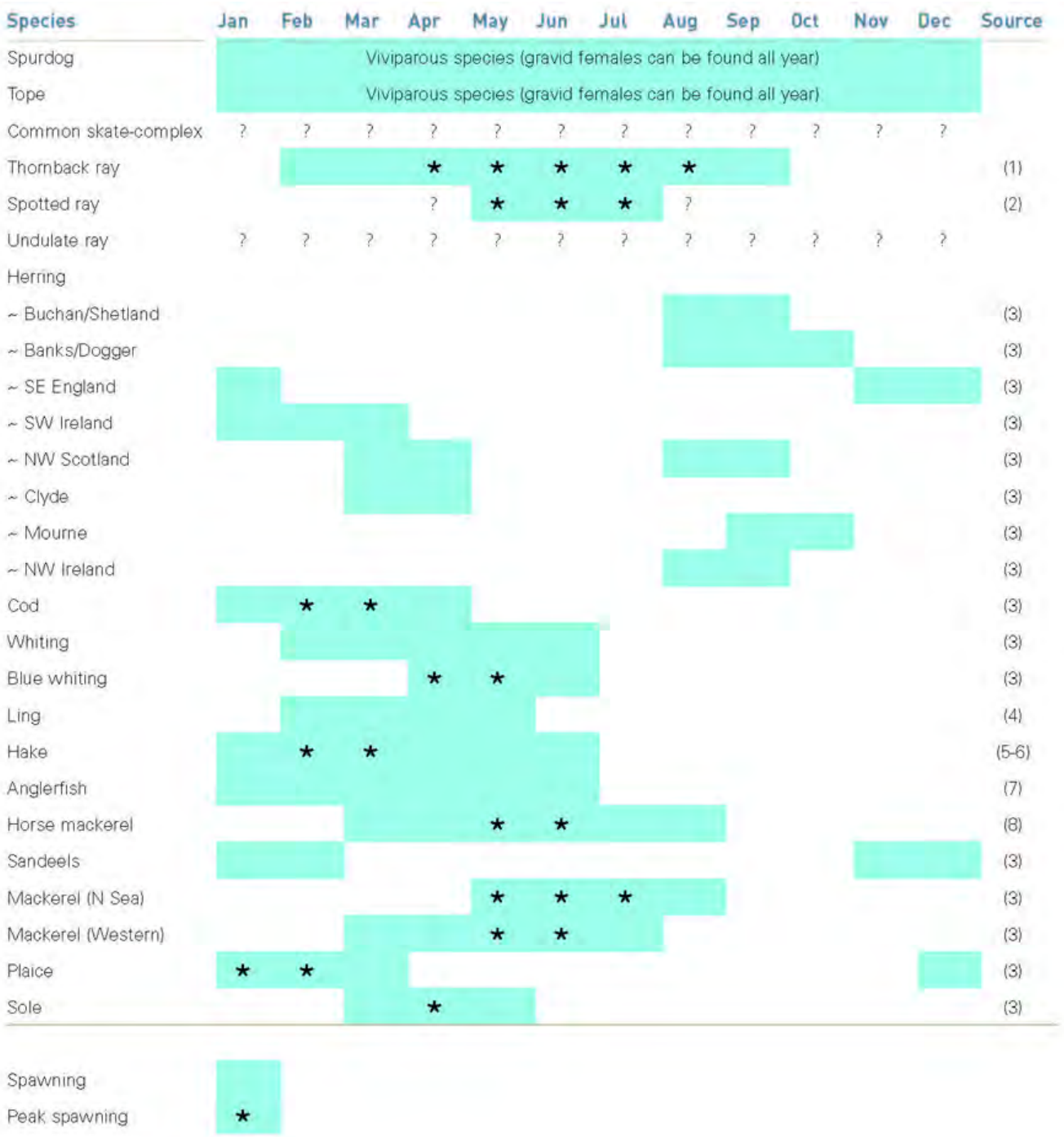

Figure 20. *Known spawning times of relevant species (CEFAS)*