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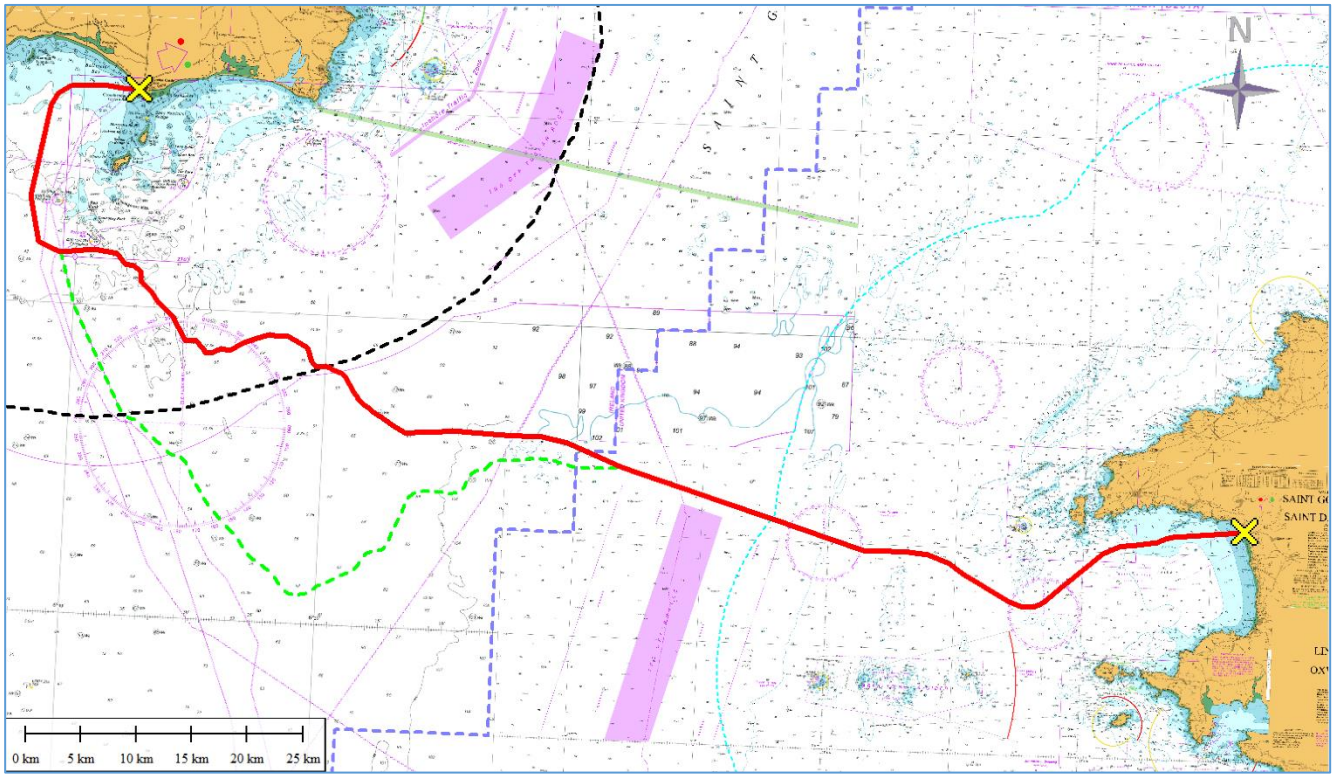
Marine & Environmental Consultancy

Supporting Information: Screening for Appropriate Assessment for marine survey and site investigation works at Kilmore Quay, Co. Wexford.



23rd October 2023

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

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Document Control Sheet			
Project	Supporting Information: Screening for Appropriate Assessment for marine survey and site investigation works at Kilmore Quay, Co. Wexford.		
Report	Appropriate Assessment Screening		
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Introduction

The following Appropriate Assessment (AA) (Screening Stage) has been prepared by **Altemar Ltd.** for marine survey and site investigation works for a fibre optic cable at Kilmore Quay, Co. Wexford.

An AA is an assessment of the potential effects of a proposed project or plan, on its own, or in combination with other plans or projects, on any European sites. European sites are those sites designated as Special Areas of Conservation (SAC) under the Habitats Directive or Special Protection Areas (SPA) under the Birds Directive.

The AA Screening stage examines the likely significant effects of a plan or project, either on its own, or in combination with other plans and projects, upon a European site and considers whether, on the basis of objective scientific evidence, it can be concluded that there are no likely significant effects on any European site, in view of best scientific knowledge and the conservation objectives of the relevant European sites.

Altemar Ltd.

Since its inception in 2001, Altemar has been delivering ecological and environmental services to a broad range of clients. Operational areas include residential, infrastructural, renewable, oil & gas, private industry, local authorities, EC projects and State/semi-State Departments. [redacted] is the managing director of Altemar. [redacted] is an environmental scientist and marine biologist with 28 years' experience working in Irish terrestrial and aquatic environments, providing services to the State, Semi-State and industry. [redacted] (MCIEEM) holds a MSc in Environmental Science, BSc (Hons.) in Applied Marine Biology, NCEA National Diploma in Applied Aquatic Science and a NCEA National Certificate in Science (Aquaculture). [redacted] carried out all elements of this Appropriate Assessment Screening.

Background to the Appropriate Assessment

The Habitats Directive 92/43/EEC (together with the Birds Directive (2009/1477/EC)) forms the cornerstone of Europe's nature conservation policy. The Directive protects over 1000 animals and plant species and over 200 "habitat types" which are of European importance. In the Habitats Directive, Articles 3 to 9 provide the legislative means to protect habitats and species of European Community interest through the establishment and conservation of an EU-wide network of conservation sites (Natura, 2000). These are Special Areas of Conservation (SACs) designated under the Habitats Directive and Special Protection Areas (SPAs) designated under the Birds Directive), Article 6(3) and 6(4) of the Habitats Directive set out the decision-making tests for plans and projects likely to affect European sites (Annex 1.1). Article 6(3) establishes the requirement for Appropriate Assessment:

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

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

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

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

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

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

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

Stages of the Appropriate Assessment

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

1) Screening stage:
    - Description of plan or project, and local site or plan area characteristics;
    - Identification of relevant European sites, and compilation of information on their qualifying interests and conservation objectives
    - Identification and description of individual in combination effects likely to result from the proposed project;
    - Assessment of the likely significance of the effects identified above. Exclusion of sites where it can be objectively concluded that there will be no likely significant effects; and,

      Conclusions
2) Appropriate Assessment (Natura Impact Statement):
    - Description of the European sites that will be considered further;
    - Identification and description of potential adverse impacts on the conservation objectives of these sites likely to occur from the project or plan; and,
    - Mitigation Measures that will be implemented to avoid, reduce or remedy any such potential adverse impacts
    - Assessment as to whether, following the implementation of the proposed mitigation measures, it can be concluded, beyond all reasonable scientific doubt, that there will be no adverse impact on the integrity of the relevant European Site in light of its conservation objectives"
    - Conclusions.

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

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

Description of the Proposed Project

Background

The applicant plans to investigate the feasibility of constructing a new subsea telecoms cable system, TUSKAR, linking Ireland to the United Kingdom, from a landfall at Kilmore Quay to a landfall at Newgale on the South 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 across the Licence Application Area within the IRL Exclusive Economic Zone (EEZ) in order to inform the location and design of the cable route and landfall.

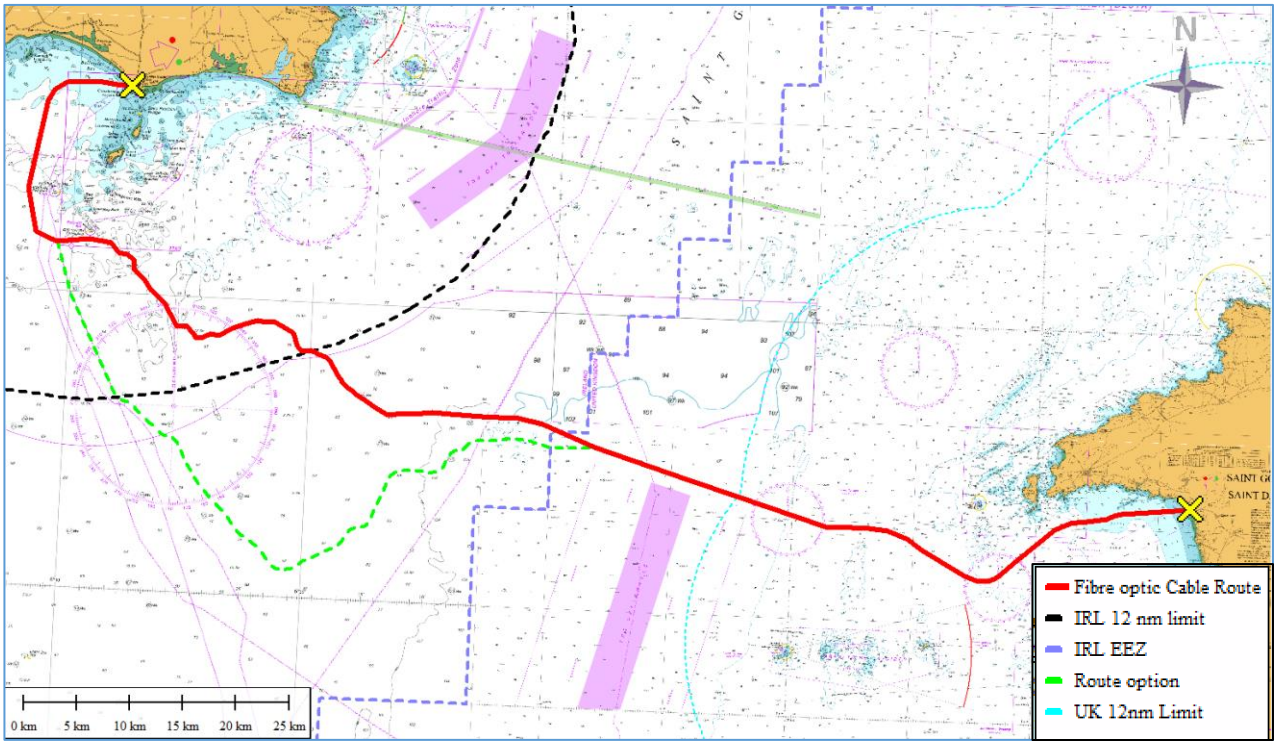

Figure 1. Proposed Telecoms Cable System

This Works Methodology has been prepared by McMahon Design and Management Ltd in consultation with Altemar 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 the Celtic Sea and St Georges Channel. 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 further submissions 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 Wexford (Figure 2). The survey corridor has total length of approx. 154 km and a total area of 10,191 hectares within EEZ limits. A cable route corridor of between 400m to 1500m in width will be surveyed within the licence application area.

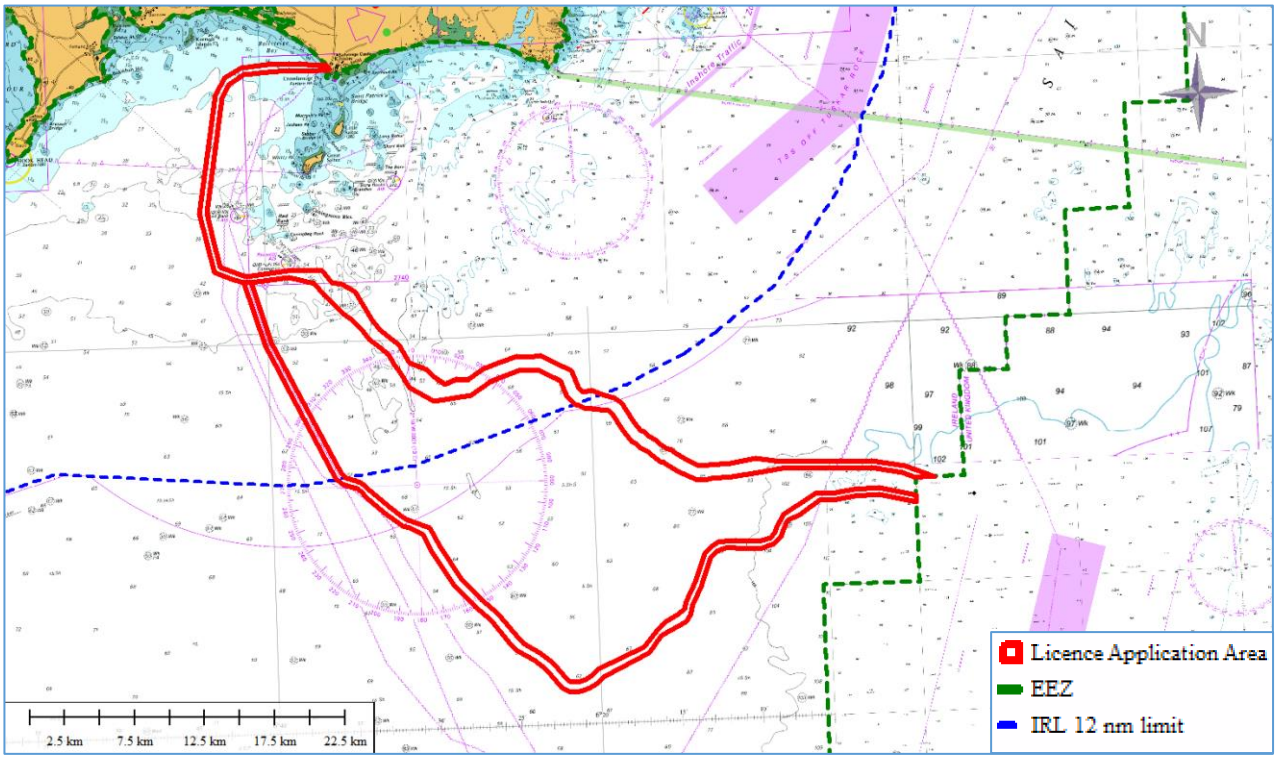

Figure 2. Proposed Survey Licence Application Area.

Figure 3. Landfall Location

Landfall & Inshore Survey Corridors

The licence application area covers the landfall at Kilmore Quay, with a survey corridor traversing the Celtic Sea and St Georges Channel to the East. The general location is shown in Figure 3.

Kilmore Quay

The licence application area covers a landfall at Kilmore Quay, Wexford. The landfall location is adjacent to the car park at Ballyteige Burrow / Crossfarnoge Beach. Any requirement for beach access for survey will be via the existing established tracks and paths from the car park. The Route Position List for the Licence Application Area is presented in Table 1a+2b below.

Idx	Latitude	Longitude	Idx	Latitude	Longitude
1	52° 02' 23.3446" N	6° 40' 57.8793" W	40	51° 54' 53.7596" N	6° 15' 30.6628" W
2	52° 02' 32.8829" N	6° 38' 35.6753" W	41	51° 54' 35.1228" N	6° 14' 43.3844" W
3	52° 02' 17.1398" N	6° 37' 00.7264" W	42	51° 54' 15.0215" N	6° 13' 44.0368" W
4	52° 01' 49.5663" N	6° 36' 25.1314" W	43	51° 54' 12.4897" N	6° 13' 06.7906" W
5	52° 01' 04.1131" N	6° 35' 11.3274" W	44	51° 54' 15.3307" N	6° 12' 42.8291" W
6	52° 00' 53.1912" N	6° 34' 50.1960" W	45	51° 54' 17.4672" N	6° 11' 23.2457" W
7	52° 00' 30.6172" N	6° 34' 13.9019" W	46	51° 54' 25.9228" N	6° 09' 46.9736" W
8	52° 00' 02.9839" N	6° 33' 41.5270" W	47	51° 54' 32.2832" N	6° 08' 20.3505" W
9	51° 59' 45.1542" N	6° 33' 05.1372" W	48	51° 54' 27.3403" N	6° 04' 51.2287" W
10	51° 59' 26.7036" N	6° 32' 31.8770" W	49	51° 54' 26.7803" N	6° 04' 24.0261" W
11	51° 59' 05.5327" N	6° 32' 13.6099" W	50	51° 54' 25.6371" N	6° 03' 38.1885" W
12	51° 58' 49.0776" N	6° 31' 57.0497" W	51	51° 54' 26.7474" N	6° 02' 44.5335" W
13	51° 58' 10.9375" N	6° 31' 17.8851" W	52	51° 54' 12.8490" N	6° 00' 48.2875" W
14	51° 57' 37.7383" N	6° 29' 46.6925" W	53	51° 53' 58.7080" N	5° 59' 59.9999" W
15	51° 57' 42.7364" N	6° 28' 47.8886" W	54	51° 54' 00.0000" N	5° 59' 59.9999" W
16	51° 57' 48.5467" N	6° 27' 29.7327" W	55	51° 54' 00.0048" N	5° 59' 33.7673" W
17	51° 58' 16.8343" N	6° 26' 16.1776" W	56	51° 54' 00.0091" N	5° 58' 49.6394" W
18	51° 58' 29.9473" N	6° 25' 19.1314" W	57	51° 54' 28.3451" N	6° 00' 40.0876" W
19	51° 58' 40.2175" N	6° 24' 26.2516" W	58	51° 54' 42.9766" N	6° 02' 42.4644" W
20	51° 58' 38.6061" N	6° 23' 43.3432" W	59	51° 54' 41.8255" N	6° 03' 38.0990" W
21	51° 58' 40.6220" N	6° 23' 14.8845" W	60	51° 54' 42.9470" N	6° 04' 23.0645" W
22	51° 58' 28.1103" N	6° 22' 39.5392" W	61	51° 54' 43.5074" N	6° 04' 50.2897" W
23	51° 58' 12.6828" N	6° 21' 51.9863" W	62	51° 54' 48.4521" N	6° 08' 19.4876" W
24	51° 57' 35.8701" N	6° 21' 29.1111" W	63	51° 54' 57.9573" N	6° 09' 54.3197" W
25	51° 57' 18.0120" N	6° 20' 58.0344" W	64	51° 54' 49.7234" N	6° 11' 28.0699" W
26	51° 57' 16.0585" N	6° 20' 45.7902" W	65	51° 54' 47.5522" N	6° 12' 48.9229" W
27	51° 57' 14.1587" N	6° 20' 41.4375" W	66	51° 54' 45.1834" N	6° 13' 08.9037" W

Idx	Latitude	Longitude	Idx	Latitude	Longitude
28	51° 57' 09.2239" N	6° 20' 27.2006" W	67	51° 54' 46.4821" N	6° 13' 28.0074" W
29	51° 57' 01.7540" N	6° 18' 58.7972" W	68	51° 55' 02.9843" N	6° 14' 16.7287" W
30	51° 56' 56.0106" N	6° 18' 45.3006" W	69	51° 55' 18.6315" N	6° 14' 56.4193" W
31	51° 56' 16.7561" N	6° 18' 08.1852" W	70	51° 55' 25.2915" N	6° 15' 06.0126" W
32	51° 55' 58.6513" N	6° 17' 46.6051" W	71	51° 55' 29.0134" N	6° 15' 26.4163" W
33	51° 55' 48.9250" N	6° 17' 36.0767" W	72	51° 55' 38.0212" N	6° 15' 45.3501" W
34	51° 55' 43.8438" N	6° 17' 21.4653" W	73	51° 55' 50.1538" N	6° 16' 07.2699" W
35	51° 55' 31.1703" N	6° 16' 59.9768" W	74	51° 55' 57.4789" N	6° 16' 28.7641" W
36	51° 55' 23.5941" N	6° 16' 37.7429" W	75	51° 56' 10.0534" N	6° 16' 50.0833" W
37	51° 55' 13.1119" N	6° 16' 18.8033" W	76	51° 56' 13.3364" N	6° 16' 59.5222" W
38	51° 54' 59.6885" N	6° 15' 50.5865" W	77	51° 56' 17.2511" N	6° 17' 03.7590" W
39	51° 54' 56.8728" N	6° 15' 35.1475" W	78	51° 56' 34.5614" N	6° 17' 24.3873" W

Table 1a. Licence Application Area RPL.

Idx	Latitude	Longitude	Idx	Latitude	Longitude
79	51° 57' 18.5634" N	6° 18' 05.9815" W	107	52° 02' 47.5993" N	6° 36' 32.9877" W
80	51° 57' 31.2462" N	6° 18' 35.7828" W	108	52° 02' 48.9378" N	6° 38' 38.8948" W
81	51° 57' 37.2614" N	6° 19' 07.7753" W	109	52° 02' 37.1365" N	6° 41' 13.3002" W
82	51° 57' 38.8675" N	6° 19' 19.1471" W	110	52° 02' 44.1627" N	6° 41' 42.9624" W
83	51° 57' 49.7688" N	6° 19' 56.6267" W	111	52° 02' 56.5277" N	6° 42' 31.0937" W
84	51° 57' 47.1873" N	6° 20' 29.9312" W	112	52° 03' 02.1040" N	6° 42' 50.8457" W
85	51° 57' 55.1307" N	6° 20' 44.9762" W	113	52° 04' 10.3813" N	6° 43' 15.4195" W
86	51° 58' 35.6542" N	6° 21' 10.1483" W	114	52° 05' 07.4447" N	6° 43' 35.3533" W
87	51° 58' 56.4762" N	6° 22' 14.3191" W	115	52° 09' 32.0507" N	6° 42' 23.3707" W
88	51° 59' 13.9760" N	6° 23' 03.7575" W	116	52° 10' 01.4739" N	6° 41' 56.5749" W
89	51° 59' 11.0735" N	6° 23' 44.7487" W	117	52° 10' 24.8532" N	6° 40' 59.9568" W
90	51° 59' 12.8748" N	6° 24' 32.7352" W	118	52° 10' 28.9533" N	6° 39' 29.7306" W
91	51° 59' 00.5607" N	6° 25' 36.1412" W	119	52° 10' 30.7484" N	6° 38' 09.2758" W
92	51° 58' 46.0204" N	6° 26' 39.3935" W	120	52° 10' 26.6462" N	6° 37' 01.2518" W
93	51° 58' 22.3917" N	6° 27' 40.8375" W	121	52° 10' 29.7494" N	6° 35' 38.2031" W
94	51° 58' 26.2128" N	6° 28' 19.9131" W	122	52° 10' 33.0429" N	6° 35' 40.5498" W
95	51° 58' 16.0810" N	6° 29' 04.6255" W	123	52° 10' 38.6148" N	6° 35' 46.5405" W
96	51° 58' 31.0430" N	6° 29' 41.3541" W	124	52° 10' 42.7960" N	6° 36' 59.5164" W
97	51° 58' 48.6985" N	6° 30' 08.0418" W	125	52° 10' 46.9537" N	6° 38' 08.4646" W
98	51° 59' 06.2787" N	6° 31' 12.6693" W	126	52° 10' 45.1084" N	6° 39' 31.1779" W

99	51° 59' 21.6927" N	6° 31' 28.1774" W	127	52° 10' 40.6911" N	6° 41' 08.3686" W
100	51° 59' 46.9511" N	6° 31' 49.9651" W	128	52° 10' 18.1722" N	6° 42' 11.5188" W
101	52° 00' 09.8793" N	6° 32' 31.2906" W	129	52° 09' 37.4989" N	6° 42' 48.5561" W
102	52° 00' 25.5525" N	6° 33' 03.2748" W	130	52° 05' 07.0628" N	6° 44' 02.0810" W
103	52° 00' 51.6142" N	6° 33' 33.8029" W	131	52° 04' 06.9265" N	6° 43' 41.0637" W
104	52° 01' 54.3087" N	6° 34' 30.0739" W	132	52° 02' 50.7445" N	6° 43' 13.6342" W
105	52° 02' 13.6137" N	6° 35' 18.2440" W	133	52° 02' 32.8980" N	6° 42' 08.5716" W
106	52° 02' 18.6973" N	6° 35' 55.6791" W	134	52° 02' 24.1218" N	6° 41' 25.7202" W

Table 2a. Licence Application Area RPL continued

Idx	Latitude	Longitude	Idx	Latitude	Longitude
1	52° 02' 24.1218" N	6° 41' 25.7202" W	40	51° 49' 01.9780" N	6° 14' 21.7401" W
2	51° 59' 56.9991" N	6° 40' 12.1957" W	41	51° 49' 11.3787" N	6° 14' 17.5127" W
3	51° 54' 49.8688" N	6° 36' 06.2746" W	42	51° 49' 28.0241" N	6° 14' 09.1037" W
4	51° 54' 42.9589" N	6° 35' 56.6458" W	43	51° 50' 11.5829" N	6° 13' 33.8675" W
5	51° 54' 40.7952" N	6° 35' 53.6052" W	44	51° 50' 14.8938" N	6° 13' 31.2745" W
6	51° 54' 33.8268" N	6° 35' 37.8633" W	45	51° 51' 12.8411" N	6° 12' 56.4795" W
7	51° 54' 28.5409" N	6° 35' 20.9124" W	46	51° 51' 28.4106" N	6° 12' 33.4783" W
8	51° 54' 24.8505" N	6° 34' 58.4741" W	47	51° 51' 34.6405" N	6° 12' 00.3037" W
9	51° 54' 21.5447" N	6° 34' 45.3233" W	48	51° 51' 34.4528" N	6° 11' 21.1545" W
10	51° 54' 17.1743" N	6° 34' 33.7429" W	49	51° 51' 30.0317" N	6° 09' 51.6052" W
11	51° 54' 12.0528" N	6° 34' 25.6317" W	50	51° 51' 39.2065" N	6° 08' 57.4074" W
12	51° 54' 04.6157" N	6° 34' 18.5426" W	51	51° 51' 55.5461" N	6° 08' 32.0898" W
13	51° 53' 22.8932" N	6° 33' 02.0452" W	52	51° 52' 12.2321" N	6° 08' 22.3574" W
14	51° 53' 02.3461" N	6° 32' 19.8370" W	53	51° 52' 32.6269" N	6° 08' 03.6885" W
15	51° 52' 52.1750" N	6° 31' 58.2450" W	54	51° 52' 45.7012" N	6° 07' 17.1342" W
16	51° 52' 46.4913" N	6° 31' 36.3291" W	55	51° 53' 15.3890" N	6° 06' 01.9427" W
17	51° 52' 43.5726" N	6° 31' 21.4643" W	56	51° 53' 16.7010" N	6° 04' 57.3153" W
18	51° 52' 30.5905" N	6° 30' 45.6709" W	57	51° 53' 22.3949" N	6° 03' 50.3577" W
19	51° 51' 51.4260" N	6° 30' 15.3993" W	58	51° 53' 24.3358" N	6° 02' 21.0594" W
20	51° 50' 34.2636" N	6° 29' 00.4505" W	59	51° 53' 02.5665" N	5° 59' 59.9986" W
21	51° 49' 39.8765" N	6° 27' 40.3549" W	60	51° 53' 19.3666" N	5° 59' 59.9989" W
22	51° 49' 07.4827" N	6° 26' 44.8038" W	61	51° 53' 40.5826" N	6° 02' 18.3155" W
23	51° 48' 17.1623" N	6° 25' 40.4491" W	62	51° 53' 38.5335" N	6° 03' 52.6022" W
24	51° 47' 54.9053" N	6° 25' 08.8330" W	63	51° 53' 32.7331" N	6° 05' 00.8150" W
25	51° 47' 31.4479" N	6° 24' 07.2856" W	64	51° 53' 31.2621" N	6° 06' 16.1896" W
26	51° 47' 08.8799" N	6° 23' 23.8852" W	65	51° 53' 21.4063" N	6° 06' 46.2596" W

Idx	Latitude	Longitude	Idx	Latitude	Longitude
27	51° 46' 26.9225" N	6° 22' 29.9130" W	66	51° 52' 46.2080" N	6° 08' 20.7885" W
28	51° 46' 20.5673" N	6° 22' 14.4117" W	67	51° 52' 18.2039" N	6° 08' 46.7545" W
29	51° 46' 16.1467" N	6° 21' 55.5449" W	68	51° 52' 06.3974" N	6° 08' 52.7038" W
30	51° 46' 15.1360" N	6° 21' 34.3271" W	69	51° 51' 53.3181" N	6° 09' 10.7172" W
31	51° 46' 18.7142" N	6° 21' 08.8681" W	70	51° 51' 46.4519" N	6° 09' 55.4660" W
32	51° 46' 23.1163" N	6° 20' 46.0589" W	71	51° 51' 50.7441" N	6° 11' 22.4241" W
33	51° 46' 31.7200" N	6° 20' 20.6643" W	72	51° 51' 50.8895" N	6° 12' 01.0802" W
34	51° 46' 48.3972" N	6° 19' 48.1403" W	73	51° 51' 48.3757" N	6° 12' 25.6075" W
35	51° 47' 39.9953" N	6° 16' 59.7287" W	74	51° 51' 42.3840" N	6° 12' 47.0439" W
36	51° 48' 16.6697" N	6° 16' 11.9729" W	75	51° 51' 22.5660" N	6° 13' 18.5118" W
37	51° 48' 21.7457" N	6° 16' 03.9973" W	76	51° 50' 20.5314" N	6° 13' 55.7528" W
38	51° 48' 37.6989" N	6° 15' 11.7672" W	77	51° 49' 34.1034" N	6° 14' 33.3896" W
39	51° 48' 47.7614" N	6° 14' 37.7216" W	78	51° 49' 17.6377" N	6° 14' 41.7055" W

Table 3b. Route option Area RPL.

vIdx	Latitude	Longitude	Idx	Latitude	Longitude
79	51° 49' 03.6720" N	6° 15' 09.2278" W	107	51° 50' 47.4368" N	6° 28' 31.7774" W
80	51° 48' 50.9943" N	6° 15' 49.5941" W	108	51° 52' 01.8728" N	6° 29' 44.0789" W
81	51° 48' 42.7322" N	6° 16' 07.4524" W	109	51° 52' 46.1669" N	6° 30' 18.3059" W
82	51° 48' 27.4182" N	6° 16' 31.5146" W	110	51° 52' 58.4453" N	6° 31' 10.7718" W
83	51° 47' 52.9261" N	6° 17' 16.4257" W	111	51° 53' 01.6921" N	6° 31' 27.3066" W
84	51° 47' 07.0055" N	6° 20' 07.5497" W	112	51° 53' 06.2977" N	6° 31' 45.0652" W
85	51° 46' 50.0270" N	6° 20' 40.6509" W	113	51° 53' 15.1401" N	6° 32' 03.8359" W
86	51° 46' 43.4841" N	6° 20' 59.9572" W	114	51° 53' 35.3272" N	6° 32' 45.3027" W
87	51° 46' 39.9773" N	6° 21' 18.0698" W	115	51° 54' 15.0497" N	6° 33' 58.1278" W
88	51° 46' 37.3238" N	6° 21' 36.9437" W	116	51° 54' 21.9661" N	6° 34' 04.7198" W
89	51° 46' 37.8320" N	6° 21' 47.7436" W	117	51° 54' 29.9343" N	6° 34' 17.3387" W
90	51° 46' 40.2813" N	6° 21' 58.1647" W	118	51° 54' 36.0376" N	6° 34' 33.5101" W
91	51° 46' 43.3741" N	6° 22' 05.6832" W	119	51° 54' 40.2221" N	6° 34' 50.1556" W
92	51° 47' 24.3295" N	6° 22' 58.3976" W	120	51° 54' 43.7431" N	6° 35' 11.5635" W
93	51° 47' 49.3615" N	6° 23' 46.4943" W	121	51° 54' 45.9283" N	6° 35' 24.3351" W
94	51° 48' 11.9208" N	6° 24' 45.7225" W	122	51° 54' 54.4209" N	6° 35' 36.3610" W
95	51° 48' 31.2687" N	6° 25' 13.2054" W	123	51° 54' 59.5153" N	6° 35' 44.8030" W
96	51° 49' 22.4130" N	6° 26' 18.5759" W	124	52° 00' 03.0094" N	6° 39' 47.7708" W
97	51° 49' 55.2545" N	6° 27' 14.9097" W	125	52° 02' 23.3446" N	6° 40' 57.8793" W

Table 4b. Route option Area RPL continued.

Figure 4. Landfall at Kilmore Quay

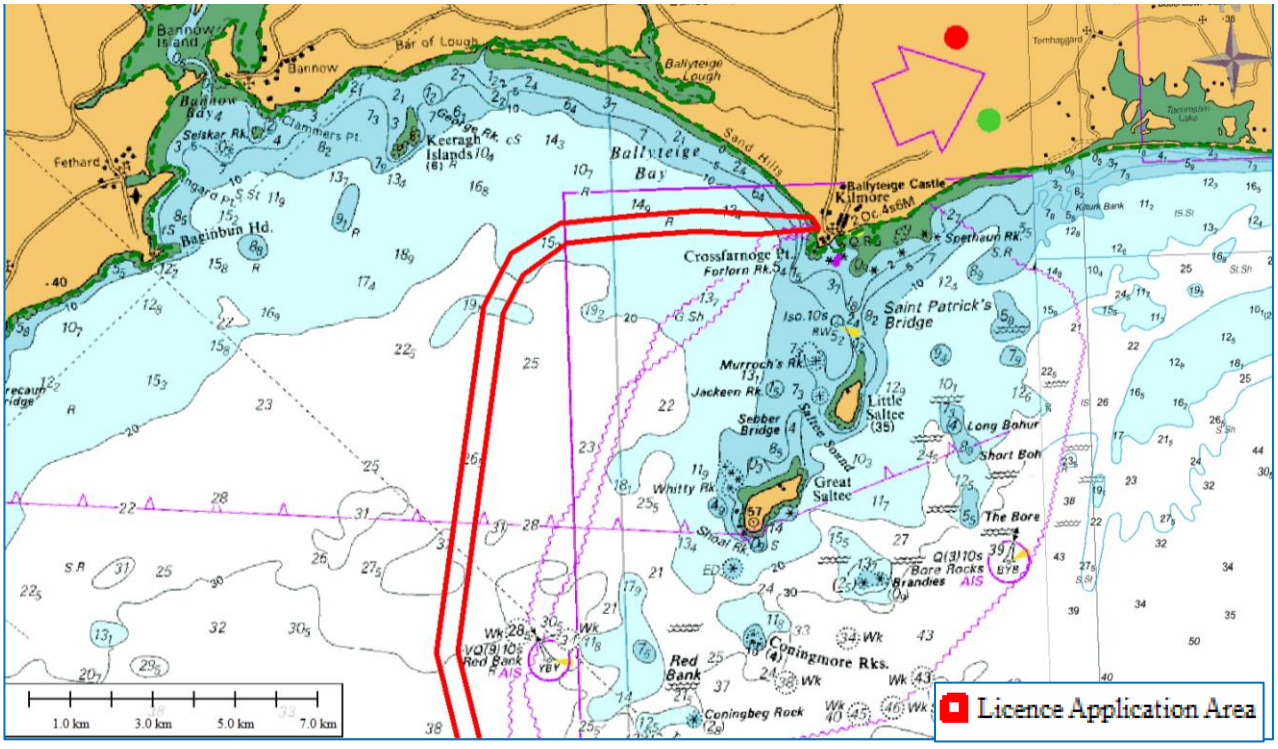

Figure 6. Inshore Survey Sections and Landfalls.

The general line of the inshore section of the survey route is shown on an Admiralty Chart base in Figure 6. The route heads west from the landfall, parallel to existing cables, before turning South and then easterly towards Wales, staying south of the Saltee Islands. Offshore, route options are explored to investigate the optimum route for cable installation. The landfall location shown on Ordnance Survey Maps are provided in Drawing 1359-001 and included with the Licence Application.

MARINE SURVEY & SITE INVESTIGATIONS SCHEDULE OF WORKS

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 cable route at the landfall is required to the low water mark. Intertidal and beach surveys (walkover survey) will be carried out on the beach by the project ecologist and the project archaeologist.

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

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 10m spacing (approx. 8 to 10 at each landfall).
- Bar probes from the Low Water Line to the 3m water depth contour at 30m spacing. (approx. 8 to 10 at each landfall)
- 3 Trial Pits on the beach (target depth 2.5m).

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.

The Trial Pits will be positioned at approximately 30 to 50m centres starting seaward of the High Water Mark. The Trial Pits will be excavated, logged, photographed and backfilled in a single tidal cycle. The trial pits will be backfilled with the original excavated materials in the sequence in which they are excavated.

A summary Method Statement for excavation of the Trial Pits is as follows;

- Excavate sand and place to one side.
- Excavate substrate and place separate from sand.
- Measure, log and photograph each Trial Pit.
- Backfill in sequence compacting with bucket of back-hoe as the backfilling proceeds.

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 - 500m	9	SSS: 100% MBES Bathy: 20%	4 knots

Table 5 Inshore Survey.

Offshore Marine Survey

The area extending seaward from the outer limits of the inshore survey to the EEZ 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 seven 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	500m - 1500	7	SSS: 100% MBES Bathy: 20%	4 knots

Table 6. 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 EEZ limits will comprise of the following techniques:

- Up to 26 CPTs (2m to 3m)
- Up to 19 Gravity Cores / Vibrocores (3m)
- Up to 17 Grab Samples

Indicative locations for the relevant site investigation activities (Gravity or Vibrocore and CPT's) are shown in Figure 7. 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.

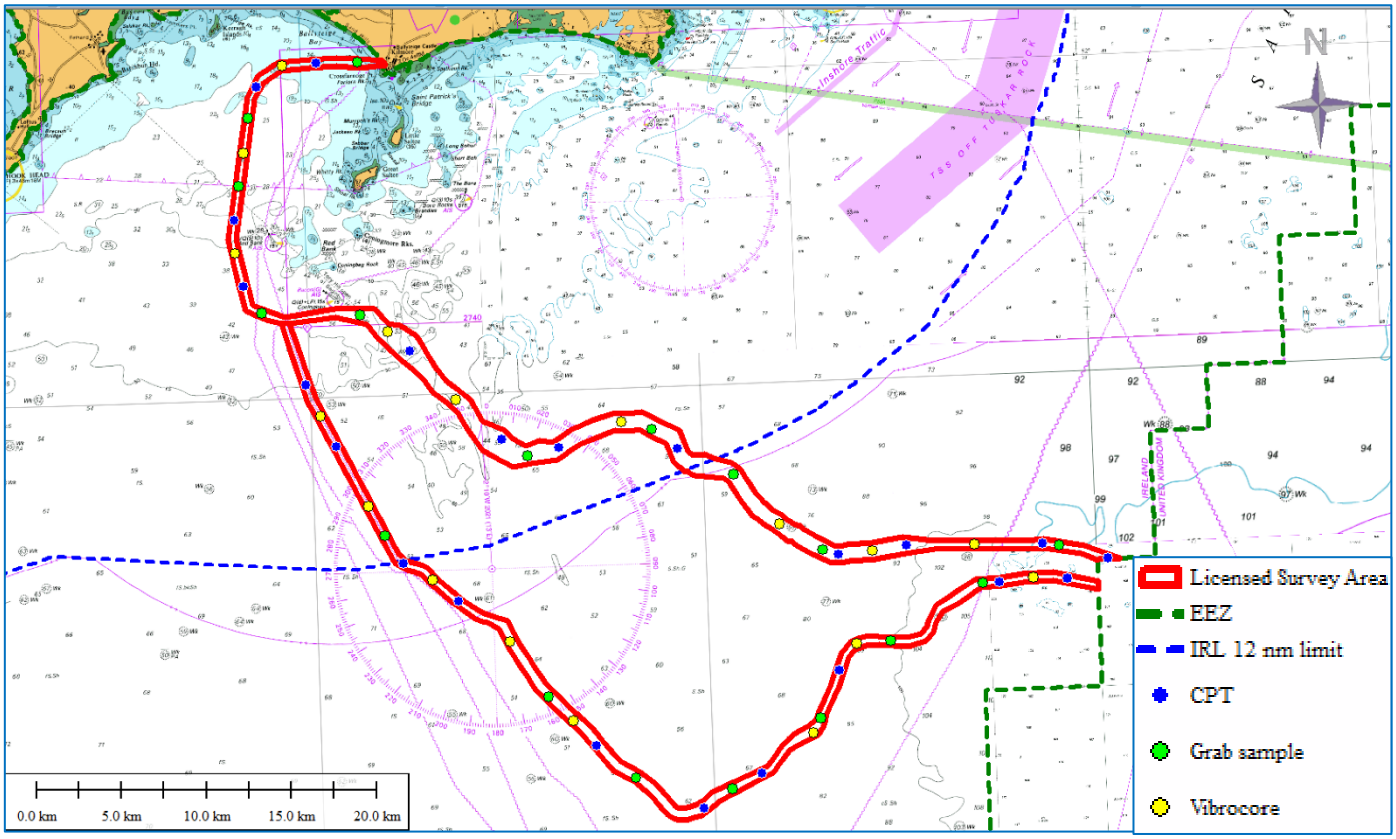

Figure 7. Indicative CPT and Vibrocore Locations.

Seabed Sampling

The total overall scope of the Site Investigations is as follows:

- Bar Probes — 10 No. on the intertidal
- Trial Pits — 3 No. on the beach
- Bar Probes — 10 No. from Low Water to 3m contour.
- Grab Samples — 17 No. along the route corridor.
- Gravity Cores / Vibrocores — 19 No. along the route corridor.
- Cone Penetration Tests — 26 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 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 8). 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.

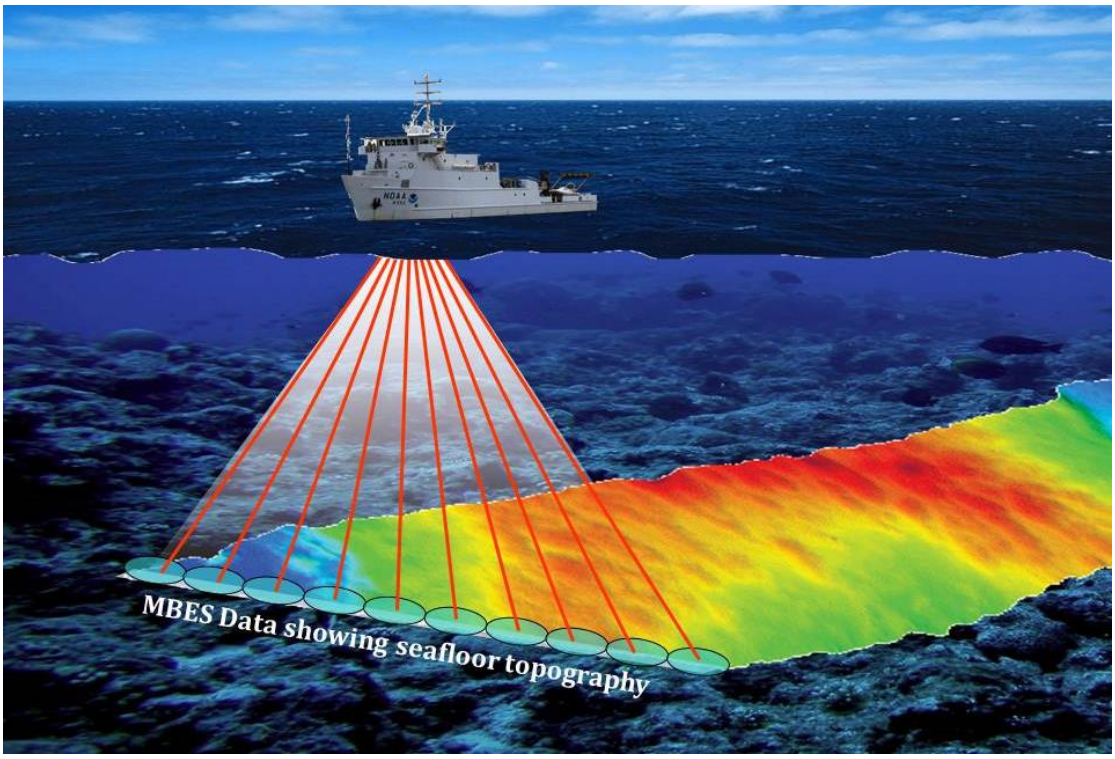

Figure 8. Graphic of MBES survey in operation

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 9).

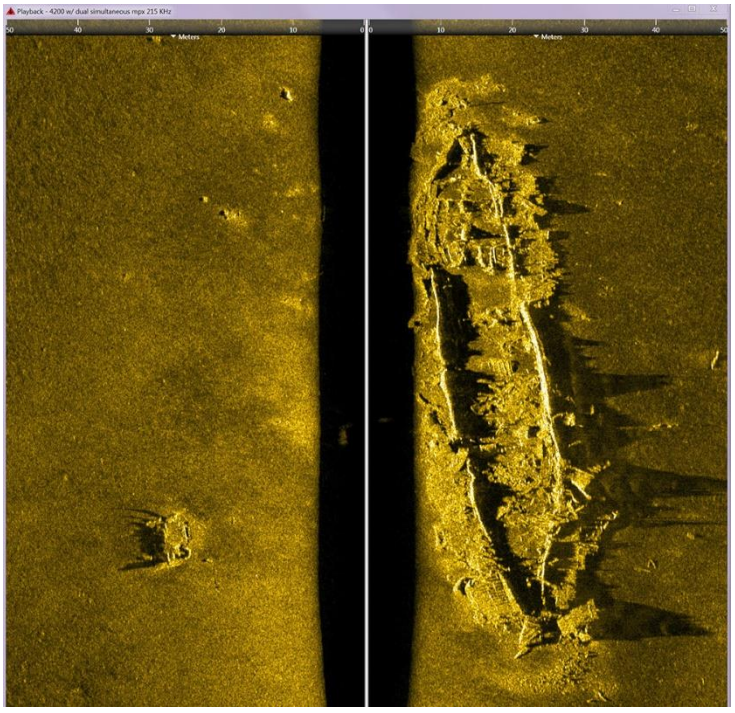

Figure 9. SSS image of shipwreck on seabed and nadir gap.

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 10). The SSS may be hull mounted but is typically towed at depth behind the survey vessel on an armoured tow cable.

Figure 10. 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 9).

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 11). 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 11. 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 12). 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.

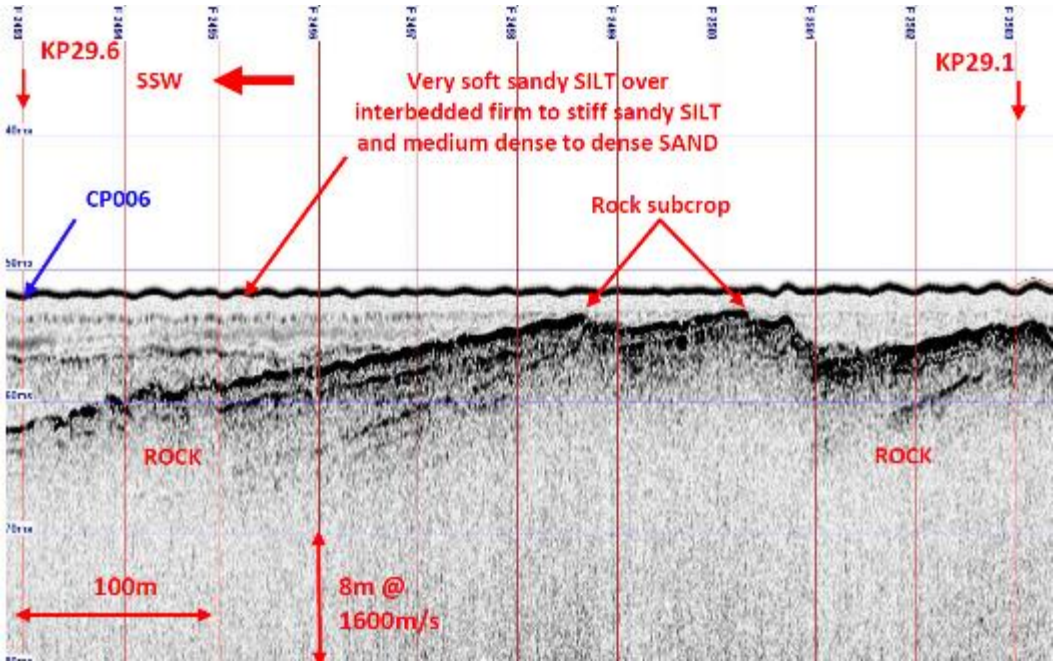

Figure 12. Interpreted SBP seabed profile

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 13) 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 13. 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 7. 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 14) 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 14 Neptune 3000 CPT rig.

Gravity Core

Gravity corers (Figure 15) 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.

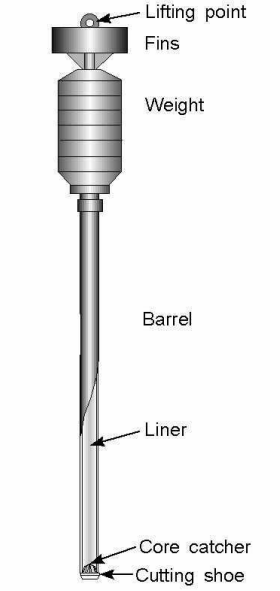

Figure 15. Gravity Corer schematic

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),

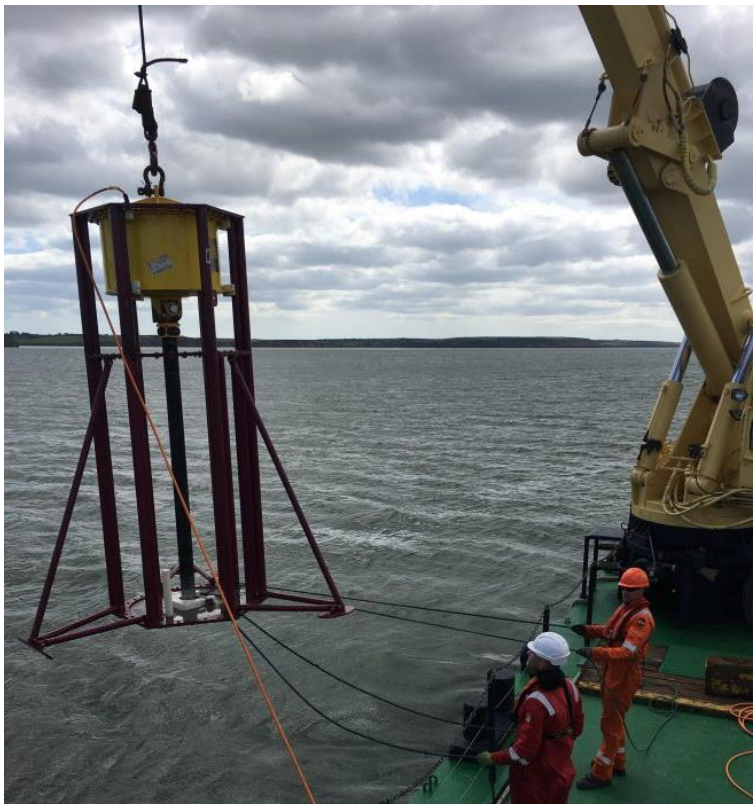

Figure 16. Deployment of Vibrocorer from Survey Vessel

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 17), 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 17. 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 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 10 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 8. Marine Survey Activities.

Equipment Type	Purpose	Number of locations within Licence 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.	26	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	19	N/A	N/A	N/A
Vibrocorer	Retrieve a seabed sediment sample by penetrating seabed with a vibrating steel core barrel	19	30 Hz	187.4 dB.	LGL 2010
Grab Samples	Collect small sediment samples from seabed surface with clamshell mechanism	17	N/A	N/A	N/A

Table 9. Marine Site Investigation Activities.

Activity	Typical Time Period Required for Activity	Total Number of SI Locations	Total Time for SI	Foot Print Affected per SI	Foot Print Affected per SI (ha)	Total Foot Print (ha)	Area Directly Affected as % of Licence Application Area
Inshore Geophysical Survey	3 to 4 days (weather and sea state dependent)	400 - 500 m cable route corridor	3 to 4 days (weather and sea state dependent)	N/A	N/A	376 ha	3.68953%
Offshore Geophysical Survey	8 to 10 days (weather and sea state dependent)	500 - 1500 m cable route corridor	8 to 10 days (weather and sea state dependent)	N/A	N/A	9815 ha	96.31047%
CPT	30 minutes - 2 hours in any one location	26	52 hours within total 10 days of Site Investigations campaign (weather and sea state dependent)	8m²	0.0008 ha	0.0208 ha	0.00020%
Gravity Corer	30 minutes - 2 hours in any one location	19	38 hours within total 10 days of Site Investigations campaign (weather and sea state dependent)	1m²	0.0001 ha	0.0019 ha	0.00002%
Vibro Corer	30 minutes - 2 hours in any one location	19	38 hours within total 10 days of Site Investigations campaign (weather and sea state dependent)	8m²	0.0008 ha	0.0152 ha	0.00015%
Grab Samples	20 minutes - 45 minutes in any one location	17	13 hours within total 10 days of Site Investigations campaign (weather and sea state dependent)	0.5m²	0.00005 ha	0.00085 ha	0.00001%

Table 10. Estimated Time and Duration of Survey Activities.

Identification of Relevant Natura 2000 Sites

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

In the interest of carrying out a thorough assessment in line with both the Habitats Directive, and the precautionary principle, the ZoI was expanded for this assessment to include designated sites within 15km of the proposed development site, and sites beyond 15km that have the potential to be impacted by the proposed survey works. This was done in the interest of ensuring that any potential impacts, however indirect or remote, were taken into account.

The proposed Cable Route, Licence Application Area, and Works are demonstrated in Figures 18-20. SACs and Waterbodies proximate to the proposed Cable Route and Licence Application Area within Ballyteige Beach are demonstrated in Figure 21. SACs and SPAs within 10km of the proposed Cable Route Licence Application Area are demonstrated in Figures 22 & 23. SACs and SPAs within 15 km of the proposed Licence Application Area are seen in Figures 24 & 25. The proposed 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) is demonstrated in Figure 26.

A key factor in the consideration as to whether or not a particular European site is likely to be affected by the proposed survey works is its distance from the works location. It is generally, but not necessarily, the case that the greater the distance from the plan or project the smaller the likelihood of impacts. In this case, the proposed survey works are located within the Ballyteige Burrow SAC.

Given that the proposed survey route is located within the Ballyteige Burrow SAC, out of an abundance of caution, in the absence of mitigation, during the survey works there is the potential for significant effects on the qualifying interests of this European Site through physical impact on habitats and species. Further information is required to assess the potential effects of the proposed works on this European Site.

Further, given the proximity of the proposed survey route to the Saltee Islands SAC (350m), there is potential for marine mammals from Saltee Islands SAC (*Halichoerus grypus* (Grey Seal)) to be in the vicinity of the proposed survey works.

The nearest Special Protection Area (SPA) is Ballyteige Burrow SPA, located 700m from the proposed cable survey route. There is the potential for disturbance of the protected bird species during the survey works via intertidal survey works within Ballyteige Burrow and the operation of survey vessels within Ballyteige Bay. Out of an abundance of caution, it is considered that mitigation measures are required to ensure that the proposed project will not impact upon the protected bird species of proximate SPAs. All Natura 2000 sites within 15km, and beyond 15km with the potential for significant effects on Natura 2000 sites, are listed in Table 11. The qualifying interests, and the potential impact of the development on each European site and qualifying interest, are screened in/out in Table 12.

Table 11. Proximity to designated sites of conservation importance

Designation	European Site	Distance
SAC	Ballyteige Burrow SAC	**Within**
SAC	Saltee Islands SAC	350m
SAC	Hook Head SAC	3.6 km
SAC	Tacumshin Lake SAC	5.6 km
SAC	Bannow Bay SAC	7.6 km
SAC	Carnsore Point SAC	10.3 km
SAC	Lady's Island Lake SAC	11.5 km
SAC	River Barrow and River Nore SAC	13.5 km
SPA	Ballyteige Burrow SPA	700m
SPA	Saltee Islands SPA	3 km
SPA	Keeragh Islands SPA	3.3 km
SPA	Tacumshin Lake SPA	6.7 km
SPA	Bannow Bay SPA	7.3 km
SPA	Lady's Island Lake SPA	11.9 km
SPA	Wexford Harbour and Slobs SPA	14.8 km

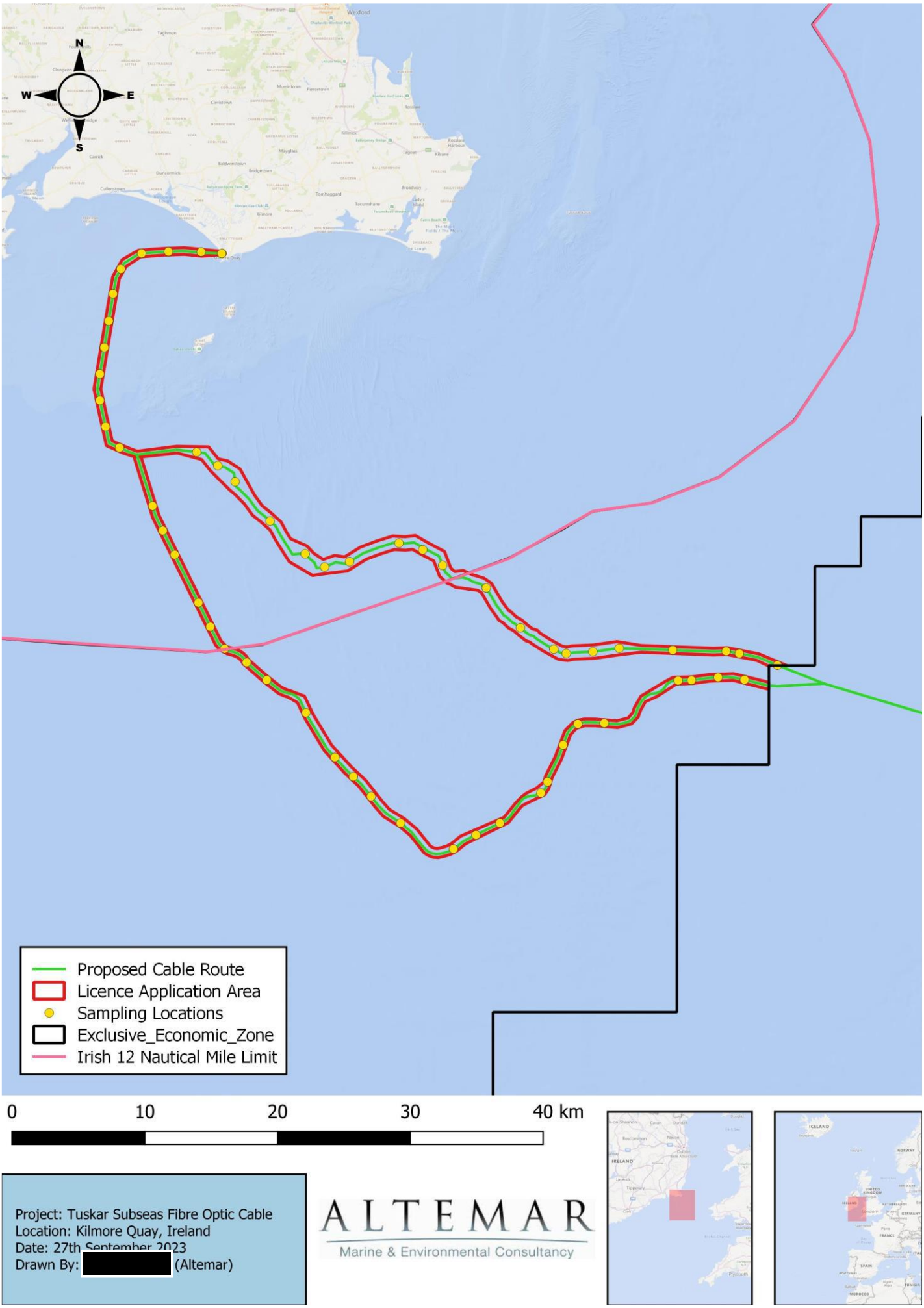

Figure 18: Proposed Cable Route, Licence Application Area, and Works (to Irish Exclusive Economic Zone).

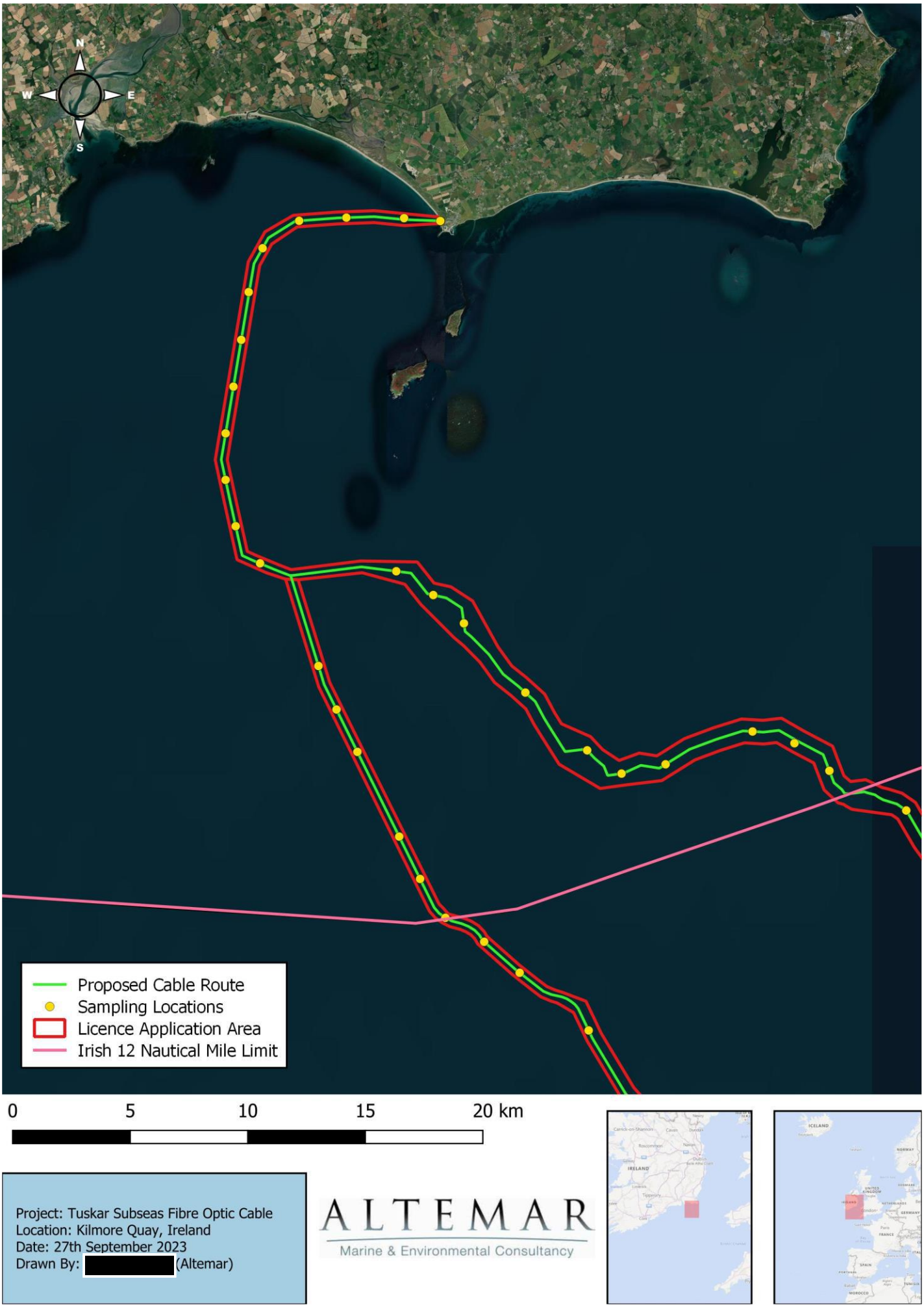

Figure 19: Proposed Cable Route, Licence Application Area, and Works (to Irish 12 Nautical Mile Limit).

Figure 20. Proposed Cable Route and Licence Application Area at proposed landfall location

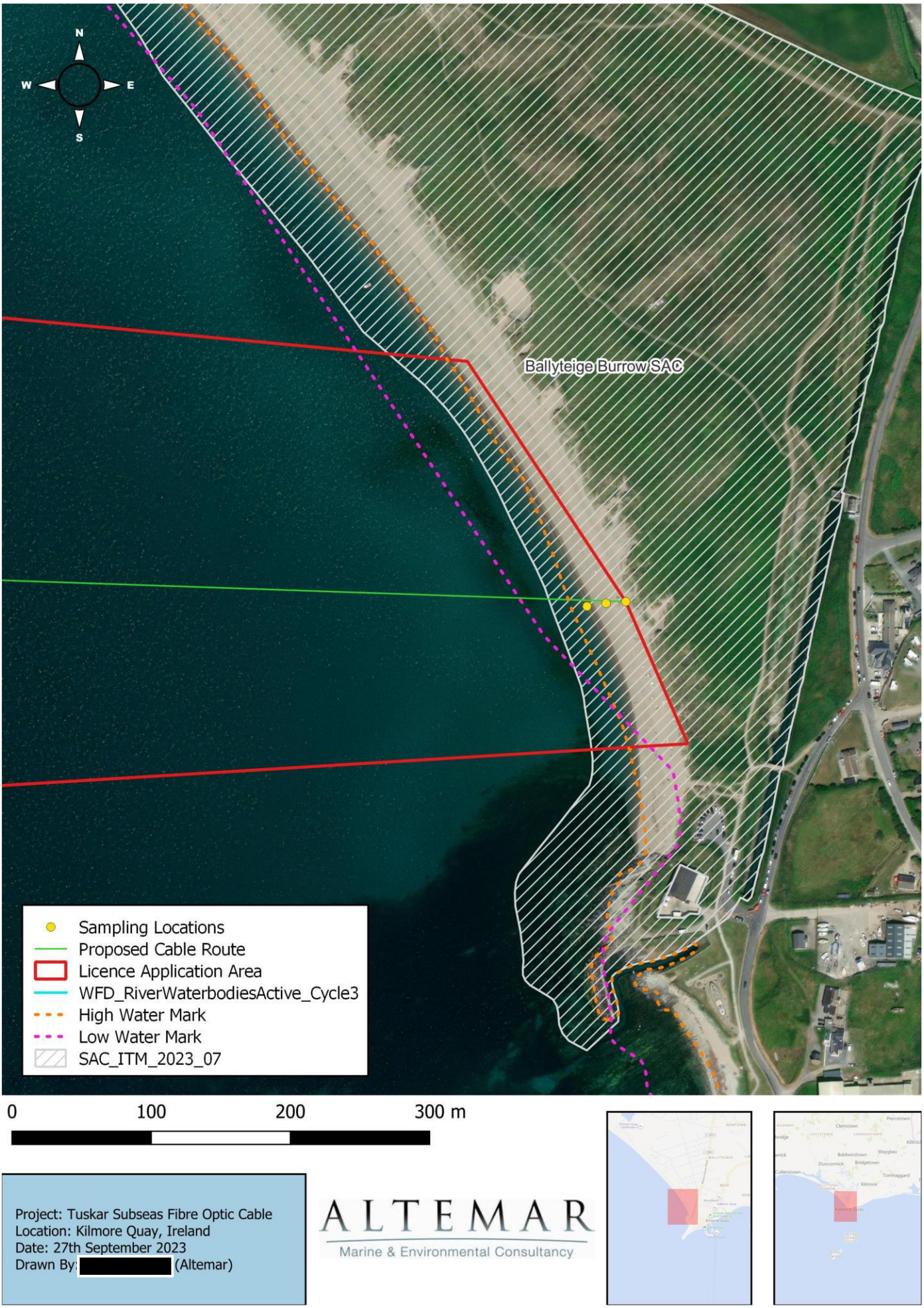

Figure 21: Special Areas of Conservation within the proposed Cable Route and Licence Application Area at landfall location.

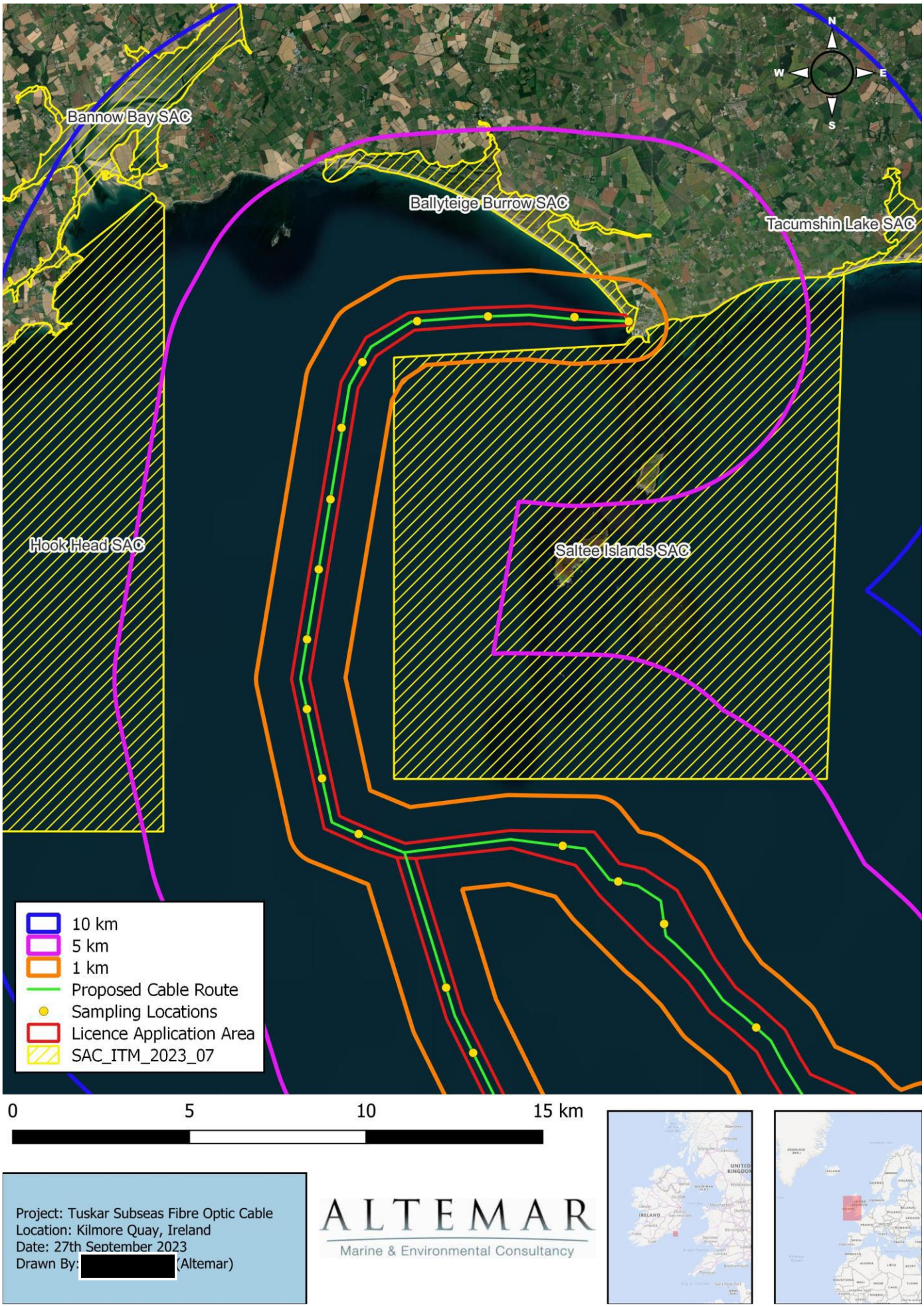

Figure 22: Special Areas of Conservation within 10km of the proposed Cable Route and Licence Application Area within Kilmore Quay

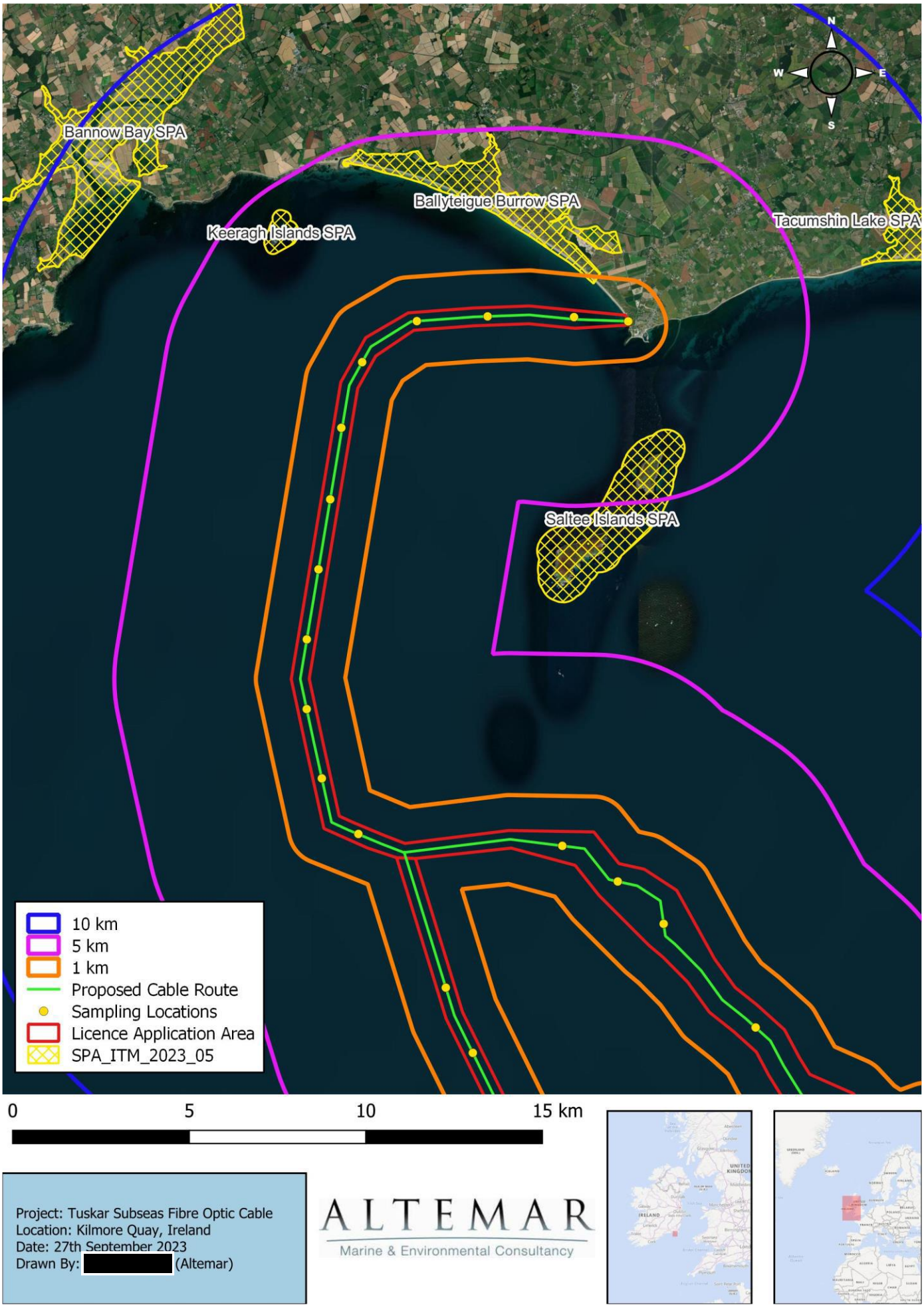

Figure 23: Special Protection Areas within 10km of the proposed Cable Route and Licence Application Area within Kilmore Quay

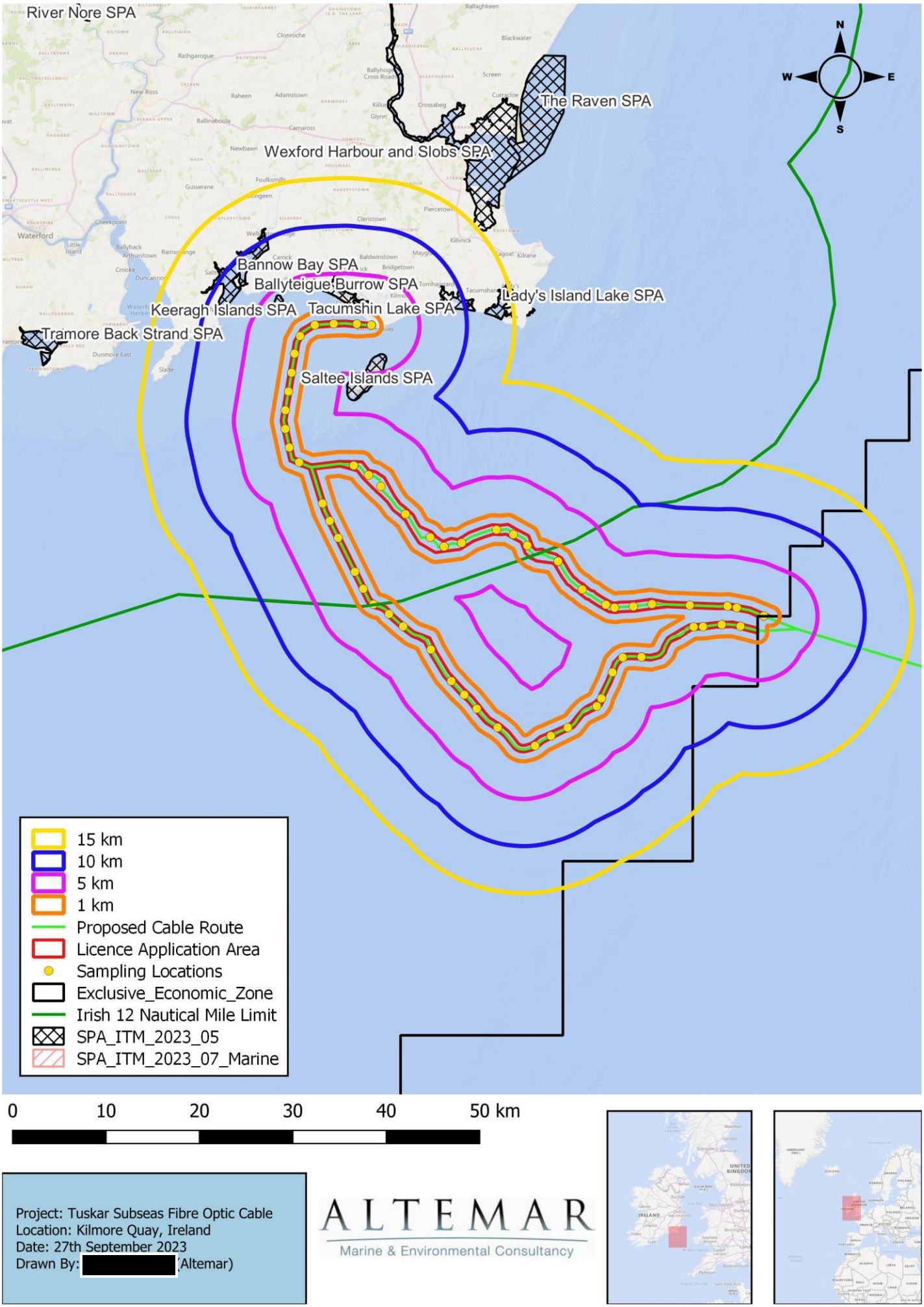

Figure 24: Special Protection Areas within 15 km of the proposed Cable Route and Licence Application Area.

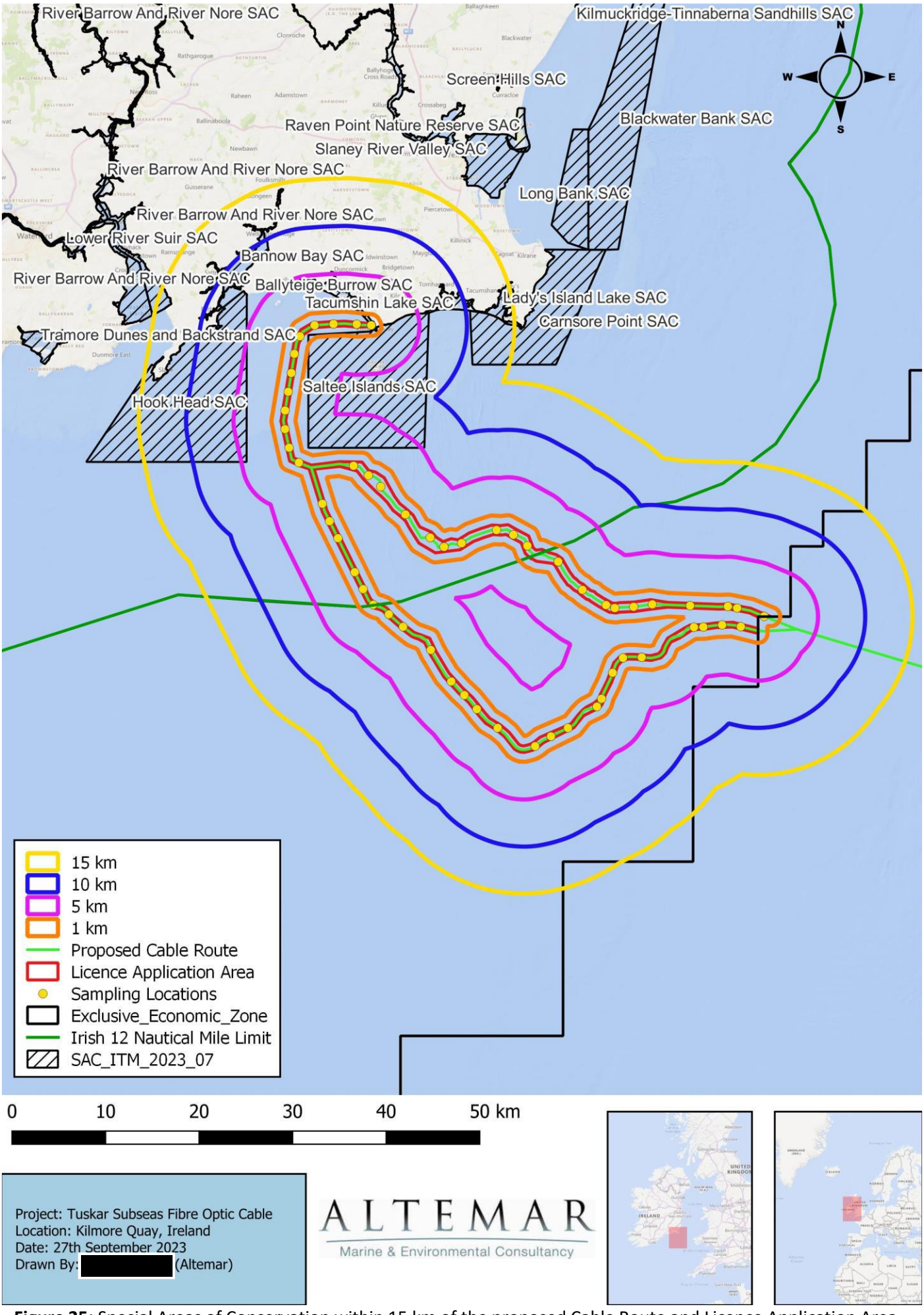

Figure 25: Special Areas of Conservation within 15 km of the proposed Cable Route and Licence Application Area.

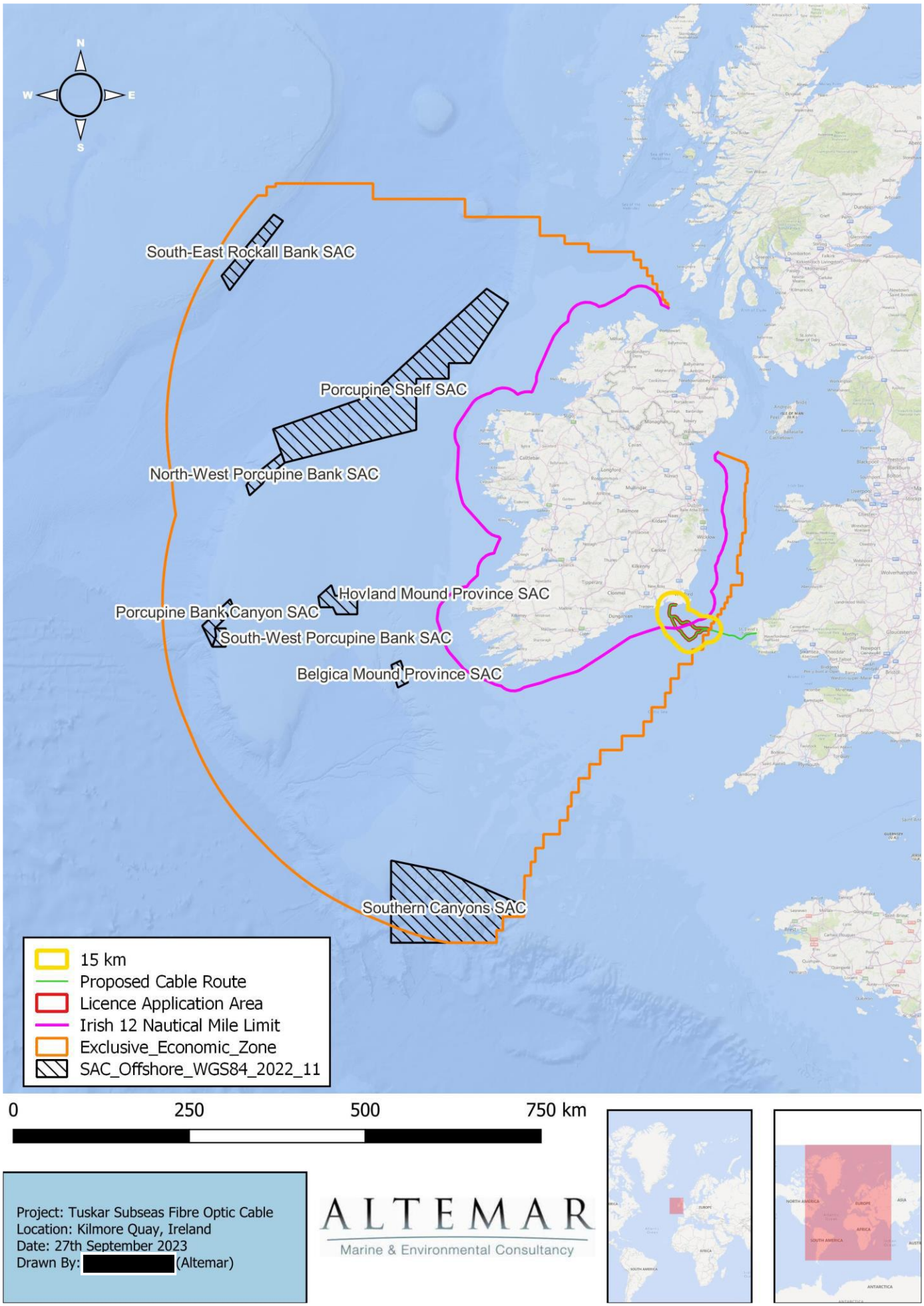

Figure 26: Fibre optic survey route in relation to the 12 nm limit, Designated Irish Continental shelf and Offshore SAC's (no offshore SAC's in the area).

Initial screening of NATURA 2000 sites, Annex habitats and species within 15km of the proposed route and landfall.

Table 12. Initial screening of Natura 2000 sites within 15km of the proposed survey route.

NATURA Site Code	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
Special Protection Areas			
IE004020	Ballyteige Burrow SPA	**In**	**Conservation Objective** The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level. **Qualifying Interests** Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] Shelduck (*Tadorna tadorna*) [A048] Golden Plover (*Pluvialis apricaria*) [A140] Grey Plover (*Pluvialis squatarola*) [A141] Lapwing (*Vanellus vanellus*) [A142] Black-tailed Godwit (*Limosa limosa*) [A156] Bar-tailed Godwit (*Limosa lapponica*) [A157] Wetland and Waterbirds [A999] **Potential Impact** The proposed survey works area is located a minimum of 700m from the SPA. The cable survey route is in the marine subtidal and in the terrestrial/intertidal elements of Ballyteige Bay and offshore. The proposed survey works will be within an area of existing vessel traffic in Kilmore Quay and the intertidal element is on a popular beach with a car park and existing human and dog walking activity. The majority of species are overwintering birds and are likely not be present during the works. However, out of an abundance of caution, should the qualifying interests be present during survey works, mitigation measures will be required in the way of ecological supervision. It is considered that, although the works are proposed in a popular beach and disturbed area, there may be potential for effect on the qualifying interests of this SPA through disturbance, if species from this SPA are roosting on site during the works. Mitigation measures will be present on site in relation to bird species and it is possible, although unlikely that wintering birds may be present during the works. Further information is required to determine the potential for adverse effects on this SPA. **NIS is Required.**

NATURA Site Code	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
IE004002	Saltee Islands SPA	**In**	**Conservation Objectives** The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level. **Qualifying Interests** Fulmar (*Fulmarus glacialis*) [A009] Gannet (*Morus bassanus*) [A016] Cormorant (*Phalacrocorax carbo*) [A017] Shag (*Phalacrocorax aristotelis*) [A018] Lesser Black-backed Gull (*Larus fuscus*) [A183] Herring Gull (*Larus argentatus*) [A184] Kittiwake (*Rissa tridactyla*) [A188] Guillemot (*Uria aalge*) [A199] Razorbill (*Alca torda*) [A200] Puffin (*Fratercula arctica*) [A204] **Potential Impact** The proposed survey route is located 3km from this SPA. The survey works will be in the marine subtidal and in the terrestrial/intertidal elements of Ballyteige Bay and offshore. The survey works will be within an area of existing vessel traffic in Kilmore Quay and the intertidal element is on a popular beach with a car park and existing human and dog walking activity. The majority of species listed as qualifying interests would not be expected in the terrestrial/intertidal landfall area. However, species would be present offshore. Out of an abundance of caution, in the absence of mitigation measures, it is considered that there may be potential for impact on the qualifying interests of this SPA through disturbance particularly for species that may be present in the landfall area. Mitigation measures are required. Further information is required to determine the potential for adverse effects on this SPA. **NIS is Required.**
IE004118	Keeragh Islands SPA	**Out**	**Conservation Objectives** To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA. **Qualifying Interest** Cormorant (*Phalacrocorax carbo*) [A017] **Potential Impact** This SPA is located 3.3 km from the proposed cable survey area. The proposed survey works will be located within an area of high

NATURA Site Code	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
			disturbance due to the presence of a car park and high pedestrian and canine activity. In addition, the works are proximate to Kilmore Quay with vessel activity. Due to the distance from the works to the SPA, and the low level of impact, there is no possibility of significant effects on the qualifying interests of this SPA. In the absence of mitigation, impacts caused by the project would be expected to be localised to the immediate environs of the proposed cable survey site. No impacts on the qualifying interests of this Natura 2000 site are foreseen. **No significant impact likely.**
IE004092	Tacumshin Lake SPA	**Out**	**Conservation Objectives** To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA. To maintain or restore the favourable conservation condition of the wetland habitat at Tacumshin Lake SPA as a resource for the regularly-occurring migratory waterbirds that utilise it. **Qualifying Interests** Little Grebe (*Tachybaptus ruficollis*) [A004] Bewick's Swan (*Cygnus columbianus bewickii*) [A037] Whooper Swan (*Cygnus cygnus*) [A038] Wigeon (*Anas penelope*) [A050] Gadwall (*Anas strepera*) [A051] Teal (*Anas crecca*) [A052] Pintail (*Anas acuta*) [A054] Shoveler (*Anas clypeata*) [A056] Tufted Duck (*Aythya fuligula*) [A061] Coot (*Fulica atra*) [A125] Golden Plover (*Pluvialis apricaria*) [A140] Grey Plover (*Pluvialis squatarola*) [A141] Lapwing (*Vanellus vanellus*) [A142] Black-tailed Godwit (*Limosa limosa*) [A156] Wetland and Waterbirds [A999] **Potential Impact** This SPA is located 6.7 km from the proposed cable survey area. The proposed survey works will be located within an area of high disturbance due to the presence of a car park and high pedestrian and canine activity. In addition, the works are proximate to Kilmore Quay with vessel activity. Due to the distance from the works to the SPA, and the low level of impact, there is no possibility of significant effects on the qualifying interests of this SPA.

NATURA Site Code	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
			In the absence of mitigation, impacts caused by the project would be expected to be localised to the immediate environs of the proposed cable survey site. No impacts on the qualifying interests of this Natura 2000 site are foreseen. **No significant impact likely.**
IE004033	Bannow Bay SPA	**Out**	**Conservation Objectives** The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level. **Qualifying Interests** Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] Shelduck (*Tadorna tadorna*) [A048] Pintail (*Anas acuta*) [A054] Oystercatcher (*Haematopus ostralegus*) [A130] Golden Plover (*Pluvialis apricaria*) [A140] Grey Plover (*Pluvialis squatarola*) [A141] Lapwing (*Vanellus vanellus*) [A142] Knot (*Calidris canutus*) [A143] Dunlin (*Calidris alpina*) [A149] Black-tailed Godwit (*Limosa limosa*) [A156] Bar-tailed Godwit (*Limosa lapponica*) [A157] Curlew (*Numenius arquata*) [A160] Redshank (*Tringa totanus*) [A162] Wetland and Waterbirds [A999] **Potential Impact** This SPA is located 7.6 km from the proposed cable survey area. The proposed survey works will be located within an area of high disturbance due to the presence of a car park and high pedestrian and canine activity. In addition, the works are proximate to Kilmore Quay with vessel activity. Due to the distance from the works to the SPA, and the low level of impact, there is no possibility of significant effects on the qualifying interests of this SPA. In the absence of mitigation, impacts caused by the project would be expected to be localised to the immediate environs of the proposed cable survey site. No impacts on the qualifying interests of this Natura 2000 site are foreseen. **No significant impact likely.**

NATURA Site Code	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
IE004009	Lady's Island Lake SPA	**Out**	**Conservation Objectives** To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA. To maintain or restore the favourable conservation condition of the wetland habitat at Lady's Island Lake SPA as a resource for the regularly-occurring migratory waterbirds that utilise it. **Qualifying Interests** Gadwall (*Anas strepera*) [A051] Black-headed Gull (*Chroicocephalus ridibundus*) [A179] Sandwich Tern (*Sterna sandvicensis*) [A191] Roseate Tern (*Sterna dougallii*) [A192] Common Tern (*Sterna hirundo*) [A193] Arctic Tern (*Sterna paradisaea*) [A194] Wetland and Waterbirds [A999] **Potential Impact** This SPA is located 11.9 km from the proposed cable survey area. The proposed survey works will be located within an area of high disturbance due to the presence of a car park and high pedestrian and canine activity. In addition, the works are proximate to Kilmore Quay with vessel activity. Due to the distance from the works to the SPA, and the low level of impact, there is no possibility of significant effects on the qualifying interests of this SPA. In the absence of mitigation, impacts caused by the project would be expected to be localised to the immediate environs of the proposed cable survey site. No impacts on the qualifying interests of this Natura 2000 site are foreseen. **No significant impact likely.**
IE004076	Wexford Harbour and Slobs SPA	**Out**	**Conservation Objectives** The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level. **Qualifying Interests** Little Grebe (*Tachybaptus ruficollis*) [A004] Great Crested Grebe (*Podiceps cristatus*) [A005] Cormorant (*Phalacrocorax carbo*) [A017] Grey Heron (*Ardea cinerea*) [A028] Bewick's Swan (*Cygnus columbianus bewickii*) [A037] Whooper Swan (*Cygnus cygnus*) [A038] Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] Shelduck (*Tadorna tadorna*) [A048]

NATURA Site Code	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
			Wigeon (*Anas penelope*) [A050] Teal (*Anas crecca*) [A052] Mallard (*Anas platyrhynchos*) [A053] Pintail (*Anas acuta*) [A054] Scaup (*Aythya marila*) [A062] Goldeneye (*Bucephala clangula*) [A067] Red-breasted Merganser (*Mergus serrator*) [A069] Hen Harrier (*Circus cyaneus*) [A082] Coot (*Fulica atra*) [A125] Oystercatcher (*Haematopus ostralegus*) [A130] Golden Plover (*Pluvialis apricaria*) [A140] Grey Plover (*Pluvialis squatarola*) [A141] Lapwing (*Vanellus vanellus*) [A142] Knot (*Calidris canutus*) [A143] Sanderling (*Calidris alba*) [A144] Dunlin (*Calidris alpina*) [A149] Black-tailed Godwit (*Limosa limosa*) [A156] Bar-tailed Godwit (*Limosa lapponica*) [A157] Curlew (*Numenius arquata*) [A160] Redshank (*Tringa totanus*) [A162] Black-headed Gull (*Chroicocephalus ridibundus*) [A179] Lesser Black-backed Gull (*Larus fuscus*) [A183] Little Tern (*Sterna albifrons*) [A195] Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395] Wetland and Waterbirds [A999] **Potential Impact** This SPA is located 14.8 km from the proposed cable survey area. The proposed survey works will be located within an area of high disturbance due to the presence of a car park and high pedestrian and canine activity. In addition, the works are proximate to Kilmore Quay with vessel activity. Due to the distance from the works to the SPA, and the low level of impact, there is no possibility of significant effects on the qualifying interests of this SPA. In the absence of mitigation, impacts caused by the project would be expected to be localised to the immediate environs of the proposed cable survey site. No impacts on the qualifying interests of this Natura 2000 site are foreseen. **No significant impact likely.**

NATURA Site	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
Special Areas of Conservation			
IE000696	Ballyteige Burrow SAC	**In**	**Conservation Objectives** The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level. **Qualifying Interests** Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Coastal lagoons [1150] Annual vegetation of drift lines [1210] Perennial vegetation of stony banks [1220] Salicornia and other annuals colonising mud and sand [1310] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410] Mediterranean and thermo-Atlantic halophilous scrubs (*Sarcocornetea fruticosi*) [1420] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Atlantic decalcified fixed dunes (*Calluno-Ulicetea*) [2150] Humid dune slacks [2190] **Potential Impact** The proposed cable survey route passes through this SAC. The proposed survey works will be in the terrestrial and in the marine elements of the SAC. The intertidal element will involve personnel, machinery and excavations on a popular beach proximate to Kilmore Quay with an existing car park and human and dog walking activity. However, initial assessment identifies that in the absence of mitigation measures there may be potential for impact on the qualifying interests of this SAC through disturbance and the physical impact on the intertidal sediments and terrestrial habitats. There is also potential for pollution from personnel on site within the SAC. Given that survey works are proposed within the SAC, mitigation measures are required to prevent significant impacts on its qualifying interests. Further information is

NATURA Site	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
			required to determine the potential for adverse effects on this SAC. **NIS is Required.**
IE000707	Saltee Islands SAC	**In**	**Conservation Objective** The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level. **Qualifying Interests** Mudflats and sandflats not covered by seawater at low tide [1140] Large shallow inlets and bays [1160] Reefs [1170] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Submerged or partially submerged sea caves [8330] *Halichoerus grypus* (Grey Seal) [1364] **Potential Impact** This SAC is located 350m from the proposed cable survey area. No works are proposed in this SAC. Due to the scale of the proposed survey works, and the distance from the proposed survey area to this SAC, in the absence of mitigation, there will be no significant effects on the terrestrial features of interest from the proposed works associated with this survey license application. However, initial assessment identifies that, in the absence of mitigation measures, there may be potential for impact on the marine features of interest of this SAC through underwater noise and physical disturbance which could impact Grey Seal, which is a Feature of Interest of this SAC. Mitigation measures are required to protect the SAC from significant effects. **Natura Impact Statement Required**
IE000764	Hook Head SAC	**Out**	**Conservation Objectives** The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level. **Qualifying Interests** Large shallow inlets and bays [1160] Reefs [1170]

NATURA Site	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
			Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] **Potential Impact** This SAC is 3.6 km from the proposed cable survey area. The proposed survey works will be in the marine subtidal and in the terrestrial/intertidal elements of Ballyteige Bay and offshore. The survey works will be within an area of existing vessel traffic and the intertidal element is on a popular beach with a car park and existing human and dog walking activity. No mobile marine species are associated with this SAC. Due to the scale and timing of the proposed survey works, and the distance from the proposed survey area to this SAC, in the absence of mitigation, there will be no significant effects on the features of interest from the proposed works associated with this survey license application. **No significant impact likely.**
IE000709	Tacumshin Lake SAC	**Out**	**Conservation Objectives** The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level. **Qualifying Interest** Coastal lagoons [1150] Annual vegetation of drift lines [1210] Perennial vegetation of stony banks [1220] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] **Potential Impact** This SAC is 5.6 km from the proposed cable survey area. The proposed survey works will be in the marine subtidal and in the terrestrial/intertidal elements of Ballyteige Bay and offshore. The works will be within an area of existing vessel traffic and the intertidal element is on a popular beach with a car park and existing human and dog walking activity. No mobile marine species are associated with this SAC. Due to the scale and timing of the proposed survey works, and the distance from the proposed survey area to this SAC, in the absence of mitigation, there will be no significant effects on the features of interest from the proposed works associated with this survey license application. **No significant impact likely.**

NATURA Site	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
IE000697	Bannow Bay SAC	**Out**	**Conservation Objectives** The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level. **Qualifying Interests** Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Annual vegetation of drift lines [1210] Perennial vegetation of stony banks [1220] Salicornia and other annuals colonising mud and sand [1310] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410] Mediterranean and thermo-Atlantic halophilous scrubs (*Sarcocornetea fruticosi*) [1420] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] **Potential Impact** This SAC is 7.6 km from the proposed cable survey area. The proposed survey works will be in the marine subtidal and in the terrestrial/intertidal elements of Ballyteige Bay and offshore. The works will be within an area of existing vessel traffic and the intertidal element is on a popular beach with a car park and existing human and dog walking activity. No mobile marine species are associated with this SAC. Due to the scale and timing of the proposed survey works, and the distance from the proposed survey area to this SAC, in the absence of mitigation, there will be no significant effects on the features of interest from the proposed works associated with this survey license application. **No significant impact likely.**
IE002269	Carnsore Point SAC	**Out**	**Conservation Objectives** The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable

NATURA Site	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
			conservation status of those habitats and species at a national level. **Qualifying Interests** Mudflats and sandflats not covered by seawater at low tide [1140] Reefs [1170] **Potential Impact** This SAC is 10.3 km from the proposed cable survey area. The proposed survey works will be in the marine subtidal and in the terrestrial/intertidal elements of Ballyteige Bay and offshore. The works will be within an area of existing vessel traffic and the intertidal element is on a popular beach with a car park and existing human and dog walking activity. No mobile marine species are associated with this SAC. Due to the scale and timing of the proposed survey works, and the distance from the proposed survey area to this SAC, in the absence of mitigation, there will be no significant effects on the features of interest from the proposed works associated with this survey license application. **No significant impact likely.**
IE000704	Lady's Island Lake SAC	**Out**	**Conservation Objectives** The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level. **Qualifying Interests** Coastal lagoons [1150] Reefs [1170] Perennial vegetation of stony banks [1220] **Potential Impact** This SAC is 11.5 km from the proposed cable survey area. The proposed survey works will be in the marine subtidal and in the terrestrial/intertidal elements of Ballyteige Bay and offshore. The works will be within an area of existing vessel traffic and the intertidal element is on a popular beach with a car park and existing human and dog walking activity. No mobile marine species are associated with this SAC. Due to the scale and timing of the proposed survey works, and the distance from the proposed survey area to this SAC, in the absence of mitigation, there will be no significant effects on the features of interest from

NATURA Site	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
			the proposed works associated with this survey license application. **No significant impact likely.**
IE002161	River Barrow and River Nore SAC	**Out**	**Conservation Objectives** The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level. **Qualifying Interests** Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Reefs [1170] Salicornia and other annuals colonising mud and sand [1310] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260] European dry heaths [4030] Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430] Petrifying springs with tufa formation (*Cratoneurion*) [7220] Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0] Desmoulin's Whorl Snail (*Vertigo moulinsiana*) [1016] Freshwater Pearl Mussel (*Margaritifera margaritifera*) [1029] White-clawed Crayfish (*Austropotamobius pallipes*) [1092] Sea Lamprey (*Petromyzon marinus*) [1095] Brook Lamprey (*Lampetra planeri*) [1096] River Lamprey (*Lampetra fluviatilis*) [1099] Twaite Shad (*Alosa fallax fallax*) [1103] Salmon (*Salmo salar*) [1106] Otter (*Lutra lutra*) [1355] Killarney Fern (*Trichomanes speciosum*) [1421] Nore Pearl Mussel (*Margaritifera durrovensis*) [1990]

NATURA Site	NAME	Screened In/Out	Conservation Objectives/ Features of interest/ Potential impact on Natura 2000 site.
			Potential Impact This SAC is 13.5 km from the proposed cable survey area. The proposed survey works will be in the marine subtidal and in the terrestrial/intertidal elements of Ballyteige Bay and offshore. The works will be within an area of existing vessel traffic and the intertidal element is on a popular beach with a car park and existing human and dog walking activity. No mobile marine species are associated with this SAC. Due to the scale and timing of the proposed survey works, and the distance from the proposed survey area to this SAC, in the absence of mitigation, there will be no significant effects on the features of interest from the proposed works associated with this survey license application. **No significant impact likely.**

In combination effects

As outlined by (OSPAR, 2012) "*Cumulative effects, the combined effect of more than one activity, may reinforce the impacts of a single activity due to temporal and/or spatial overlaps*". The potential for in-combination effects within the ZoI that may occur as a result of the proposed project, during and post works were assessed. The proposed landfall cable survey works are in a populated area and is a popular destination for the local community. It is a location with a regular stream of dog walkers and pedestrians on the shore. The proposed survey works would not be seen to have an impact on water quality of the area including impacting the water quality status. The intertidal section of this project will involve trial pits (in SAC/SPA/pNHA & Ramsar site) and machinery that will enter the upper shore (within the conservation sites).

The following is a list of planning applications as identified on the Department of Housing, Local Government and Heritage's 'National Planning Application Database' portal:

Table 13. In combination effects evaluated.

Ref. No.	Address	Proposal
20210079	Ballask (ED Kilmore), Kilmore.	Permission for the construction of 1) an All Weather Outdoor Training facility and associated lighting, 2) an All weather walking track and associated lighting and 3) all associated site works at Kilmore GAA grounds.
20191633	Crossfarnogue, Nemestown, Beak, Ballyteigue and Libgate, Kilmore.	Ten year planning permission to construct a new wastewater treatment plant in Kilmore Quay in two phases. Phase 1 (A) Wastewater treatment plant (WwTP) with a capacity of 850 population equivalent (PE) at Nemestown; (B) 2 No. wastewater pumping stations (WwPS) at Crossfarnogue; (C) 8.5 kms of pipeline Irish Water intends to deliver this phase within 5 years. Phase 2 construction of modular expansion to the WwTP to provide a treatment capacity up to 1,900 PE. A Natura Impact Statement accompanies this planning application.
20170534	Crossfarnogue, Kilmore.	Permission for extension to front of existing factory comprising the erection of single storey loading bay.

These potential future offshore developments are discussed with regard to the planned Tuskar Cable in the following sections. These have been detailed previously in the report.

Table 14. Foreshore licence applications in vicinity of survey works

Reference	Title	Year	Location	Activity	Status
FS007445	Blackwater Offshore Wind – Marine Surveys	2022	Wexford	Marine Surveys	Applied
FS007472	Mac Lir Offshore Wind Limited Site Investigations for proposed Offshore Wind Farm	2022	Wicklow, Wexford, Dublin	Site Investigations	Applied
FS007488	Celtic Offshore Renewable Energy Site Investigations for proposed Offshore Wind Farm	2022	Wexford and Waterford	Site Investigations	Applied
FS007436	Voyage Offshore Array Limited Site Investigations for proposed Wind Farm	2022	Waterford and Wexford	Site Investigations	Applied
FS007464	Bore Array Offshore Wind Farm	2022	Wexford	Site Investigations	Applied

Reference	Title	Year	Location	Activity	Status
FS007509	Rosslare Europort Offshore Wind Hub Site Investigations	2022	Wexford	Site Investigations	Determination
FS007361	Beaufort Subsea Fibre Optic Cable	2022	Off Wexford Coast	Installation of Subsea Fibre Optic Cable	Consultation
FS007232	DP Energy – Latitude 52 Offshore Windfarm Ltd. Site Investigations	2022	Wicklow and Wexford	Site Investigations	Applied
FS007135	ESB Wind Development Ltd. Site Investigations at Loch Garman Offshore Wind	2022	Wexford	Site Investigations	Consultation
FS007318	RWE Renewables Ireland East Celtic Ltd. Site Investigations for proposed East Celtic Offshore Wind Park	2022	Wexford and Waterford	Site Investigations	Applied
FS007384	Celtic Horizon Offshore Wind Farm Limited Site Investigations for proposed Offshore Wind Farm	2022	Wexford and Waterford	Site Investigations	Applied
FS007224	Rosslare Europort Berth 3 Extension	2022	Wexford	Extension of Existing Berth 3	Consultation
FS007219	Rosslare Europort Maintenance Dredging	2022	Wexford	Maintenance Dredging	Determination
FS007374	Mainstream Renewable Power Ltd.	2022	Waterford & Wexford	Site Investigations	Consultation
FS007038	Lady's Island Pipeline	2022	Wexford	Installation of 2 no. pipes and a flow control structure	Consultation
FS007351	GDG Ltd. Deployment of 3 ADCP off the coast of Wicklow and Deployment of 1 ADCP off the coast of Wexford	2021	Wexford & Wicklow	Four Acoustic Doppler Current Profiler (ADCP) Trawl Resistant Bottom Mount (TRBM) units to be deployed on the seabed in the Irish Sea for a duration of 35 days to collect data on current speed and direction at each location.	Determination
FS007222	Rosslare Europort Site Investigation	2021	Wexford	Site Investigation	Determination
FS007274	UCD Soil and Vegetation Sampling - Ballyteige	2021	Wexford	Soil and vegetation sampling	Consultation
FS007050	Greenlink Interconnector Wexford	2019	Wexford	Subsea and underground electricity interconnector cable	Determination
FS006982	Energia - Application for Site Investigation Licence for Windfarm off Helvick Head	2019	Waterford	Site investigations for Offshore Wind Farm	Consultation
FS006983	SSE Renewables Celtic Sea	2019	Waterford	Site investigations for Offshore Wind Farm	Consultation
FS007038	Lady's Island Pipeline	2021	Wexford	Installation of 2 no. pipes and a flow control structure	Consultation

Application **20191633** relates to a proposed wastewater treatment plant located to the east of the proposed cable survey that was granted permission. An Appropriate Assessment Screening Report and a Natura Impact Statement was prepared by AECOM Infrastructure and Environment UK Ltd., on behalf of Irish Water, to accompany this application. The Stage 2 Appropriate Assessment concludes that:

'*provided the mitigation measures and the guidelines outlined in this Stage 2 Appropriate Assessment, along with monitoring procedures outlined are implemented, it is considered that the proposed development will not result in significant impacts on the qualifying species or habitats, and the conservation status of the Saltee Islands SAC or Ballyteige Burrow SAC, either directly, indirectly, or cumulative.*'

Further, following the implementation of mitigation measures:

'*it is envisioned that there shall be no significant adverse effects on the integrity of the European sites in view of the site's conservation objectives and that the conservation status of the Annex I habitats and Annex II species will not be compromised by this proposed project either directly, indirectly, or cumulatively*.'

The UK element of the proposed marine survey project will be covered under UK licencing. Given this, it is considered that in combination effects with other existing and proposed developments in proximity to the application area would be unlikely, neutral, not significant and localised. It is concluded that no likely significant effects on Natura 2000 sites will be seen as a result of the proposed survey works alone or combination with other projects.

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 foresee with the proposed project. This report pertains to survey works for the proposed route for a marine fibre optic cable in subtidal and intertidal habitats. As can be seen from using the Best Available Techniques and mitigation measures during survey works, considerable effort has gone into minimising the potential environmental impact of the project. "*Generally all mitigation measures applied for individual cables also contribute to reduction of cumulative impacts*" (OSPAR, 2012).

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

Appropriate Assessment Screening Conclusions

An initial screening of the proposed works, using the precautionary principle (without the use of any mitigation measures) and Natura 2000 sites with the potential to result in significant effects on the conservation objectives and features of interest of the Natura 2000 sites was carried out in Table 8. Based on best scientific knowledge and objective information and assessment, the possibility of significant effects caused by the proposed project was excluded for the following Natura 2000 sites:

Special Protection Areas

Keeragh Islands SPA
Tacumshin Lake SPA
Bannow Bay SPA
Lady's Island Lake SPA
Wexford Harbour and Slobs SPA

Special Areas of Conservation

Hook Head SAC
Tacumshin Lake SAC
Bannow Bay SAC
Carnsore Point SAC
Lady's Island Lake SAC
River Barrow and River Nore SAC

The project is limited in scale and extent and the potential zone of influence is restricted to the immediate vicinity of the survey route, with the exception of underwater noise that may extend beyond the survey corridor. The proposed intertidal survey is within Ballyteige Burrow SAC. Further, it should be noted that the Saltee Islands SAC has been screened IN due to the potential effects on grey seals and reef (qualifying interests of this SAC). The distribution of grey seals may bring them within the proximity of the subtidal survey works. Standard marine mammal mitigation measures will be in place (in compliance with NPWS guidance) and as a result it is required to go to NIS for this SAC.

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

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

A Stage 2 AA is required for the proposed project.

Data Used for AA Screening

NPWS site synopses and Conservation objectives of sites within 15km were assessed. The most recent SAC and SPA boundary shapefiles were downloaded and overlaid on Bing road maps and satellite imagery. Numerous site visits were carried out, the most recent of which was on the 13th May 2023.

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