Statkraft Ireland Ltd.

NISA Project: Cable Assessment Area Foreshore Licence Application for Marine Survey Work – Non-statutory Environmental Report

7th December 2021

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Background Information

The Non-Statutory Environmental Report has been prepared by GDG on behalf of North Irish Sea Array Windfarm Limited (NISA Ltd), a wholly owned subsidiary of Statkraft Ireland Ltd., who have submitted a Foreshore Licence Application FS007358 for Site Investigations off the coats of Counties Dublin and Meath to establish the optimal cable route and landing point for the export cables for the proposed North Irish Sea Array Windfarm.

The purpose of this report is to assess the environmental effects of the proposed site investigation works on the receiving environment. This report documents the current state of the environment in the vicinity of the proposed works in an effort to quantify the effects, if any, on the environment, and highlights how the survey design and proposed mitigation measures will be implemented to prevent or minimise impacts on the environment.

This report does not comprise an Environmental Impact Assessment Screening Report or an Environmental Impact Assessment Report (EIAR) or form part of an Environmental Impact Assessment under the provisions of the European Union Directive 2011/92/EU, as amended by EU Directive 2014/52/EU on the assessment of the effects of certain public and private projects on the environment (the 'EIA Directive').

It is the applicant's position that the proposed site investigation works do not reflect the class of project to which the EIA Directives apply, and that there is therefore no requirement to carry out screening for EIA, or EIA for the proposed NISA cable assessment area site investigation activities.

This application is for a site investigation licence to collect data to determine the most appropriate export cable route to shore and landfall point for an export cable/s from an offshore windfarm.

The activities have been described in detail in the Foreshore Licence Application Schedule of Works Document which accompanied the application (in April 2021) and is summarised in this document (Table 2-2).

It is the applicant's position that the proposed development does not come within any class of project to which the EIA Directives apply, including Class 2 Extractive Industry listed under Annex II of the Directive including:

(a) Quarries, open-cast mining and peat extraction (projects not included in Annex I);

(b) Underground mining;

(c) Extraction of minerals by marine or fluvial dredging;

(d) Deep drillings, in particular:

(i) geothermal drilling;

(ii) drilling for the storage of nuclear waste material;

(iii) drilling for water supplies;

None of the activities could be described as deep drilling, the boreholes will be undertaken at the landfalls only and will be shallow in nature (generally c. 15m-20m and in some cases up to 40m max) to determine the stability of the substructure soils to determine the most suitable installation method for the cable at the landfall point. CPT and Vibrocores for this type of activity (determination of suitable cable routes) are shallow by nature (<10m) and will be undertaken along the proposed export cable route. Benthic sampling is very shallow and doesn't fall under any of the 4 subclasses.

Even if it were determined that the boreholes were deep drilling the purpose of the boreholes at the landfall is to determine the stability of the soil through determining the composition of the soil. This information will be used to determine the burial depth of the cables and the most suitable installation method for the cables at the landfall location. Therefore the exemption under Annex II Class (2) (d) would apply to the activities and the EIA Directive would not apply.

However as requested by the Foreshore Unit of the Department of Housing, Local Government and Heritage NISA Ltd is now providing a Non-Statutory Environmental Report in Support of the Application.

1 Introduction

North Irish Sea Array Windfarm Limited (NISA Ltd), which is a wholly owned subsidiary of Statkraft Ireland Ltd, has submitted an application (FS007358) for a licence under Section 3 of the Foreshore Act, 1933 as amended to undertake site investigations for a cable route from an offshore windfarm back to shore. A separate licence application was submitted to the Department of Housing, Local Government and Heritage for site investigations within the proposed array area in January 2020. That application has been granted approval in principle by the Minister and the licence is expected to be executed in the coming weeks.

Statkraft Ireland Ltd. is part of the Statkraft group. The Group produces hydropower, wind power, solar power, gas-fired power and supplies district heating. Statkraft is a global company in energy market operations. Statkraft group have previous experience in offshore on the following projects in the UK: Dogger Bank projects (4 x 1200MW), Triton Knoll (860MW), Dudgeon (402MW), Sheringham Shoal (317 MW).

Statkraft Ireland Ltd. (Statkraft) develops, owns and operates renewable production facilities and is also involved in the trading and origination of power from their own projects and those of third parties. Ireland is one the selected growth markets for Statkraft in the areas of wind and solar power, given its significant renewable energy resources, particularly in terms of wind energy. Statkraft is already playing a leading role in the transition to a low carbon future and believe that the company's experience and capabilities will be of service to Ireland in this transition over the coming years.

Statkraft intend to undertake marine surveys over the proposed cable route area to determine the most suitable cable alignment back to shore and the landing point for the export cables taking into account local constraints including environmental, archaeological and fisheries related constraints. The marine surveys will include geophysical, geotechnical, ecological and archaeological surveys. These surveys are described in detail in the Foreshore Licence Application - NISA Cable Assessment Area, Schedule of Works document which was submitted with the application (FS007358) and summarised in this Chapter 2 of this report.

2 Description of the Proposed Marine Site Investigation Activities

This Foreshore Licence Application seeks consent to conduct site investigation activities in order to inform the location and design of the export cable route off the coasts of Co. Dublin and Co. Meath. This is not an application for a windfarm development. The Foreshore Licence Site Investigation Area is all within 12 nautical miles of the coast. The site is defined as an irregular polygon which extends out from the High-Water Mark to approximately 16km offshore to the array site, with the depths ranging between 0 m and 41.3 m (Figure 2-1). The Foreshore Licence Site Investigation Area for the cable assessment area has a total area of 106.2 km^2. Both the cable route site investigation area and the proposed array area are shown in Figure 2-2.

Statkraft will investigate up to three landfall areas and cable routes options but not all routes will be used for the wind farm cabling. The purpose of this site investigation is to investigate the feasibility of the different routes to allow Statkraft to determine the most preferred option. If the site investigation activities indicate that the area is suitable for the export cable from the array site to shore, the design of the cable, cable route and landing points etc. will be incorporated into the overall project design. The overall project will then be progressed in accordance with the National Marine Planning Framework and other relevant legislation in due course including the new consenting regime for offshore renewable energy being legislated for through the Maritime Area Planning Bill 2021.

- The objectives of these works are to determine the most suitable route for the export cable route to shore from the windfarm site
- To supplement and update data already collected for the site through the INFOMAR Programme
- To gather sufficient baseline data to enable the preparation of an EIAR and NIS.

The co-ordinates of the site extents are shown (in WG84 and Degrees, seconds, minutes) in **Error! Reference source not found.**.

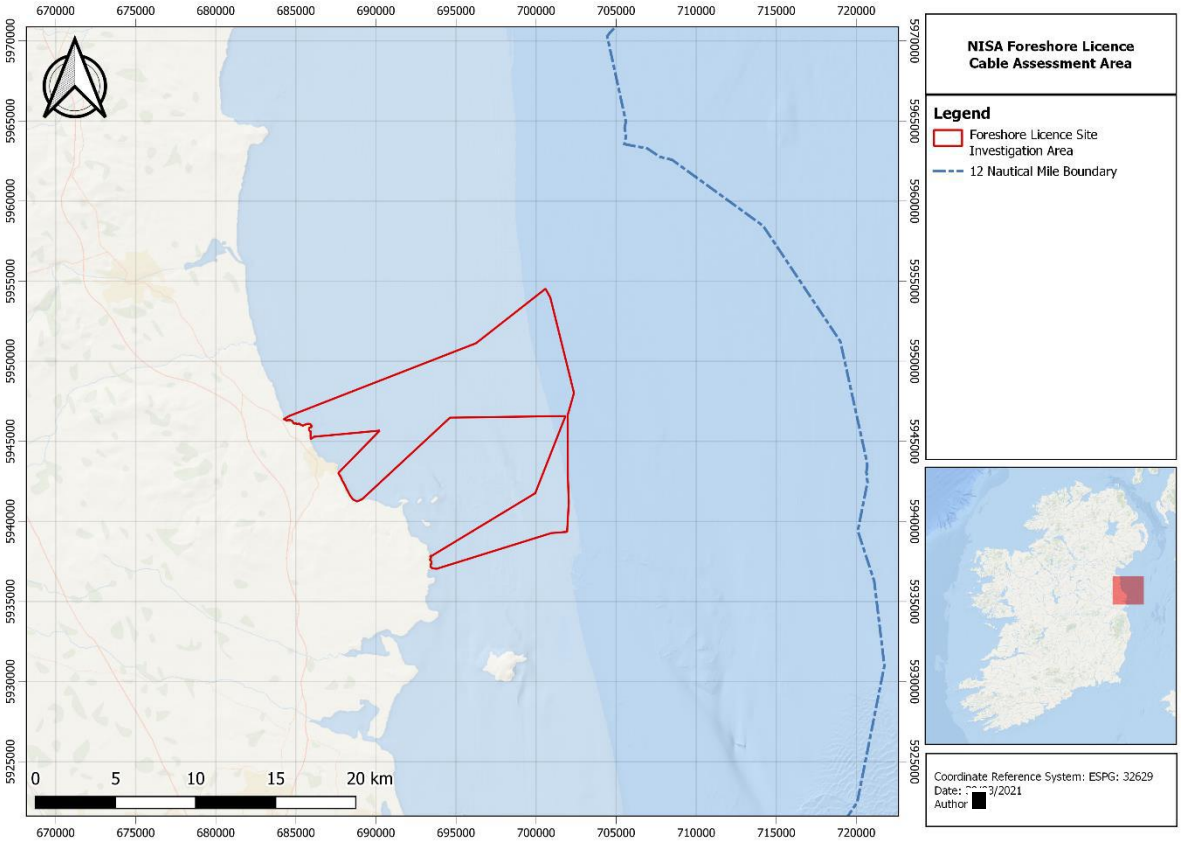

Figure 2-1: Proposed cable route site investigation area

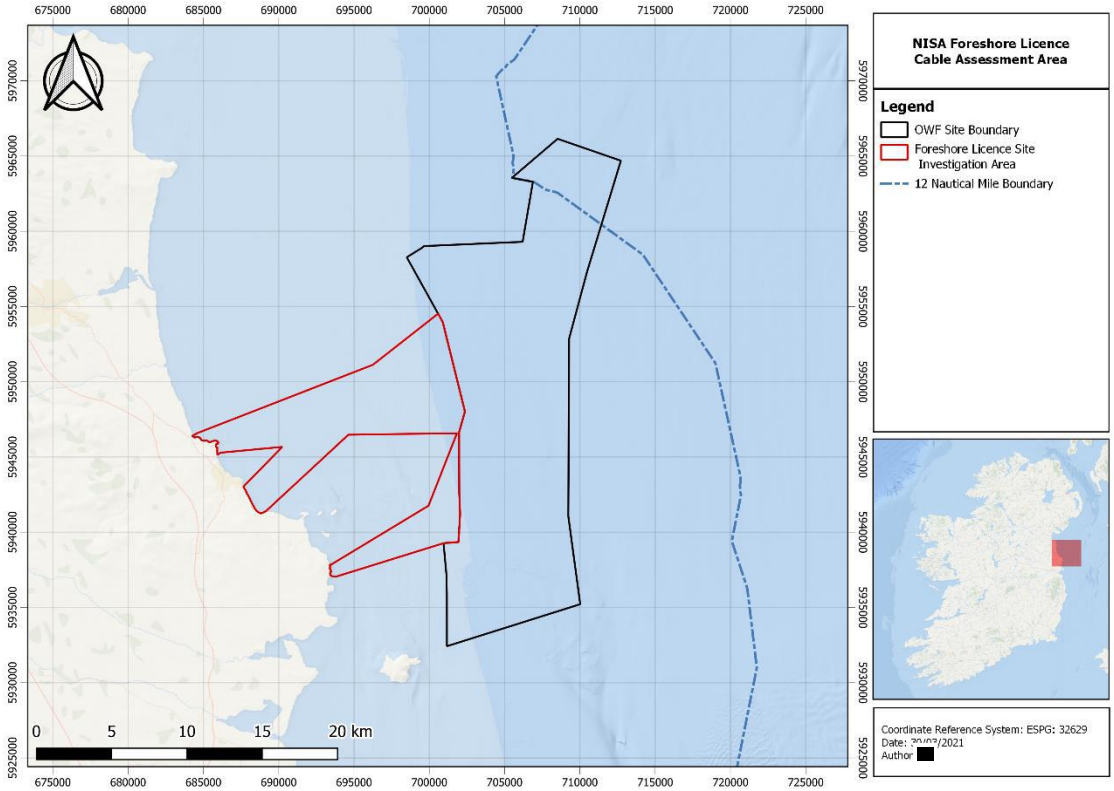

Figure 2-2: Foreshore Licence Site Investigation Area presenting three landfall and cable route options and NISA array site boundary (NISA array site inside the 12nm boundary is subject to a separate Foreshore Licence Application - FS007031)

Table 2-1: Proposed survey area co-ordinates

System: IRENET95 ITM			WGS 84 / UTM zone 30N	
ID	Easting	Northing	Easting	Northing
1	734619.1	774283.2	304531.1	5954313.9
2	734914.2	773720.0	304785.9	5953731.3
3	736305.0	767750.8	305753.9	5947679.0
4	735893.8	766379.9	305247.4	5946340.4
5	735852.6	762367.7	304924.6	5942340.8
6	735884.9	760941.0	304856.7	5940915.4
7	735752.6	759088.9	304594.8	5939077.1
8	734760.4	759022.8	303600.4	5939080.8
9	727568.8	756893.2	296276.5	5937460.9
10	727332.9	756934.2	296044.2	5937518.4
11	727206.8	757704.5	295972.3	5938295.7
12	727295.8	757718.8	296062.2	5938303.7
13	733798.3	761528.6	302816.4	5941648.0
14	735754.5	766318.6	305104.1	5946289.0
15	728541.3	766318.6	297908.4	5946795.6
16	722966.4	761290.8	291993.6	5942171.1
17	721529.9	762972.0	290678.5	5943949.2
18	724142.3	765573.2	293467.4	5946360.9
19	720033.1	765246.7	289345.0	5946323.7
20	719817.1	765094.9	289118.8	5946187.5
21	718193.6	766390.2	287590.1	5947593.9
22	718494.1	766561.4	287901.9	5947743.5
23	730235.3	770944.7	299923.3	5951291.6

2.1 Marine Site Investigation Activities

The proposed programme of site investigation activities to be undertaken within the site investigation area is summarised in Table 2-2 below. A full description of the proposed activities is included in the Foreshore Licence Application for Site Investigation Work – NISA Cable Assessment Area Schedule of Works document provided with the Foreshore Licence Application (FS007358).

Table 2-2: Summary of site investigation activities methodologies[1]

Survey	Methods /Techniques	Purpose
Hydrographical and Geophysical	Multibeam Echosounder (MBES)	MBES is a system for collecting detailed topographical data of the seabed. The R2Sonic 2024 may be taken as an indicative example of a MBES system to be used in the completion of these works. For these surveys the equipment will operate at a typical central frequency of 400kHz (700kHz optional) with sound pressure levels in the range of 200-228dB re1µPa @1m.
	Side Scan Sonar (SSS)	SSS surveys are used to determine sediment characteristics and seabed features. The Edgetech 4200 may be taken as an indicate example of an SSS device and for these surveys will have a potential operating frequency range of approximately 300 to 900 kHz with sound pressure levels of 228dB re1µPa @1m.
	Magnetometer	A magnetometer is used to identify magnetic anomalies and hazard mapping for metal obstructions, shipwrecks and unexploded ordnance on the surface and in the shallow sub-surface. The Geometrics G-882 can be taken as an indicative equipment example, it is a passive device (i.e. it does not emit any sound waves into the marine environment).
	Sub-bottom Profiling (SBP)	SBP is used to develop an image of the subsurface, identifying different strata encountered in the shallow sediments. The Innomar SES-2000 Medium is an indicative example of a parametric system with a primary and secondary frequency range of 85-115kHz and 2-22kHz, respectively, and sound pressure levels of up to 247 dB (typically operated at <200dB) re1µPa @ 1m. The Seatronics Edgetech 3300 is an indicative example of a hull-mounted pinger system with an operating frequency range of approximately 2-16 kHz with sound pressure levels of 200dB re1µPa @1m. The Applied Acoustics AA301 is an indicative example of a boomer, with sound pressure levels in the range of 208-215dB re1µPa @ 1m. The Geo-Source 200 lightweight or the Applied Acoustics Squid 500 are indicative examples of sparker systems used in sub-bottom profiling, with sound pressures in the range of 204-216dB re1µPa @1m.

[1] For the purposes of the assessment, typical acoustic properties of equipment are provided (Table 2-2). The acoustic frequencies given below are indicative. These may change on site if dictated by the ground conditions however the precautionary approach has been adopted and the indicative values provided in Table 2-2 are the maximum expected for these types of surveys.

	Higher Energy Sub-surface Acoustic Sources (for example: Sparker systems, eSource)	Sub-surface acoustic surveys are used to image the subsurface and categorise sediment strata. These surveys can create 2D or 3D images of the subsurface. The intensity of the source varies depending on the requirements of the survey. Higher energy sub-surface sources used in multi-channel surveys will only be used if sufficient depth data is not achieved with the use of the Sub-bottom profiling methods.
Geotechnical	Downhole Sampling	A total of 6 sampling boreholes to 40m at each landfall for cable landfall assessment. Both bedrock and gravel tills may occur at depths from mudline to >40mbsf, both materials, particular gravel tills can be problematic for HDD. A variety of sampling methods including large diameter Geobor S coring to be utilised. Samples and cores to be retained for onshore laboratory testing. Water depths for nearshore restrict SI to be conducted from jack-up units. Each sampling borehole shall be paired with a CPT borehole. There may be recommendations for sampling boreholes along export cable route in locations where bedrock outcrops at shallow depths and CPT or seabed sampling penetration is limited. These may replace some vibrocore locations. The final number and location of SI points may be informed by the geophysical survey results or existing information.
	Cone Penetration Tests (CPTs)	CPTs are a method for testing in situ soil parameters. CPT can be performed as either Seabed CPTs or downhole in boreholes. A total of 6 CPT boreholes with target depth of 40m at each landfall, co-located with each sampling borehole. Up to 70 CPT seabed CPT locations to a depth of 6 to 10m bsf (approx. 1 every 500m co-located with seabed sampling points along the export cable route until water depths become prohibitive). The spacing interval will be determined by the variability and level of understanding of the shallow geology. The final number and location of SI points will be informed by the geophysical survey results.
	Seabed Sampling	Up to 70 vibrocore samples with a target depth of 6m bsf (approx. 1 every 500m co-located with seabed CPT points along the export cable route until water depths become prohibitive). Up to 70 grab samples shall be completed through the export cable route areas as part of benthic studies and for ground truthing.
Ecological	Ornithology Survey	Identify bird species distribution and behaviour within the Foreshore Licence Site Investigation Area. This does not require a licence under the Foreshore Act 1933, as amended and is included for information only.
	Fisheries Survey	Identify fish species distribution within the Foreshore Licence Site Investigation Area. Exact details of monitoring required will be determined through engagement with the relevant authorities such as SFPA,

		the Marine Institute and through local knowledge where appropriate.
	Subtidal benthic survey, intertidal habitat walkover survey and sampling	This survey is designed to identify the benthic communities and habitats within the Foreshore Licence Site Investigation Area. This may consist of an intertidal walkover survey of the proposed landfall locations with identification of the main habitats present (in the form of biotope mapping). Features of conservation importance will be identified by means of intertidal habitat mapping with core/quadrat sampling and hard substrate quadrat sampling where appropriate. Subtidal sample locations may be subject to drop down video or ROV inspection in advance of sampling. Up to 70 no. subtidal and 20 intertidal locations (at each landfall) will be sampled. Multiple samples will be taken at each location.
	Marine Mammal Survey	Identify marine mammal species distribution within the Foreshore Licence Site Investigation Area. This does not require a licence under the Foreshore Act 1933, as amended and is included for information only. The marine mammal observational studies will be run concurrently with ornithology surveys.
	Marine Mammal Acoustic Monitoring	Marine mammal acoustic monitoring using CPODs deployed on the seabed. SoundTrap hydrophones may be deployed alongside the CPODs for periods throughout the monitoring campaign. Either 2 permanent sites will be selected, or the 2 sites will be relocated every 3 months during battery change. The CPOD locations are subject to archaeological survey results.
Archaeological	Underwater Archaeology	Identification and assessment of metallic and other targets recorded if required during the marine geophysical surveys.

The geophysical and geotechnical scope of works outlined in Table 2-2 and **Error! Reference source not found.** refer to the preliminary stage of site investigation activities.

The Preliminary Campaign is intended to inform the developer of the baseline ground conditions and to facilitate early-stage concept development. It generally includes a geophysical campaign and the preliminary geotechnical campaign. The information obtained will also be used for the design of future site investigations including the selection of appropriate drilling equipment and testing techniques to match the ground conditions.

Error! Reference source not found. below shows the indicative geotechnical and benthic ecology site investigation locations across the Foreshore Licence Site Investigation Area. **Error! Reference source not found.**, **Error! Reference source not found.** and **Error! Reference source not found.** show the indicative geotechnical investigation locations along the northern, central and southern landfall areas respectively.

Offshore site investigation activities including the benthic ecology survey and deployment of ecological devices (CPODs) aren't necessarily tied to any campaign phase, rather they are planned to take advantage of suitable weather windows and availability of vessels.

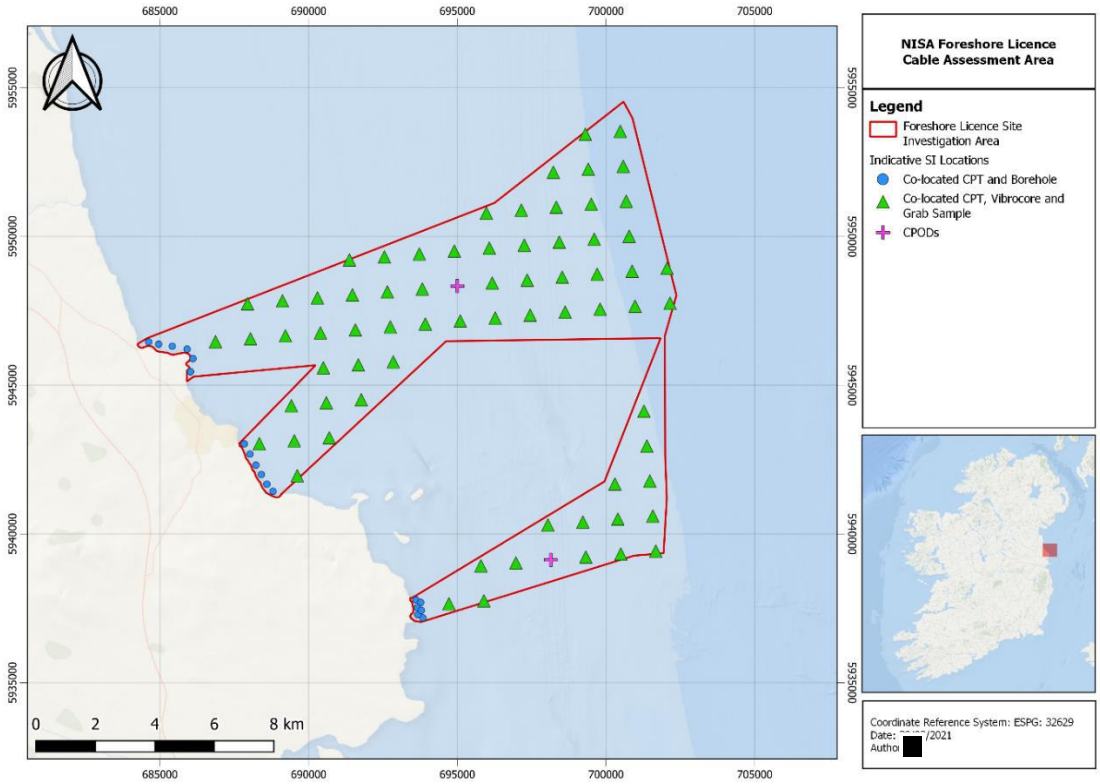

Figure 2-3: Indicative Geotechnical and Ecological Site Investigation locations presenting three landfall and cable route options which will be narrowed down following the site investigations.

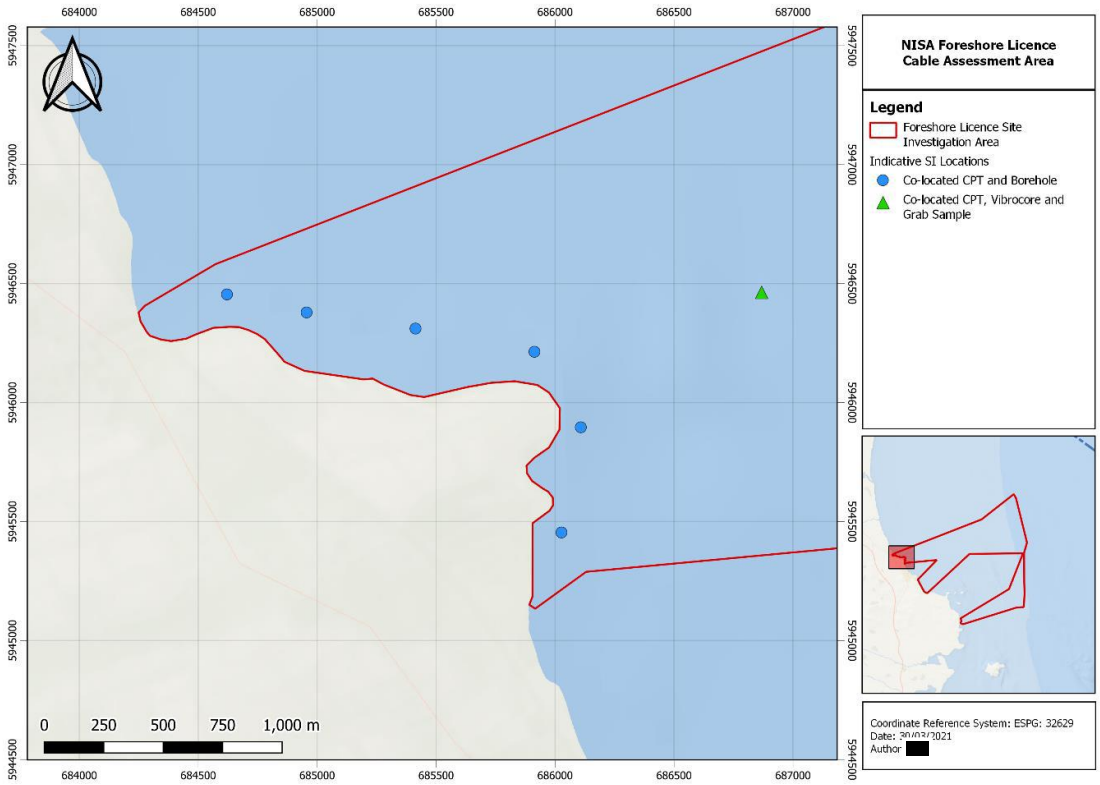

Figure 2-4: Northern Landfall Area

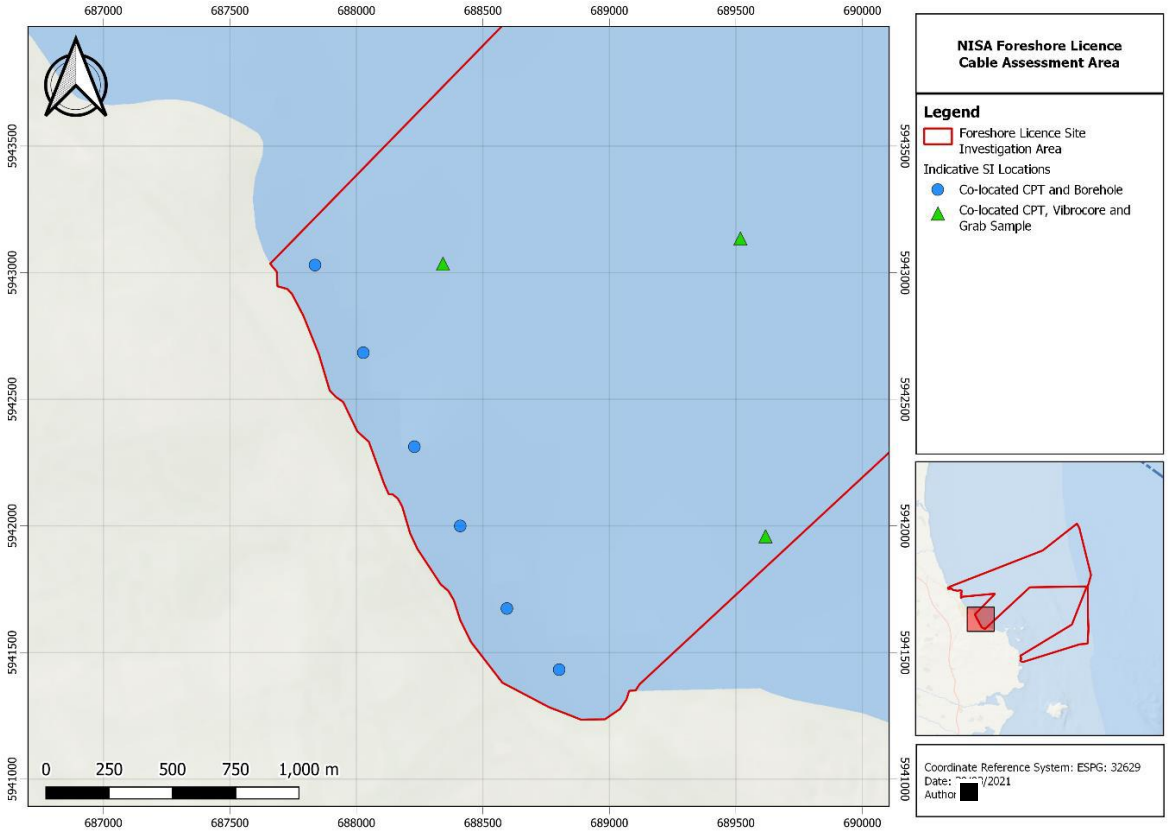

Figure 2-5: Central Landfall Area

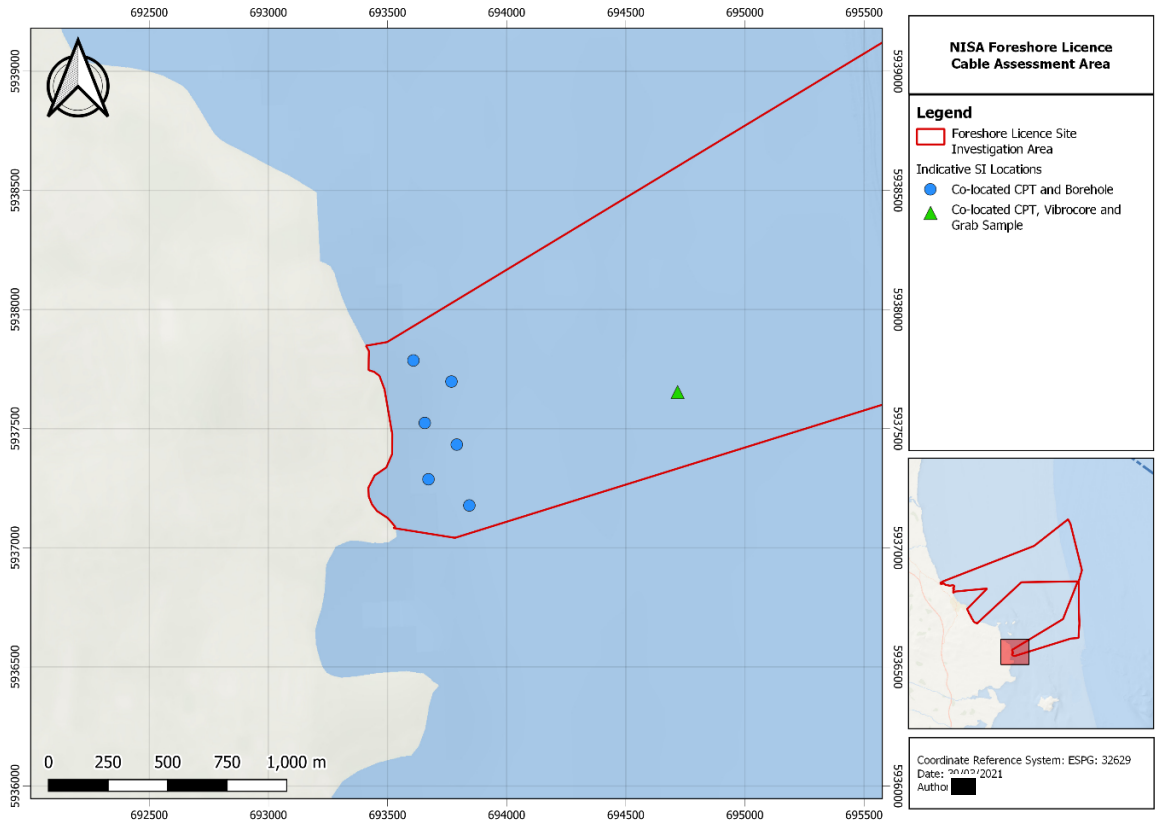

Figure 2-6: Southern Landfall Area

2.2 Survey Schedule

The NISA project was granted "Relevant Status" under the transitional protocol published as an Appendix to the Frequently Asked Questions to the General Scheme of the Marine Planning and Development Management Bill in early 2020 (now the Maritime Area Planning Bill (MAP)). The transitional protocol is a means by which projects that were sufficiently advanced under the Foreshore Act or those projects that had an agreed grid connection could move from the Foreshore Act to the new marine consent system being legislated for under MAP.

As a "Relevant Project" NISA aims to apply for a Maritime Area Consent (MAC) once the process opens for relevant projects following enactment of MAP (expected to be mid 2022). To feed into the MAC process and the subsequent planning application which NISA intends to submit NISA intends to undertake site investigations as soon as possible following execution of the licence.

The timing and coordination of the proposed site investigation works will be carried out in a way to minimise the potential disruption to existing fishing practices in the area. Statkraft, and in particular the FLO appointed to the project is working with fishers and fisher organisations in the area and will other relevant stakeholders to ensure that impacts to fisheries are either prevented or minimised and to ensure that adequate advance notice is given to the fisheries operating in the area to ensure the optimum coordination of the surveys with all stakeholders.

3 NISA Array Site Investigation Activities – Non-statutory Environmental Assessment

A description of the known baseline receiving environment for the cable route site investigation area is included in the Foreshore Licence Application – Natura Impact Statement document provided in support of the Application (FS007358) and in Appendix A to this report (section numbering 3.1, 3.2 etc. consistent with Table 3-1 is maintained in Appendix A). Table 3-1 sets out the specific sections and subsections of that report and Appendix A to this report where the relevant baseline description may be found.

Table 3-1: Description of baseline receiving environment – relevant sections and subsections of Foreshore Licence Application – Natura Impact Statement document

Section/Subsection	Baseline Receiving Environment Description
Section 3.1 Marine Benthos	Described the nature of the expected sediments in the area based on the EMODnet Sediment Substrate Folk 7 classification
Section 3.2 Natura 2000 Sites Section 3.2.1 Special Conservation Interests (Birds) Section 3.2.2 Annex I Habitats and Associated SACs Section 3.2.3 Annex II Species and Associated SACs	Describes the Natura 2000 considered relevant to the site investigation activities, i.e. the SPAs and their Special Conservation Interests and the Special Areas of Conservation, designated Annex I Habitats and designated Annex II Species considered relevant to be included for Appropriate Assessment Stage 1 Screening (and subsequent Stage 2 Appropriate Assessment where necessary)
Section 3.3 Marine Mammals	Describes the marine mammals which may be found on site
Section 3.4 Fisheries Section 3.4.1 Data Availability Section 3.4.2 Fishing Activity Section 3.4.3 Fish Ecology	Describes the various methods of recording fishing activity and the legal obligations upon vessels of certain dimensions in transmitting and recoding data. Also identifies data gaps. Describes the known fishing activity for the site based on records held by the Marine Institute. NISA Ltd acknowledges that these records re not complete and an FLO has been working with fisheries in the area for the past 2 years to establish the full extent and nature of fishing within the area. Describes the known/expected fish ecology for the site also based on Marine Institute records.
Section 3.5 Marine Traffic	Describes the typical level of marine traffic in the area as well as the nature of marine traffic use in the area (marine traffic directional trends and densities). This is based on records obtained from the Irish Coast Guard for a 6-month period in 2018 and mapped by GDG. This is for boats which carry an automated identification system (AIS) and will not include smaller vessels (such as many inshore fishing vessels). However as previously stated and FLO has been appointed whom is not only engaging with fisheries but also other marine users in the area to establish the extent and nature of activity in the area.
Section 3.6 Subsea Infrastructure and Shipwrecks	Describes existing subsea infrastructure in the area (telecommunication cables, gas interconnector) and known shipwrecks in the area (including unconfirmed wrecks (taken from the National Monuments database) and recently confirmed wrecks (from INFOMAR surveys).
Section 3.7 Other Proposed Activities in the Area Section 3.8 Dumping at Sea	Describes other known or proposed activities including other proposed windfarm and export cable route activities known at the time of submission of the application documentation (Section 3.7) and existing Dumping at Sea sites (Section 3.8).

The non-statutory environmental assessment of the proposed site investigation activities considers impacts to the following aspects:

- Population and Human Health
- Biodiversity
- Land, Soils and Geology
- Water
- Air, Climate and Noise
- Landscape and Visual
- Cultural Heritage
- Material Assets

Table 3-2: Non-statutory Assessment of Environmental Effects

Relevant factors for site investigation activities	Non-statutory environmental assessment	Conclusions and mitigation measures
Human health - accident risk	The proposed site investigation activities will involve activities which could potentially pose a risk to human health if strict Health and Safety Protocols are not adhered to during operations.	NISA will adhere to the extensive legislation on protection of marine environment and very rigorous health and safety protocols, significant impact is not likely.
Marine benthos	Please refer to the Foreshore Licence Application: Natura Impact Statement document for detailed information on marine benthos. The following impacts have been identified for the site investigation: 1. Habitat disturbance and smothering during all intrusive survey works 2. Increased suspension of solids in water column 3. Vibration from geo-technical equipment 4. Sediment penetration and some substratum loss	Information in support of an Appropriate Assessment Screening is provided in the Foreshore Licence Application Natura Impact Statement Document provided in support of the application. That report found that only the Rockabill to Dalkey Island SAC should be brought forward to State 2 AA (in the context of likely significant effects on its Annex I Qualifying feature [Reefs] and appropriate mitigation measures were proposed (use of drop down video, avoidance of Annex I Habitat [reef]) and following application of mitigation measures concluded that there would be no adverse effect on the conservation objectives for the Rockabill to Dalkey Island SAC in terms of it Annex I Habitat [reefs] and that the integrity of the site would be maintained. With respect to the overall receiving environment, both within and outwith SACs physical disturbance to marine benthic communities (1,2,3&4 in column 2) is likely in the direct footprint of sampling equipment however only a very small area of the seabed will be affected. Vibration from geotechnical equipment will be temporary with no lasting effects. Proposed mitigation: The geotechnical and ecological sampling locations will be established after thorough geophysical data analysis, where all effort will be made to choose sampling locations avoiding potential Annex I habitats with particular attention to reefs. The number of sampling locations will be kept to a minimum necessary to confirm habitat type and to collect sufficient geotechnical data to minimise habitat disturbance and loss. As is standard practice each sampling location will be visually inspected first with underwater camera

Relevant factors for site investigation activities	Non-statutory environmental assessment	Conclusions and mitigation measures
		or ROV in order to confirm absence of Annex I habitats. In case of identification of Annex I habitat the sampling location will be repositioned and again subject to visual inspection clearance before commencement of any intrusive work on the repositioned location. If required, ROV may be used for geotechnical and sediment sampling (for phys-chem sediment analysis and core for geotechnical scope of works) in the area where no other sampling equipment can access due to environmental constraints. With respect to intertidal surveys: surveys will be undertaken within daylight hours and sensitive species and habitats within the survey area will be identified, recorded and avoided during sampling. Samples taken within the intertidal area will be small and by their nature will be taken from soft sediments only (i.e. any Annex I Habitat [Reefs] will be avoided). Adherence to the standard practice measures as included in the preceding paragraphs will ensure that significant effects on the marine benthic communities within the site investigation area is considered not likely.
Use of natural resources	These are marine site investigation activities only. Natural Resource "use" is limited to occupation of the marine environment.	No significant impacts are predicted. To ensure protection of natural resources during the proposed site investigation activities, all works will be carried out in accordance with the Maritime Law to include compliance with all requirements under the MARPOL Convention.
Marine pollution	The Foreshore Licence Application site investigations will result in a temporary increase in vessels using the area which could theoretically increase the risk of accidents and resultant fuel spills. All vessels carry fuel during the survey provisions. Lubricants are also present onboard. Any other	Heath and Safety protocols relevant to the vessel type and proposed activities will be agreed with the survey contractor in advance of commencement of survey activities. All Health and Safety Protocols will comply with all International Maritime Law and National Maritime Legislation. This ensures the risk of an accidental release of materials which could cause harm in the receiving environment is considered not likely.

Relevant factors for site investigation activities	Non-statutory environmental assessment	Conclusions and mitigation measures
	potentially harmful substances are at very limited amounts stored in purpose made storage containers or facilities and adequately secured. There is no production of any substances involved and no bulk transportation of oil or chemical substances. Collection and disposal of waste (refuse) produced as a result of the onboard activities will form part of any Health and Safety or Environmental Management Plan.	In addition all vessels used shall, as required by law, be MARPOL compliant and fully certified by the Maritime Safety Office. Therefore, it is considered not likely that there would be any occurrence of a pollution event, accidental or otherwise that could directly or indirectly affect any Natura 2000 site and other forms of environmental conservation. Environmental Management Protocols will be followed by all crew onboard the vessel with respect to the collection and disposal or waste. All waste will be brought back to shore and suitably disposed of in a licence waste facility. Therefore significant effects as a result of production of waste (refuse) by the crew onboard the survey vessels is considered not likely.
Marine waste produced during site investigations	Drill cuttings, consisting of seabed material, will be produced as a result of the boreholes. A very small volume of the flush and cutting is expected to be released into the environment. The released material will result in a temporary localised increase in turbidity and a small mound of the seabed comprising of the cuttings.	Biodegradable polymer mix will be used throughout drilling operations where possible. Chemical material used will be from the List of Notified Chemicals (approved chemicals) and discharged into the marine environment under the Offshore Chemical Notification Scheme. The flush and cuttings will not result in any deterioration of sediment or water quality therefore no likely significant effect is expected as a result.
Air Quality	Routine vessels emissions are expected. Any other substances which may emit harmful emissions will be stored in adequately prepared and ventilated storage facilities onboard the vessel with strict Health and safety protocols to include safe handling.	No significant impact is envisaged. Health and Safety protocols onboard the vessel on safe handling of harmful substances will be provided.
Underwater noise and vibration	Please refer to Section 5.3.2 Disturbance from vibration and underwater noise associated with surveys of the Natura Impact Statement for more information where the significant impacts are likely: • Disturbance from vibration and underwater noise associated with surveys • Injury due to collision (survey vessels/sampling equipment) • Visual and noise disturbance	The DAHG 2014 Guidance to Manage the Risk to Marine Mammals form Man Made Sound Sources in Irish Waters will be followed at all times. These measures are considered sufficient to mitigate any risk to marine mammals which may be present within the zone of influence of the proposed activities. No likely significant effect is expected.

Relevant factors for site investigation activities	Non-statutory environmental assessment	Conclusions and mitigation measures
Socio-economics	The coastal area including beaches will be exposed to temporary impact from site investigation activities. The key economic sectors in the zones were identified and assessed with tourism and leisure, agriculture and food, sea fisheries, ports and shipping, and residential housing being most common. A temporary and very localised impact on fisheries that use the area cannot be excluded.	Site investigation activities will be short term and temporary in nature. A Fisheries Liaison Officer has been appointed to the project. Communications with fisheries, fisheries representatives groups have been ongoing for over two years with the objective of avoiding where possible and minimising where not possible to avoid interactions with ongoing fishing activities in the area during the course of the site investigation works on the Foreshore.
Biodiversity- – Nature conservation -	There are a number of nature conservation sites within the vicinity of the Foreshore Licence Application area including: 1. **Natura 2000 Network – relevant SACs and SPAs** are described in detail in Section 3.2 of Natura Impact Statement report. 2. **High Amenity Area** where it is an objective to"Protect and enhance high amenity areas" The Islands, Rockabill re designated as a High Amenity Area (HA) and include a number of objectives relating to the protection and enhancement of the site. 3. **County Geological Sites**: GH01- Rockabill Objective to protect and enhance the geological and geomorphological heritage of the County Geological Sites listed in Table GH01 and indicated on Green Infrastructure Maps 4. **Natural Heritage Sites include:** Natural Heritage Areas 001459- Clogher Head Natural Heritage Areas 001957- Boyne Coast And Estuary	Information in support of an Appropriate Assessment Screening is provided in the Foreshore Licence Application Natura Impact Statement Document provided in support of the application. The report concluded that the proposed marine surveys will not pose a risk of adversely affecting (either directly or indirectly) the integrity of any of the Natura 2000 sites, either alone or in combination with other plans or projects. There is not likely to be any interaction between the survey activities and the Rockabill area that could affect any of the objectives under the designated of the site as either a High Amenity Area or a County Geological Site. With respect to Natural Heritage sites there will be no interaction with any of the listed sites. With respect to the general protection of biodiversity in the receiving environment the survey activities are temporary in nature and with very localised effects (immediate vicinity of the sampling or survey equipment) and will affect a very small area of the seabed within the Foreshore Licence Site Investigation Area therefore significant effects on biodiversity or nature conservation is considered not likely.

Relevant factors for site investigation activities	Non-statutory environmental assessment	Conclusions and mitigation measures
	Natural Heritage Areas 000554- Laytown Dunes/Nanny Estuary Natural Heritage Areas 000207- Rockabill Island Natural Heritage Areas 001218- Skerries Islands Natural Heritage Areas 002000- Loughshinny Coast Natural Heritage Areas 000204 - Lambay Island Natural Heritage Areas 000208- Rogerstown Estuary Natural Heritage Areas 000205- Malahide Estuary	
Landscape and scenic value	The area is famous for views of the Rockabill Lighthouse as well as the complex of small isles which forms Skerries Islands (Natural Heritage Area) that together are a part of Rockabill.	The survey works are temporary. Therefore survey related operations will be hard to distinguish from other regular vessel activities in the area. It is concluded that the proposed marine surveys will not pose a risk of negatively affecting landscape and scenic views.
Marine traffic	The area has a number of commonly used vessel routes although no designated shipping lanes, which are mostly associated with transiting into and out of local harbours, fishing activities within the area and recreational vessels. Please refer to Section 3.5 Marine Traffic of the NISA Cable Assessment Area, Natura Impact Statement.	Temporary potential impact on marine traffic is possible. Therefore, navigational channels within the site will be addressed through engagement with the relevant stakeholders including the Irish Coast Guard, local ports and harbours and users of the navigational channels, at the appropriate time. In addition a notice to mariners will issue in advance of the works. No specific exclusion zone will be sought however vessels will be asked to maintain a safe distance in keeping with accepted maritime safety practices. Activities on site will be kept to the minimum time period possible and will be temporary in nature with the maximum time expected on site in

Relevant factors for site investigation activities	Non-statutory environmental assessment	Conclusions and mitigation measures
		any on place c. 24-36 hours for boreholes at the landfall locations. These are not likely to interact with other vessel traffic. Therefore significant effects on marine traffic is considered not likely.
Cultural Heritage	The National Monument Database identifies six shipwreck locations within the proposed survey site and a further 67 shipwrecks within 15km of the survey area. The proposed site investigation area is located in an area of high underwater archaeological potential. The Wreck Inventory of Ireland Database (WIID) lists numerous wrecks for the proposed development area, which are subject to statutory protection under section 3 of the 1987 National Monuments (Amendment) Act. Please refer to Section 3.6 Subsea Infrastructure and Shipwrecks of the NISA Cable Assessment Area, Natura Impact Statement. Given the location of the proposed site and the nature of the works it is possible that underwater archaeology may be impacted by these operations.	Known or suspected wrecks will be avoided during physical sampling activities. All proposed physical sampling locations will be assessed in advance by a suitably qualified archaeologist to ensure that the proposed works do not negatively impact on locations where there is known or potential archaeology.
Land use	The existing land use comprise of various zones where the major one is the coastal areas with beaches surrounded by residential areas, active open spaces, The Conservation, amenity or buffer space, corridor/belt. landscape protection zones, (G3) and M2 - City/Town/village Centre, central area. More information on land use can be found on https://myplan.ie/zoning-map-viewer/ All survey works are limited to the intertidal area only.	There will be no interaction with any terrestrial areas. Only temporary and localised impact is expected in the coastal/beach areas during inshore and intertidal survey provisions. Therefore significant effects on existing land use is considered not likely.

Relevant factors for site investigation activities	Non-statutory environmental assessment	Conclusions and mitigation measures
Commercial fisheries	Relevant data on fisheries is presented in the Section 3.4 Fisheries of NISA Cable Assessment Area, Natura Impact Statement. The application falls within commercial fishing grounds for crustaceans and live bivalve molluscs. There is an active razor fleet which operates out of Howth, Balbriggan, Skerries and Clogherhead. .	A Fisheries Liaison Officer has been appointed to the project. Communications with fisheries, fisheries representatives groups have been ongoing for over two years with the objective of avoiding where possible and minimising where not possible to avoid interactions with ongoing fishing activities in the area during the course of the site investigation works on the Foreshore. Therefore significant effects on commercial fisheries is considered not likely.
Aquaculture	There are no licenced aquaculture sites within, or adjacent to, the proposed site investigation area. Additionally, there are no designated Shellfish Growing Waters within the proposed site investigation area. The Malahide Shellfish Growing Waters area is circa 4Km to the southwest while the Balbriggan / Skerries Shellfish Growing Waters area is circa 6 Km to the west.	Significant effects on aquaculture operations are considered not likely.
Tourism and recreation to include sport fishing	Overall, the site investigation area has a high value as a marine sport fish zone, both for shore angling and for boat fishing. The shorelines from Skerries to Rush up to Balbriggan are important angling locations. These areas are also important for tourism and recreation, marine leisure clubs and groups active in the area include sailing, rowing clubs various sea scouts groups, sea angling, swimming, diving and sub aqua clubs. The coastal areas include sea kayaking tours, stand up paddle boarding and kitesurfing. There may be short term localised disturbance to these activities.	Short term and localised impact of the site investigation activities on Tourism and recreation to include sport fishing activities may occur. An FLO has been appointed to the project who is in ongoing communications with fisheries and other marine users including leisure users. A notice to mariners will issue in advance of the works. No specific exclusion zone will be sought however vessels will be asked to maintain a safe distance in keeping with accepted maritime safety practices. Activities on site will be kept to the minimum time period possible and will be temporary in nature with the maximum time expected on site in any on place c. 24-36 hours for boreholes at the landfall locations. These are not likely to interact with other vessel traffic. Therefore significant effects on marine traffic or other marine users is considered not likely.

Relevant factors for site investigation activities	Non-statutory environmental assessment	Conclusions and mitigation measures
In-combination effects	A number of other activities or proposed activities are in the area. There is a possibility of interaction between these activities that may cause in-combination effects on certain elements of the receiving environment (depending on the activity and element of the receiving environment). There is no spatial overlap between the activities proposed under this application and any of the other projects. Due to the very localised and temporary effects of the proposed surveys the only potential for in-combination effects identified is on marine mammals or sound pressure sensitive fish species (twaite or allis shad) if there is a temporal overlap between certain activities (some geophysical survey activities).	Communication between NISA Ltd and the other proposed activities in the area is proposed to ensure that geophysical survey activities which may cause in-combination effects on marine mammals or sound pressure sensitive fish species are scheduled in such as to avoid in-combination effects on these species.

4 Conclusion of Non-statutory Environmental Assessment

Subject to the measures as outlined in Column 3 of Table 3-2 and due to the characteristics of the proposed activities, the location of the proposed activities, the nature of the potential impacts (which are very localised and/or temporary in nature), and the state of the receiving environment, significant effects on the receiving environment as a result of site investigation activities is considered not likely.

Appendix A

3 Receiving Environment

The Foreshore Licence Site Investigation Area is located in the Irish Sea off the Co. Dublin and Meath coasts. The total Foreshore Licence Site Investigation Area is approximately 115.7 km^2 (11570 ha). All site investigation activities under the Foreshore License Application will be confined to the Foreshore Licence Site Investigation Area within the foreshore 12 nautical mile limit. The full description of planned site investigation activities is contained within the NISA Cable Corridor Foreshore Licence Application: Schedule of Works document accompanying this application.

To understand the potential impacts on the receiving environment it is important to outline the present state of the environmental baseline data of the Foreshore Licence Site Investigation Area. In this section, the receiving environment is described, paying particular attention to Natura 2000 (SACs and SPAs) which have the potential to be impacted, highlighting environmental receptors which could be affected by the proposed site investigation activities. **Error! Reference source not found.** shows the indicative locations of where site investigation activities will interact with the seafloor.

3.1 Marine Benthos

The benthic macroinfaunal invertebrates are considered a useful group to study in species assemblage mapping and environmental monitoring studies. This is because the majority of species are essentially sedentary, and their natural distributions usually show good relationships with their sedimentary habitat and depth. Their responses to environmental change can be easily measured. They are an integral part of marine food webs and can be an important source of food for certain commercially exploited fish and invertebrates. More practically, the taxonomic literature on the worms, crustaceans, molluscs and echinoderms that are the main components of the macrofauna is generally good. Soft-bottom benthos can be readily sampled by grabs, dredges and trawls.

Available data (EMODnet – 2019) indicates that water depths in the area range from 0 m to 41.3 m in the Foreshore Licence Site Investigation Area. The sediments underlying the application area are comprised predominantly of sand sediment and areas of sandy mud and occasional rock. Figure 3-1 illustrates the predominant substrate type surrounding the Foreshore Licence Site Investigation Area.

Taking into consideration the substrate type within the Foreshore Licence Site Investigation Area as well as exposure to strong tidal streams, there is a possibility that habitats listed in Annex I of the Habitats Directive (92/43/EEC) are present in the Foreshore Licence Site Investigation Area including but not limited to biogenic reefs and bedrock reefs.

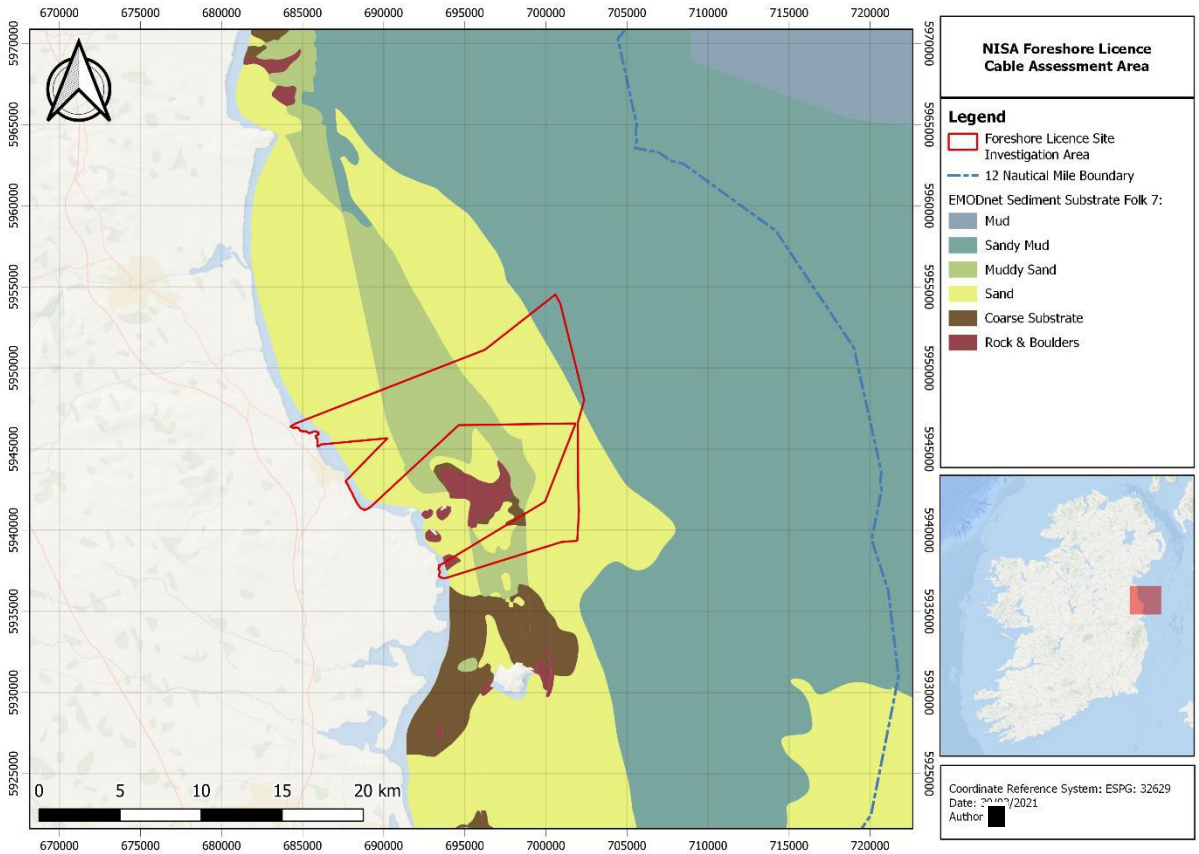

Figure 3-1: Predominant Sediment Type (EMODnet, 2019)

3.2 Natura 2000 Sites

3.2.1 Special Conservation Interests (SCI) (Birds)

Note: Guidance from the National Parks and Wildlife Service (Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities) (DEHLG, 2010) recommends that the distance chosen for appropriate assessment screening should be evaluated on a case-by-case basis and should be proportionate to the proposed activities. The activities proposed under this foreshore licence application are of a temporary nature and expected to have only localised effects (Refer to Section 4 and Section 5 for further detail). While birds from SPAs further away than 15km may enter the survey area, any effects would be to individual birds only and not likely to effect bird species on a population basis. Therefore, considering the nature of the surveys, consideration of SPAs within 15km is considered sufficient for the purposes of this assessment.

Ireland is host to several nationally and internationally important bird species which inhabit areas with coastal sea cliffs, estuaries, and offshore islands. Many of these areas have therefore been designated as Special Protection Areas (SPA). Coastal habitats provide important breeding sites for many species of seabirds, many of which are protected under national and European legislation.

At least 45 species of seabird (including divers and grebes) have been recorded during at-sea surveys in Irish waters, of which 23 species regularly breed around Ireland (Mackey *et al*., 2004). In addition, a further 59 species of waterfowl and wader regularly occur at coastal sites such as estuaries around Ireland including five grebe species, two heron species, 26 species of wildfowl and 26 wader species (Crowe 2005). Some of these species are migratory and are present only during migration periods in spring and autumn; others come to Ireland to breed or to spend the winter, while some are resident all year round. Several SPAs are designated along the Co. Dublin and Meath Coasts (Figure 3-2). There is one designated SPA within the Foreshore Licence Site Investigation Area and eight other SPAs within 15 km of the Foreshore Licence Site Investigation Area (Table 3-1). A description of each site is included in this chapter. This information is taken directly from the NPWS site synopses at www.npws.ie with additional more recent data included where available.

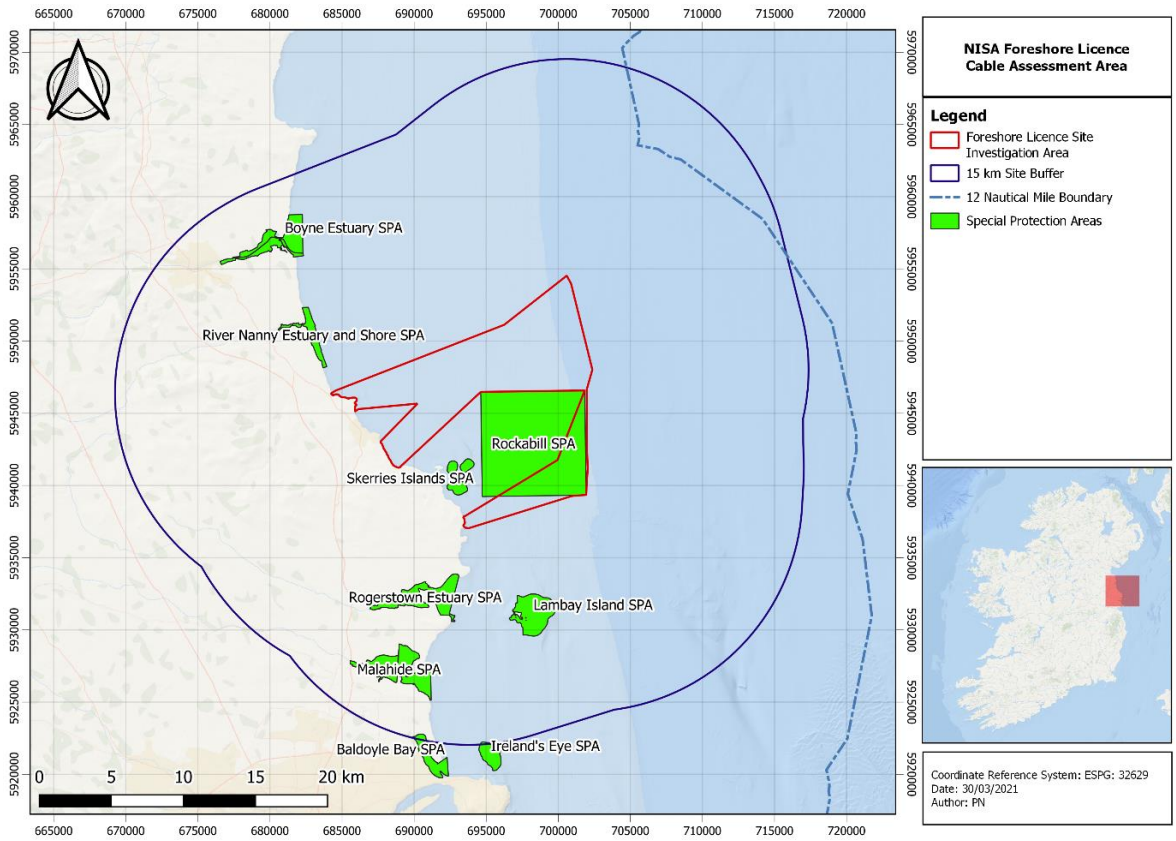

Figure 3-2: Special Protection Areas within 15 km of the Foreshore Licence Site Investigation Area designated under the Bird Directive

Table 3-1: Special Protection Areas within 15 km of the Foreshore Licence Site Investigation Area designated under the Bird Directive

Special Protection Area Name (SPA code)	Distance from FLA Area (km)
Rockabill SPA (004014)	0.0
Skerries Islands SPA (004122)	1.40
River Nanny Estuary and Shore SPA (00415)	1.77
Rogerstown Estuary SPA (004015)	3.25
Lambay Island SPA (004069)	5.45

Special Protection Area Name (SPA code)	Distance from FLA Area (km)
Malahide Estuary SPA (004025)	9.31
Boyne Estuary SPA (004080)	9.51
Baldoyle Bay SPA (004016)	14.60
Ireland's Eye SPA (004117)	14.83

Rockabill SPA (004014) (NPWS, 2015a)

Rockabill SPA (004014) overlaps the Foreshore Licence Site Investigation Area (Figure 3-2). Rockabill consists of two small, low-lying, granitic islets situated c. 7 km off the Co. Dublin coast. The islands are separated by a narrow channel, though are connected at low spring tides. The main island, known as the Lighthouse Island, is vegetated by a scrubby sward of Tree Mallow (*Lavatera arborea*), with a range of other maritime species occurring, such as Sea Mayweed (*Matricaria maritima*), Sea Campion (*Silene maritima*), Sorrel (*Rumex spp.*), Common Scurvy-grass (*Cochlearia officinalis*), Orache (*Atriplex spp.*) and Rock Sea-spurrey (*Spergularia rupicola*). The smaller island, known as the Bill, is very exposed and is sparsely vegetated. A lighthouse, manned until 1989, is situated on the main island. The site includes the two islands and the surrounding seas to a distance of 3.5 km from the islands.

The site is a SPA under the EU Birds Directive, of special conservation interest for the following species: Purple Sandpiper, Roseate Tern, Common Tern and Arctic Tern.

Skerries Island SPA (004122) (NPWS, 2009b)

Skerries Island SPA (004122) at its closest point lies 1.40 km from the Foreshore Licence Site Investigation Area (Figure 3-2). The Skerries Islands are a group of three small uninhabited islands, Shenick's Island, St Patrick's Island and Colt Island, situated between 0.5 km and 1.5 km off the north Co. Dublin coast. Skerries Islands SPA comprises the three islands and the seas surrounding them, to a distance of 200 m from the shore. The three islands are all low-lying with maximum heights ranging from 8 m to 13 m above sea level. St Patrick's Island and Colt Island have low cliffs, while Shenick's Island has more extensive expanses of intertidal rocky shore and sand flats. Shenick's Island also has a shingle bar and is connected to the mainland at low tides; it became a BirdWatch Ireland Reserve in 1987. The vegetation of the islands is dominated by rank grasses, with Brambles (*Rubus spp.)* and other species such as Hogweed (*Heracleum sphondylium*) occurring commonly.

The site is a SPA under the EU Birds Directive, of special conservation interest for the following species: Cormorant, Shag, Light-bellied Brent Goose, Purple Sandpiper, Turnstone and Herring Gull. The EU Birds Directive pays particular attention to wetlands and, as these form part of this SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds.

River Nanny Estuary and Shore SPA (004158) (NPWS, 2015b)

River Nanny Estuary and Shore SPA (004158) at its closest point lies 1.77 km to the west/northwest of the Foreshore Licence Site Investigation Area (Figure 3-2). The site comprises the estuary of the River Nanny and sections of the shoreline to the north and south of the estuary (c. 3 km in length), in Co. Meath. The estuarine channel, which extends inland for almost 2 km, is narrow and well sheltered. Sediments are muddy in character and edged by saltmarsh and freshwater marsh/wet grassland.

The saltmarsh is best developed in the eastern portion of the estuarine channel, with species such as Sea Plantain (*Plantago maritima*), Sea Aster (*Aster tripolium*), Red Fescue (*Festuca rubra*) and Sea Purslane (*Halimione portulacoides*) occurring. Further up the estuary, the marsh habitats support species such as Bulrush (*Typha latifolia*) and Yellow Flag (*Iris pseudacorus*). The shoreline, which is approximately 500 m in width to the low tide mark, comprises beach and intertidal habitats. It is a well-exposed shore, with coarse sand sediments. The well developed beaches, which are backed in places by clay cliffs, provide high tide roosts for the birds. The village of Laytown occurs in the northern side of the River Nanny estuary.

The site is a SPA under the EU Birds Directive, of special conservation interest for the following species: Oystercatcher, Ringed Plover, Golden Plover, Knot, Sanderling and Herring Gull. The EU Birds Directive pays particular attention to wetlands, and as these form part of this SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds.

Rogerstown Estuary SPA (004015) (NPWS, 2014a)

Rogerstown Estuary SPA (004015) at its closest point lies 3.25 km to the south of the Foreshore Licence Site Investigation Area (Figure 3-2). Rogerstown Estuary is situated about 2 km north of Donabate in north County Dublin. It is a relatively small, funnel shaped estuary separated from the sea by a sand and shingle peninsula; the site extends eastwards to include an area of shallow marine water. The estuary receives the waters of the Ballyboghil and Ballough rivers and has a wide salinity range, from near full seawater to near full freshwater.

The estuary is divided by a causeway and narrow bridge, built in the 1840s to carry the DublinBelfast railway line. At low tide extensive intertidal sand and mud flats are exposed and these provide the main food resource for the wintering waterfowl that use the site. The intertidal flats of the estuary are mainly of sands, with soft muds in the northwest sector and along the southern shore. Associated with these muds are stands of Common Cord-grass (*Spartina anglica*). Green algae (*mainly Ulva spp*.) are widespread and form dense mats in the more sheltered areas.

The intertidal vascular plant Beaked Tasselweed (*Ruppia maritima*) grows profusely in places beneath the algal mats and is grazed by herbivorous waterfowl (notably Light-bellied Brent Goose and Wigeon). Salt marsh fringes parts of the estuary, especially its southern shores. Common plant species of the saltmarsh include Sea Rush (*Juncus maritimus*), Sea Purslane (*Halimione portulacoides*) and Common Saltmarsh-grass (*Puccinellia maritima*).

The site is a SPA under the EU Birds Directive, of special conservation interest for the following species: Greylag Goose, Light-bellied Brent Goose, Shelduck, Shoveler, Oystercatcher, Ringed Plover, Grey Plover, Knot, Dunlin, Black-tailed Godwit and Redshank. The EU Birds Directive pays particular attention to wetlands and, as these form part of this SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds.

Lambay Island SPA (004069) (NPWS, 2011a)

Lambay Island SPA (004069) at its closest point lies 5.45 km to the south of the Foreshore Licence Site Investigation Area (Figure 3-2). Lambay Island lies approximately 4 km off the north Co. Dublin

coastline and is separated from it by a channel of 10-13 m in depth. East of Lambay Island the water deepens rapidly into the Irish Sea basin. The island, which rises to 127 m, has an area of 250 ha above high tide mark.

The underlying geology is very varied but is dominated by volcanic igneous rocks (of andesitic type) and ash; also present are shales, limestones and limestone conglomerates. The soils are generally shallow and are derived from glacial tills of Irish Sea origin. The shallow soils are peaty on high exposed ground and above the cliffs. On the western side of the island the land rises gently from a bedrock shoreline. Cobble storm beaches are associated with this shore and at low tide sandflats are exposed within the harbour and below a section of the rocky shore. The northern, eastern and most of the southern shorelines consist of steep cliffs varying from about 15 m to 50 m high. These are backed by vegetated slopes along most of their length. The cliff slopes have a typical maritime vegetation, including such species as Thrift (*Armeria maritima*), Sea Campion (*Silene maritima*), Rock Sea-spurrey (*Spergularia rupicola*) and Spring Squill (*Scilla verna*). Some sheltered gullies have small areas of scrub woodland dominated by Elder (*Sambucus nigra*).

The site is a SPA under the EU Birds Directive, of special conservation interest for the following species: Fulmar, Cormorant, Shag, Greylag Goose, Lesser Black-backed Gull, Herring Gull, Kittiwake, Guillemot, Razorbill and Puffin. The site is also of special conservation interest for holding and assemblage of over 20,000 breeding seabirds.

Malahide Estuary SPA (004025) (NPWS, 2013a)

Malahide Estuary SPA (004025) at its closest point lies 9.31 km to the south of the Foreshore Licence Site Investigation Area (Figure 3-2). Malahide Estuary is situated in north Co. Dublin, between the towns of Malahide and Swords. The site encompasses the estuary, saltmarsh habitats and shallow subtidal areas at the mouth of the estuary. A railway viaduct, built in the 1800s, crosses the site and has led to the inner estuary becoming lagoonal in character and only partly tidal. Much of the outer part of the estuary is well-sheltered from the sea by a large sand spit, known as “The Island”. This spit is now mostly converted to golf-course. The outer part empties almost completely at low tide and there are extensive intertidal flats exposed.

Substantial stands of eelgrass (both *Zostera noltii* and *Z. angustifolia*) occur in the sheltered part of the outer estuary, along with Tasselweed (*Ruppia maritima*). Green algae, mostly Ulva spp., are frequent on the sheltered flats. Common Cord-grass (*Spartina anglica*) is well established in the outer estuary and also in the innermost part of the site. The intertidal flats support a typical macroinvertebrate fauna, with polychaete worms (*Arenicola marina* and *Hediste diversicolor*), bivalves such as *Cerastoderma edule, Macoma balthica* and *Scrobicularia plana*, the small gastropod *Hydrobia ulvae* and the crustacean *Corophium volutator*. Salt marshes, which provide important roosts during high tide, occur in parts of the outer estuary and in the extreme inner part of the inner estuary. These are characterised by such species as Sea Purslane (*Halimione portulacoides*), Sea Aster (*Aster tripolium*), Thrift (*Armeria maritima*), Sea Arrowgrass (*Triglochin maritima*) and Common Saltmarsh-grass (*Puccinellia maritima*).

The site is a SPA under the EU Birds Directive, of special conservation interest for the following species: Great Crested Grebe, Light-bellied Brent Goose, Shelduck, Pintail, Goldeneye, Red-breasted

Merganser, Oystercatcher, Golden Plover, Grey Plover, Knot, Dunlin, Black-tailed Godwit, Bar-tailed Godwit and Redshank. The EU Birds Directive pays particular attention to wetlands and, as these form part of this SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds.

Boyne Estuary SPA (004080) (NPWS, 2015c)

Boyne Estuary SPA (004080) at its closest point lies 9.51 km to the northwest of the Foreshore Licence Site Investigation Area (Figure 3-2). This moderately-sized coastal site is situated west of Drogheda on the border of Counties Louth and Meath. The site comprises most of the estuary of the Boyne River, a substantial river which drains a large catchment. Apart from one section which is over 1 km wide, its width is mostly less than 500 m. The river channel, which is navigable and dredged, is defined by training walls, these being breached in places.

Intertidal flats occur along the sides of the channelled river. The sediments vary from fine muds in the sheltered areas to sandy muds or sands towards the river mouth. The linear stretches of intertidal flats to the north and south of the river mouth are mainly composed of sand. One or more species of Eelgrass (*Zostera spp.*) occur in the estuary. Parts of the intertidal areas are fringed by salt marshes, most of which are of the Atlantic type, and dominated by Sea-purslane (*Halimione portulacoides*). Other species present include Common Saltmarsh-grass (*Puccinellia maritima*), Sea Plantain (*Plantago maritima*), Lax-flowered Sea-lavender (*Limonium humile*) and Glasswort (*Salicornia spp.*). Common Cord-grass (*Spartina anglica*) occurs frequently on the flats and salt marshes.

The site is a SPA under the EU Birds Directive, of special conservation interest for the following species: Shelduck, Oystercatcher, Golden Plover, Grey Plover, Lapwing, Knot, Sanderling, Black-tailed Godwit, Redshank, Turnstone and Little Tern. The EU Birds Directive pays particular attention to wetlands and, as these form part of this SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds.

Baldoyle Bay SPA (004016) (NPWS, 2014b)

Baldoyle Bay SPA (004016) at its closest point lies 14.60 km to the south of the Foreshore Licence Site Investigation Area (Figure 3-2). Baldoyle Bay, located to the north and east of Baldoyle and to the south of Portmarnock, Co. Dublin, is a relatively small, narrow estuary separated from the open sea by a large sand dune system. Two small rivers, the Mayne River and the Sluice River, flow into the inner part of the estuary.

Large areas of intertidal flats are exposed at low tide. These are mostly sands, but grade to muds in the inner sheltered parts of the estuary. Extensive areas of Common Cord-grass (*Spartina anglica*) occur in the inner estuary. Both the Narrow-leaved Eelgrass (*Zostera angustifolia)* and the Dwarf Eelgrass (*Z. noltii*) are also found here. During summer, the sandflats of the sheltered areas are covered by mats of green algae (*Ulva* spp.). The sediments have a typical macrofauna, with Lugworm (*Arenicola marina*) dominating the sandy flats. Areas of saltmarsh occur near Portmarnock Bridge and at Portmarnock Point, with narrow strips found along other parts of the estuary. Species such as Glasswort (*Salicornia* spp.), Sea-purslane (*Halimione portulacoides*), Sea Plantain (*Plantago maritima*) and Sea Rush (*Juncus maritimus*) are found here.

The site is a SPA under the EU Birds Directive, of special conservation interest for the following species: Light-bellied Brent Goose, Shelduck, Ringed Plover, Golden Plover, Grey Plover and Bar-tailed Godwit. The EU Birds Directive pays particular attention to wetlands and, as these form part of this SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds.

Ireland's Eye SPA (004117) (NPWS, 2011b)

Ireland's Eye SPA (004117) at its closest point lies 14.83 km to the south of the Foreshore Licence Site Investigation Area (Figure 3-2). Ireland's Eye is an uninhabited island located about 1.5 km north of Howth in Co. Dublin. The site encompasses Ireland's Eye, Rowan Rocks, Thulla, Thulla Rocks, Carrageen Bay and a seaward extension of 200m in the west and 500m to the north and east. The island has an area of c. 24 ha above the high tide mark. The underlying geology is Cambrian greywackes and quartzites. These rocks form impressive near vertical cliffs, reaching 69 m, along the northern and eastern sides of the island, with scattered exposures elsewhere on the island and especially in the high northern half.

A tall stack, which is completely cut off from the main island at mid to high tide, occurs at the eastern side of the cliffs. A sandy beach, backed by low sand hills, occurs at Carrigeen Bay on the western shore, while a shingle beach extends from Carrigeen to Thulla Rocks. Elsewhere the island is covered by glacial drift. A low-lying, sparsely vegetated islet, known as Thulla, occurs a little to the south of the island, and an extensive area of bedrock shore (heavily covered by brown seaweeds) is exposed at low tide between Thulla and the main island. There are no watercourses or springs on the island, though two small rainwater ponds form during winter in the north-west and north-east sectors.

The site is a SPA under the EU Birds Directive, of special conservation interest for the following species: Cormorant, Herring Gull, Kittiwake, Guillemot and Razorbill.

3.2.2 Annex I Habitats and Associated SACs

Note: Guidance from the National Parks and Wildlife Service (Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities) (DEHLG, 2010) recommends that the distance chosen for appropriate assessment screening should be evaluated on a case-by-case basis and should be proportionate to the proposed activities. The activities proposed under this foreshore licence application are of a temporary nature and expected to have only localised effects (Refer to Section 4 and Section 5 for further detail). In terms of protected habitats within SACs 15km is considered an appropriate distance for inclusion in this screening assessment and subsequent NIS if required for individual sites.

There is one designated Special Areas of Conservation (SAC) within the Foreshore Licence Site Investigation Area (Figure 3-3). There are five Special Areas of Conservation (SAC) located within 15km of the site investigation activities which have a marine element (Figure 3-3). In addition, there is one site (River Boyne And River Blackwater SAC) that does not have a marine element but has a possible connection to the Statkraft Foreshore Licence Site Investigation Area via rivers that discharges within zone of influence of the proposed cable corridor area. These SACs, listed below, are designated for the presence of Annex I habitats listed on the EU Habitats Directive. The descriptions are taken directly

from the NPWS site synopses at www.npws.ie with more up to date information included where available.

- Rockabill to Dalkey Island SAC (003000)
- Rogerstown Estuary SAC (000208)
- Lambay Island SAC (000204)
- Malahide Estuary SAC (000205)
- Boyne Coast And Estuary SAC (001957)
- River Boyne And River Blackwater SAC (002299)
- Baldoyle Bay SAC (000199)

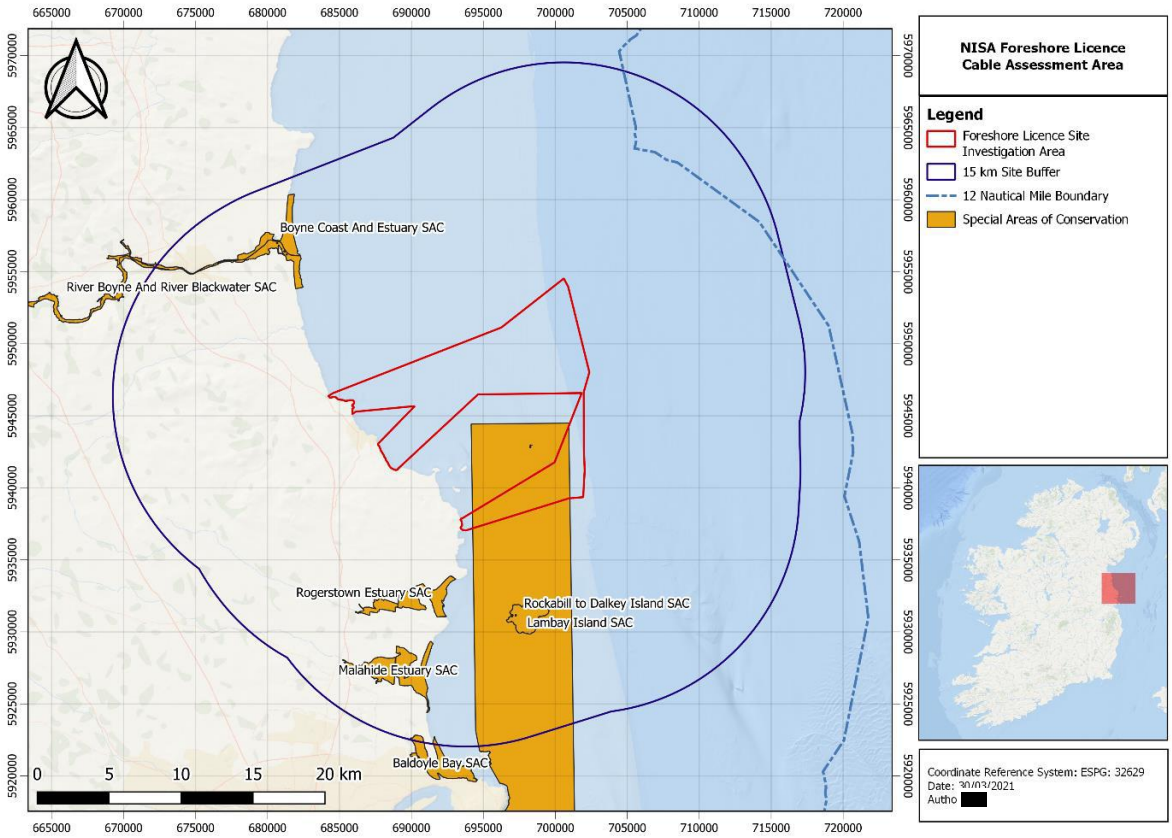

Figure 3-3: Special Areas of Conservation located within 15km of the Foreshore Licence Site Investigation Area designated under the Habitats Directive

Table 3-2: Special Areas of Conservation located within 15km of the Foreshore Licence Site Investigation Area designated under the Habitats Directive

Special Area of Conservation Name (SAC code)	Distance from FLA Area (km)
Rockabill to Dalkey Island SAC (003000)	0.0
Rogerstown Estuary SAC (000208)	4.02
Lambay Island SAC (000204)	5.91
Boyne Coast And Estuary SAC (001957)	7.60

Malahide Estuary SAC (000205)	8.57
Baldoyle Bay SAC (000199)	14.63
River Boyne And River Blackwater SAC (002299)	14.70

Rockabill to Dalkey Island SAC (003000) (NPWS, 2014c)

Rockabill to Dalkey Island SAC overlaps the Foreshore Licence Site Investigation Area (Figure 3-3). This site includes a range of dynamic inshore and coastal waters in the western Irish Sea. These include sandy and muddy seabed, reefs, sandbanks and islands. This site extends southwards, in a strip approximately 7 km wide and 40 km in length, from Rockabill, running adjacent to Howth Head, and crosses Dublin Bay to Frazer Bank in south Co. Dublin. The site encompasses Dalkey, Muglins and Rockabill islands.

The site is a SAC, selected for the following habitats and/or species listed on Annex I of the EU Habitats Directive (* = priority; numbers in brackets are Natura 2000 codes): [1170] Reefs

This site is of conservation importance for reefs, listed on Annex I of the EU Habitats Directive.

Rogerstown Estuary SAC (000208) (NPWS, 2013b)

Rogerstown Estuary SAC at its closest point lies 4.02 km to the south of the Foreshore Licence Site Investigation Area (Figure 3-3). Rogerstown Estuary is situated about 2 km north of Donabate in Co. Dublin. It is a relatively small, narrow estuary separated from the sea by a sand and shingle bar. The estuary is divided by a causeway and narrow bridge, built in the 1840s to carry the Dublin-Belfast railway line.

The site is a SAC, selected for the following habitats and/or species listed on Annex I of the EU Habitats Directive (* = priority; numbers in brackets are Natura 2000 codes): [1130] Estuaries, [1140] Tidal Mudflats and Sandflats, [1310] Salicornia Mud, [1330] Atlantic Salt Meadows, [1410] Mediterranean Salt Meadows, [2120] Marram Dunes (White Dunes), [2130] Fixed Dunes (Grey Dunes)*.

The outer part of the estuary has been designated a Statutory Nature Reserve and a Special Protection Area under the EU Birds Directive. The inner estuary has been damaged by the refuse tip which covers 40 ha of mudflat.

This site is a good example of an estuarine system, with all typical habitats represented, including several listed on Annex I of the EU Habitats Directive. Rogerstown is an internationally important waterfowl site and has been a breeding site for Little Terns. The presence within the site of three rare plant species adds to its importance.

Lambay Island SAC (000204) (NPWS, 2014d)

Lambay Island SAC at its closest point lies 5.91 km to the south of the Foreshore Licence Site Investigation Area (Figure 3-3). Lambay Island is a large (250 ha) inhabited island lying 4 km off Portrane on the north Co. Dublin coast. It is privately owned. The island rises to 127 m and is surrounded by steep cliffs on the north, east and south slopes. These cliffs contain good diversity in height, slope and aspect. The west shore is low-lying and the land slopes gently eastwards to the summit in the centre of the island. The underlying geology is varied but is dominated by igneous rocks

(of andesitic type) and ash. Also present are shales and limestones of Silurian origin, limestone conglomerates, and shales from the Old Red Sandstone era. The bedrock is exposed on the fringing cliffs and in rocky outcrops; elsewhere it is overlain by varying depths of glacial drift.

The site is a SAC, selected for the following habitats and/or species listed on Annex I of the EU Habitats Directive (* = priority; numbers in brackets are Natura 2000 codes): [1170] Reefs, [1230] Vegetated Sea Cliffs, [1364] Lambay Island has good examples of vegetated sea cliffs, a habitat listed on Annex I of the EU Habitats Directive, and these cliffs hold internationally important populations of seabirds.

Boyne Coast and Estuary SAC (001957) (NPWS, 2016a)

Boyne Coast and Estuary SAC at its closest point lies 7.60 km to the northwest of the Foreshore Licence Site Investigation Area (Figure 3-3). Boyne Coast and Estuary SAC is a coastal site which includes most of the tidal sections of the River Boyne, intertidal sand- and mudflats, saltmarshes, marginal grassland, and the stretch of coast from Bettystown to Termonfeckin that includes the Mornington and Baltray sand dune systems.

The site is a SAC, selected for the following habitats and/or species listed on Annex I of the EU Habitats Directive (* = priority; numbers in brackets are Natura 2000 codes): [1130] Estuaries, [1140] Tidal Mudflats and Sandflats, [1210] Annual vegetation of drift lines, [1310] *Salicornia* Mud, [1330] Atlantic Salt Meadows, [2110] Embryonic Shifting Dunes, [2120] Marram Dunes (White Dunes), [2130] Fixed Dunes (Grey Dunes)*.

This site has been somewhat modified by human activities. The river is regularly dredged to accommodate cargo ships, which causes disturbance to the bird, fish and invertebrate communities in the estuary. Several factories operate upstream from the estuary and pollution and disturbance associated with them has had an impact on the ecology of the area. There is a proposal to create a deep water facility at the north end of Mornington Dunes on the mouth of the Boyne estuary.

The site is of considerable conservation interest as a coastal complex that supports good examples of eight habitats that are listed on Annex I of the EU Habitats Directive, including one which is listed with priority status, and for the important bird populations that it supports.

Malahide Estuary SAC (000205) (NPWS, 2017a)

Malahide Estuary SAC at its closest point lies 8.57 km to the south of the Foreshore Licence Site Investigation Area (Figure 3-3). Malahide Estuary is situated immediately north of Malahide and east of Swords in Co. Dublin. It is the estuary of the River Broadmeadow. The site is divided by a railway viaduct which was built in the 1800s.

The site is a SAC, selected for the following habitats and/or species listed on Annex I of the EU Habitats Directive (* = priority; numbers in brackets are Natura 2000 codes): [1140] Tidal Mudflats and Sandflats, [1310] Salicornia Mud, [1330] Atlantic Salt Meadows, [1410] Mediterranean Salt Meadows, [2120] Marram Dunes (White Dunes), [2130] Fixed Dunes (Grey Dunes)*. The site includes a fine area of rocky shore south-east of Malahide and extending towards Portmarnock. This represents the only continuous section through the fossiliferous Lower Carboniferous rocks in the Dublin Basin, and is the type locality for several species of fossil coral.

The inner part of the estuary is heavily used for water sports. A section of the outer estuary has recently been infilled for a marina and housing development. This site is a fine example of an estuarine system with all the main habitats represented. The site is important ornithologically, with a population of Brent Goose of international significance.

Baldoyle Bay SAC (000199) (NPWS, 2013c)

Baldoyle Bay SAC at its closest point lies 14.63 km to the south of the Foreshore Licence Site Investigation Area (Figure 3-3). Baldoyle Bay SAC extends from just below Portmarnock village to the west pier at Howth in Co. Dublin. It is a tidal estuarine bay protected from the open sea by a large sand-dune system. Two small rivers, the Mayne and the Sluice, flow into the bay.

The site is a SAC, selected for the following habitats and/or species listed on Annex I of the EU Habitats Directive (* = priority; numbers in brackets are Natura 2000 codes): [1140] Tidal Mudflats and Sandflats, [1310] Salicornia Mud, [1330] Atlantic Salt Meadows, [1410] Mediterranean Salt Meadows.The area surrounding Baldoyle Bay is densely populated and so the main threats to the site include visitor pressure, disturbance to wildfowl and dumping. In particular, the dumping of spoil onto the foreshore presents a threat to the value of the site.

Baldoyle Bay is a fine example of an estuarine system. It contains four habitats listed on Annex I of the EU Habitats Directive and supports two legally protected plant species. The site is also an important bird area and part of it is a Special Protection Area under the EU Birds Directive, as well as being a Statutory Nature Reserve. It supports internationally important numbers of Brent Goose and nationally important numbers of six other bird species, including two Annex I Birds Directive species.

River Boyne and River Blackwater SAC (002299) (NPWS, 2014e)

River Boyne and River Blackwater SAC at its closest point lies 14.70 km to the west of the Foreshore Licence Site Investigation Area (Figure 3-3). This site comprises the freshwater element of the River Boyne as far as the Boyne Aqueduct, the Blackwater as far as Lough Ramor and the Boyne tributaries including the Deel, Stoneyford and Tremblestown Rivers. These riverine stretches drain a considerable area of Meath and Westmeath, and smaller areas of Cavan and Louth. The underlying geology is Carboniferous Limestone for the most part, with areas of Upper, Lower and Middle well represented. In the vicinity of Kells Silurian Quartzite is present while close to Trim are Carboniferous Shales and Sandstones. There are many large towns adjacent to but not within the site, including Slane, Navan, Kells, Trim, Athboy and Ballivor.

The site is a SAC, selected for the following habitats and/or species listed on Annex I of the EU Habitats Directive (* = priority; numbers in brackets are Natura 2000 codes): [7230] Alkaline Fens, [91E0] Alluvial Forests*

The site supports populations of several species listed on Annex II of the EU Habitats Directive, and habitats listed on Annex I of this Directive, as well as examples of other important habitat types. Although the wet woodland areas appear small there are few similar examples of this type of alluvial wet woodland remaining in the country, particularly in the north-east. The semi-natural habitats, particularly the strips of woodland which extend along the river-banks, and the marsh and wet

grasslands, increase the overall habitat diversity and add to the ecological value of the site, as does the presence of a range of Red Data Book plant and animal species and the presence of nationally rare plant species.

3.2.3 Annex II Species and Associated SACs

Annex II of the Habitats Directive lists animal and plant species whose conservation requires the designation of Special Areas of Conservation. In Ireland's marine and coastal zones, SACs have been designated under Annex II of the Habitats Directive for four purely marine species and six species that occur in both marine and freshwater habitats (See Table 3-3).

Table 3-3: Marine and Marine/Freshwater Species for which Special Areas of Conservation have been designated in Ireland

Marine Species		
1349	Bottlenose dolphin	*Tursiops truncatus*
1351	Harbour porpoise	*Phocoena phocoena*
1364	Grey seal	*Halichoerus grypus*
1365	Harbour seal	*Phoca vitulina*
Marine/freshwater Species		
1095	Sea lamprey	*Petromyzon marinus*
1099	River lamprey	*Lampetra fluviatilis*
1102	Allis shad	*Alosa alosa*
1103	Twaite shad	*Alosa fallax fallax*
1106	Salmon	*Salmo salar*
1355	Otter	*Lutra lutra*

Natura 2000 sites (Ireland and the UK) within a 100km distance from the survey area boundaries and which have Annex II qualifying features that have the potential to be within the survey area are shown in Figure 3-4 and Table 3-4.

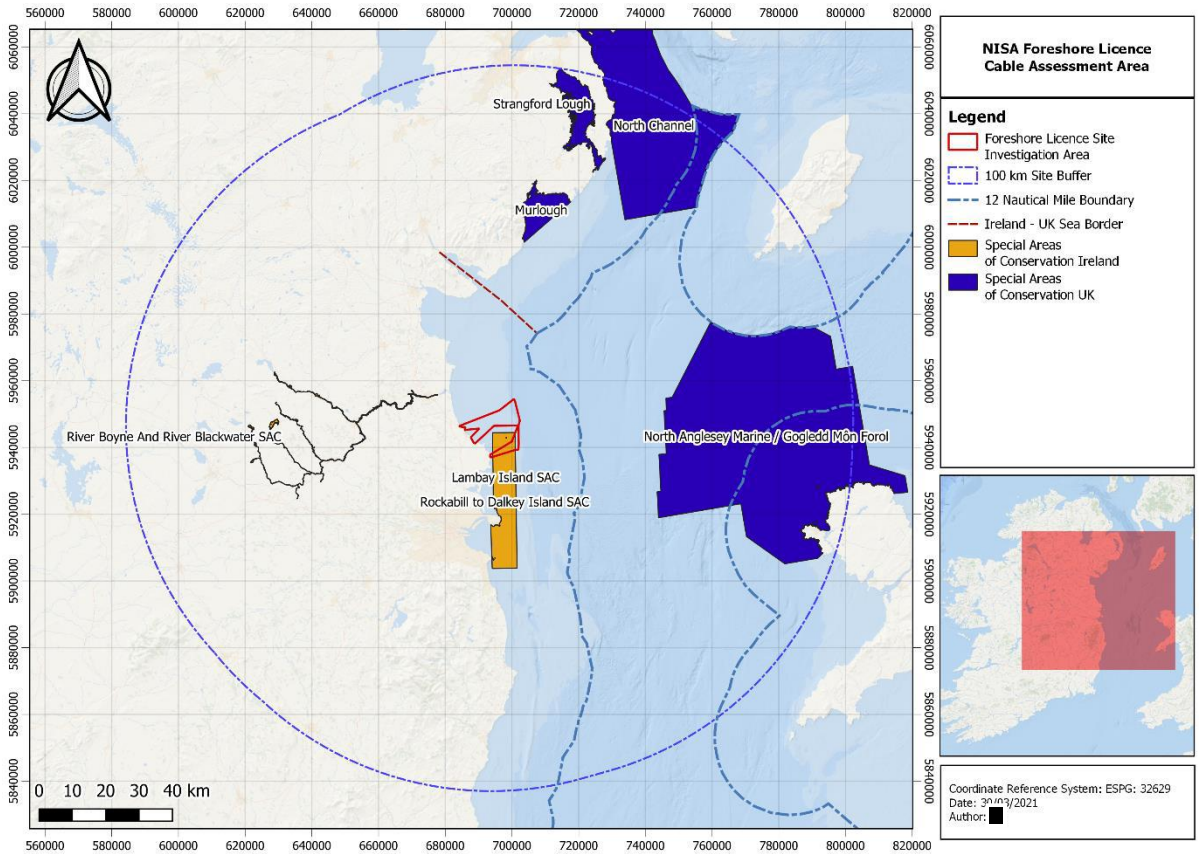

Figure 3-4: Ireland and UK Special Areas of Conservation located within 100km of the Foreshore Licence Site Investigation Area (NPWS, 2020), (JNCC, Natural Resources Wales)

There are seven sites within a 100km radius of the application area that have been designated as Special Areas of Conservation under Annex II of the Habitats Directive which have mobile aquatic or marine species as qualifying interests. All have between one and three species which are mobile and have the potential to be present within the Foreshore Licence Site Investigation Area.

Table 3-4: Special Areas of Conservation within 100km of the Foreshore Licence Site Investigation Area with mobile species listed in Annex II of the EU Habitats Directive that may be present in the site investigation area at least part of the year

Site Name	Mobile Annex II Species	Distance from Site (km)
Rockabill to Dalkey Island SAC	*Phocoena phocoena* (Harbour Porpoise) [1351]	0
Lambay Island SAC	*Halichoerus grypus* (Grey Seal) [1364]	5.91
	Phoca vitulina (Common Seal) [1365]	
River Boyne And River Blackwater SAC	*Salmo salar* (Salmon) [1106]	14.70
	Lampetra fluviatilis (River Lamprey) [1099]	
	Lutra lutra (Otter) [1355]	
North Anglesey Marine / Gogledd MÃ´n Forol SAC	*Phocoena phocoena* (Harbour Porpoise) [1351]	42.16
Murlough SAC	*Phoca vitulina* (Common Seal) [1365]	47.02

Site Name	Mobile Annex II Species	Distance from Site (km)
North Channel SAC	*Phocoena phocoena (*Harbour Porpoise*)* [1351]	63.15
Strangford Lough SAC	*Phoca vitulina* (Common Seal) [1365]	71.91

Rockabill to Dalkey Island SAC (003000) (NPWS, 2014c), which is designated for the protection of an Annex II species is overlapping the Foreshore Licence Site Investigation Area. The next closest SAC to the Foreshore Licence Site Investigation Area that is designated for the protection of an Annex II species is the Lambay Island SAC (000204) (NPWS, 2014d). This site is 5.91 km away from the Foreshore Licence Site Investigation Area. The only other SAC which lies within a 15km radius is the River Boyne And River Blackwater SAC (002299) (NPWS, 2014e) which lies 14.70 km from the Foreshore Licence Site Investigation Area. The remaining 4 SACs that are designated for the protection of an Annex II species are outside the 15km radius, the nearest is North Anglesey Marine / Gogledd MÃ´n Forol SAC (UK0030398) (NRW, 2016a) which is 42.16 km away and the furthest is Strangford Lough six (DAERA-NI, 2015c) which is 71.91 km away.

There are six different species listed on Annex II of the Habitats Directive across the seven Special Areas of Conservation within 100km of the Foreshore Licence Site Investigation Area. These are, *Phocoena phocoena* (Harbour porpoise) [1351], *Halichoerus grypus* (Grey seal) [1364], *Phoca vitulina* (Common seal) [1365], *Salmo salar* (Salmon) [1106], *Lampetra fluviatilis* (River lamprey) [1099] and *Lutra lutra* (Otter) [1355].

***Phocoena phocoena* (Harbour porpoise) [1351]** is a qualifying feature of the Rockabill to Dalkey Island SAC (003000) which overlaps the Foreshore Licence Site Investigation Area. It is also a qualifying feature of North Channel SAC (UK0030399) (JNCC, 2019). The harbour porpoise is the smallest and most abundant cetacean in Irish waters and possibly the most abundant in the northeast Atlantic. It is common around the entire Irish coast. Sightings are common from June through the autumn/winter but reduced sightings in spring suggest they move offshore, possibly to calving/breeding grounds. Three marine SACs have been designated for harbour porpoise in Ireland – Blasket Islands (Kerry), Roaringwater Bay and Islands (Cork) and the Rockabill to Dalkey Island SAC off County Dublin.

The **Grey Seal (*Halichoerus grypus*) [1364]** is a designated Annex II Species for one of the SACs found within 100km from the Foreshore Licence Site Investigation Area: Lambay Island SAC (000204). The grey seal is the larger and more abundant of the two seal species resident in Ireland. They spend much of the year at sea and may range widely in search of prey. They come ashore in autumn to form breeding colonies on rocky shores, beaches and caves, often on small uninhabited islands. They are found all around the coast wherever habitats are suitable and are most abundant along the exposed south, southwest and west coasts. The two major Irish breeding sites for grey seals are the Inishkea Islands (Mayo) and the Blasket Islands (Kerry). Smaller groups breed at Lambay Island (Dublin), Slyne Head (Galway) and the Saltee Islands (Wexford). All of these locations, along with a further five, are designated as SACs due to the presence of grey seals. All of these are also designated for one or more habitats (e.g. large shallow inlets and bays, estuaries).

***Phoca vitulina* (Common seal) [1365]** is a qualifying feature of the Lambay Island SAC (000204) Murlough SAC (UK0016612) (DAERA-NI, 2015b), the Strangford Lough SAC (UK0016618). These SACs

are located between 5.91 km to 71.91 km from the Foreshore Licence Site Investigation Area. The common, or harbour, seal is the smaller of the two seals resident in Ireland. Despite its name it is less common than the Grey Seal. The common seal is the characteristic seal of sandflats and estuaries however are also found on rocky shores. Seals may range widely in search of prey, but individuals often return to favoured haul-out sites to rest or to give birth. Many of the most important haul-out areas are on the west coast. These include Bantry Bay, Kenmare River, Galway Bay, Sligo Bay and the Donegal Coast.

***Salmo salar* (Salmon) [1106]** is a qualifying feature of the River Boyne And River Blackwater SAC (002299). This SACs is located 14.70 km from the Foreshore Licence Site Investigation Area. The salmon is an anadromous fish which spawns in rivers and is only offered protection under Annex II of the Habitats Directive when in freshwater.

***Lampetra fluviatilis* (River lamprey) [1099]** is a qualifying feature of the River Boyne And River Blackwater SAC (002299). This SAC is located 14.70 km from the Foreshore Licence Site Investigation Area. The river lamprey is a native species that inhabits shallow inshore waters and accessible rivers. It is normally anadromous (i.e. spawning in freshwater but completing part of its life cycle in the sea), and pollution or artificial obstacles such as weirs or dams can impede migration. The adult is parasitic, mainly on herring and sprat.

***Lutra lutra* (Otter) [1355]** is a qualifying feature of the River Boyne And River Blackwater SAC (002299). This SACs is located 14.70 km from the Foreshore Licence Site Investigation Area. The otter is a semi-aquatic mammal, which occurs in a wide variety of aquatic habitats such as rivers, streams, lakes, estuaries and on the coast. Populations in coastal areas use shallow, inshore marine areas for feeding but they also require access to fresh water for bathing and terrestrial areas for resting and breeding. Coastal otter habitat ranges from sheltered wooded inlets to more open, low-lying coasts. The otter is found throughout Ireland, which has the densest otter population in western Europe. Over most of the continent the species is scarce to extinct, making the Irish population of otters particularly important.

Table 3-5: Overview of sites designated for Annex II mobile species

SAC Name	Mobile Annex II Species	Overview of site relevant to QI
Rockabill to Dalkey Island SAC	*Phocoena phocoena* (Harbour porpoise) [1351]	The area selected for designation represents a key habitat for the Annex II species harbour porpoise (*Phocoena phocoena*) [1351], within the Irish Sea. The species occurs year-round within the site and comparatively high group sizes have been recorded. Porpoises with young (i.e. calves) are observed at favourable, typical reference values for the species. The site contains a wide array of habitats believed to be important for harbour porpoise including inshore shallow sand and mudbanks and rocky reefs scoured by strong current flow.
Lambay Island SAC	*Halichoerus grypus* (Grey seal) [1364] *Phoca vitulina* (Common seal) [1365]	Lambay supports the principal breeding colony of grey seal (*Halichoerus grypus*) [1364], on the east coast of Ireland, numbering 196-252 seals, across all ages. It also contains regionally significant numbers of common seal, of which up

		to 47 individuals have been counted at the site. Grey seals and common seals occur year around and the island's intertidal shorelines, coves and caves are used by resting and moulting seals.
North Anglesey Marine / Gogledd MÃ´n Forol SAC	*Phocoena phocoena* (Harbour porpoise) [1351]	North Anglesey Marine / Gogledd MÃ´n Forol SAC (3,249km2) is made up of marine areas and sea inlets (NRW, 2016a). According to JNCC (2019) the site supports an estimated 2.4% of the UK Celtic and Irish Seas Management Unit (MU) of harbour porpoise population and occurs within the top 10% of persistent high-density areas for harbour porpoise in UK waters for the summer season.
River Boyne And River Blackwater SAC	*Lampetra fluviatilis* (River lamprey) [1099] *Salmo salar* (Salmon) [1106] *Lutra lutra* (Otter) [1355]	The Boyne and its tributaries form one of Ireland's premier game fisheries and the area offers a wide range of angling, from fishing for spring salmon and grilse to seatrout fishing and extensive brown trout fishing. Atlantic salmon (*Salmo salar*) use the tributaries and headwaters as spawning grounds. The River Boyne is a designated Salmonid Water under the E.U. Freshwater Fish Directive. This site is important for the populations of two other species listed on Annex II of the EU Habitats Directive which it supports, namely River Lamprey (*Lampetra fluviatilis*), which is present in the lower reaches of the Boyne River, and otter (*Lutra lutra*), which can be found throughout the site.
Strangford Lough SAC	*Phoca vitulina* (Harbour Seal) [1365]	Strangford Lough SAC is a large (150 km^2) marine inlet on the east coast of County Down, its northern end lies some 15 km east of Central Belfast (6 km from the outskirts. The Lough supports an impressive range of marine habitats and communities with over 2,000 recorded species. It is important for marine invertebrates, algae and saltmarsh plants, for wintering and breeding wetland birds, and for marine mammals. The site also supports an Annex II species population of *Phoca vitulina* (common seal) [1365]. Common seals range around the shore of the UK and are the characteristic seal of sandflats and estuaries but are also found on rocky shores in Scotland. The vast majority of common seal haul-outs are found on the coasts of Scotland, but with an additional important concentration on The Wash, and a smaller number in Strangford Lough, Northern Ireland.
Murlough SAC	*Phoca vitulina* (Common seal) [1365]	The site adjoins Dundrum Bay in Co. Down and includes the shallow waters of the Bay itself, of importance as the largest area of shallow sub-littoral sandbanks in Northern Ireland. The inter-tidal sands and muds are also extensive, and the beach area at Ballykinler is important as a haul-out for Common Seal.
North Channel SAC	*Phocoena phocoena* (Harbour Porpoise) [1351]	Located along the eastern coast of Northern Ireland, the North Channel SAC has been identified as an important winter area for harbour porpoise *Phocoena phocoena*, supporting an estimated 1.2% of the UK Celtic and Irish Seas

		Management Unit (MU) population. Although small compared to most of the harbour porpoise SACs, this site, with an area of 1,604 km2, supports areas where large groups of up to 100 Harbour Porpoise have been sighted.

3.2.4 Annex V Species

Annex V of the Habitats Directive lists animal and plant species where Member States must ensure that their exploitation and taking in the wild is compatible with maintaining them in a favourable conservation status.

Salmon is also listed on Annex V of the Habitats Directive and has the potential to be in the survey area as smolts migrating from March to June and as adults migrating from March to August. The River lamprey is a migratory species and predominantly anadromous, breeding in freshwater as adults with offspring migrating to sea after a freshwater phase prior to maturation. Migration from the sea to freshwater occurs in October to December where they spawn in late March/April and then return to sea. Both species are migratory species that may be found in the Foreshore Licence Site Investigation Area at certain times of the year as indicated below in Table 3-6.

Table 3-6: Designated migratory species which may be present within the Foreshore Licence Site Investigation Area

Species	Period at which they may be present within the Foreshore Licence Site Investigation Area
***Lampetra fluviatilis* (River lamprey) [1099]**	September to June
***Salmo salar* (salmon) [1106]**	May to June and Autumn Months

3.3 Marine Mammals

Marine mammals present in the Foreshore Licence Site Investigation Area are restricted to cetaceans (whales, dolphins, and porpoises) and pinnipeds (seals). All cetaceans and pinnipeds are European Protected Species (EPS) under Annex IV of the Habitats Directive (92/43/EEC) which lists species of Community Interest in need of strict protection. It is an offence to deliberately capture, kill, injure, or disturb animals classed as EPS. These species are deemed in need of a strict protection regime across their entire natural range within the EU, both within and outside Natura 2000 sites. In addition, Irish territorial waters were declared a Whale and Dolphin Sanctuary in 1991.

Ireland has recorded 25 species of cetacean and 2 species of pinnipeds all of which are recognised as protected species under the EU Habitats Directive and the Irish Wildlife Act. Many of these 25 species have been recorded off the east coast and may be present in the offshore Foreshore Licence Site Investigation Area at least on a seasonal basis. According to Ireland Marine Atlas (2019a) the range of the following species is recorded in the Foreshore Licence Site Investigation Area and in surrounding waters: bottlenose dolphin, common dolphin, Risso's dolphin, harbour porpoise, fin whale, humpback whale, minke whale, common seal and grey seal.

<u>Bottlenose Dolphin</u>

Bottlenose Dolphins (*T. truncatus*) are a large, gregarious dolphin widely distributed around Ireland and found in tropical and temperate waters worldwide (Wall et al., 2013). Resident or semi-resident populations are known from the Shannon Estuary, Tralee Bay, the Mayo coast and Cork Harbour. There is evidence for the existence of a larger offshore ecotype (Mirimin et al., 2011)

Common Dolphin

The short-beaked Common Dolphin (*Delphinus delphis*) is the second most frequently reported species after the Harbour Porpoise and are the most abundant of all cetacean species recorded in Ireland (Berrow *et al.*, 2010). Surveys indicate a population of 40000 animals in Irish waters (Hammond et al., 2010) They are recorded from all shelf waters with concentrations off the South and South-west Coasts; lower numbers are recorded from deeper waters off the shelf edge (Wall et al., 2013).

Risso's Dolphin

Risso's Dolphin (*Grampus griseus*) in Ireland favour inshore waters and offshore Islands especially off Saltee Islands, Co. Wexford, the Cork coast and the Blasket Islands, Co. Kerry during the summer months, (Berrow et al., 2010) in contrast to deep-water habitats elsewhere in the world (Shirihai & Jarrett, 2006). They have been sighted in all areas and all seasons but there is an inshore peak in the spring. They are the most frequently sighted dolphin species in the Irish Sea (Berrow et al., 2010).

Harbour Porpoise

The Harbour Porpoise (*Phocoena phocoena)* is Ireland's smallest cetacean and is coastally distributed across the northern Pacific and Atlantic. Notwithstanding its small size and elusive nature, it is the marine mammal most frequently seen with sightings concentrated within 10 km of the coast (Berrow et al., 2010). SCANS II estimated a population of 15000 animals in the Irish Sea from a North-western European population of 385000 (Hammond et al., 2006).

Fin Whale

Fin Whales (*Balaenoptera physalus*) are the second-largest animal in the world after the blue whale (*Balaenoptera musculus)* and the largest baleen whale likely to be present close to shore off Ireland. Growing up to 24m in the North Atlantic their distribution is worldwide but concentrated in temperate waters (Shirihai & Jarrett, 2006). In Irish waters nearshore sightings cluster to the South of the country but they are well represented off the shelf edge in deeper waters too (Wall et al., 2013).

Humpback Whale

The Humpback Whale (*Megaptera novaeangliae*) is a large (11-16m) baleen whale with a global distribution (Shirihai & Jarrett, 2006). Sightings of the iconic humpback have increased over recent years in Irish waters with concentrations around the South and Southwest coasts, though all coasts are represented. The Irish photo-ID catalogue of unique Humpback Whale sightings currently comprises more than 100 animals (IWDG, 2020)

Minke Whale

Minke Whales (*Balaenoptera acutorostrata*) are the most common and widely distributed of the Baleen Whales in Ireland and the most likely to be encountered in shallow waters. The smallest of the Baleen Whales their length averages 8.5 metres. Usually encountered singly or in small groups, sightings are most frequent off the Irish coast in spring and autumn (Wall et al., 2013).

Grey Seal

Grey Seals (*Halichoerus grypus*) are the larger of the two seals resident in Irish waters. They are recorded from all coasts and in all seasons and have been sighted out to the edge of the continental shelf (Wall et al., 2013). Recent surveying by the NPWS reported in Morris and Duck (2019) indicates that the Grey Seal population is stable or increasing; 3698 individuals were counted.

Common Seal

Common Seal (*Phoca vitulina*), also known as harbour seal, are smaller animals (maximum length 2m). Favouring more sheltered coasts and a near-shore environment, over 4000 individuals were counted nationally in 2017/2018 (Morris & Duck 2019) and their population is considered stable.

3.4 Fisheries

3.4.1 Data Availability

The availability of information on fishery activity specifically related to fishing grounds and areas in Irish waters is dependent on the target species, fishing gear and the size of the vessels engaged in the fisheries. Broadly speaking good quality data are available for fish species which are managed via a quota system and are fished by larger vessels; conversely less data is available from smaller vessels targeting non-quota species.

Vessels >12 m are legally obliged to transmit VMS (Vessel Electronic Monitoring System) data and (with some exceptions) to submit logbooks of their catches; this information is collated by the Marine Institute (MI) to produce the Atlas of Commercial Fisheries which maps fishery activity. Vessels >12 m are legally required to transmit their position via VMS (Vessel Electronic Monitoring System) to the Fisheries Monitoring Centre (FMC) in Haulbowline Naval Base, Cork; In addition to transmitting their position via VMS they also electronically transmit onboard catch data (E.LOG) to the Sea Fisheries Protection Authority (SFPA). This data is filtered at a later stage by the Marine Institute and processed by the MI to screen out non-fishing activity which is done on the basis of vessel speed upper and lower parameters in combination with industry knowledge. The data is of low certainty for some fisheries due to the difficulties in relating vessel position at a given time with logbook records for individual species, also data from all fisheries other than otter trawling are considered indicative and not quantitative due to uncertainties around effort.

Vessels between 10 and 12m are not obligated to use a VMS however they are required to record their catch in log-books. Vessels <10 m are neither required to transmit VMS data nor to record their catches in logbooks. Information from this sector is derived from sales notes, the Bord Iascaigh Mhara (BIM) Inshore Sentinel Vessel Programme, the MI Observer Programme and industry knowledge. This

classification of vessel accounts for the majority of pot-fishing inshore fleet targeting crab, lobster, shrimp and whelks. Vessels <10m with a polyvalent licence may also target finfish with gillnets, jiggers and longlines. For vessels between 10-12 meters position data which is recorded in logbooks is only at the ICES (International Council for the Exploration of the Sea) Statistical Rectangle scale.

The Irish Groundfish Survey (IGFS) is an annual fisheries-independent trawl survey carried out by the MI in Irish waters to contribute to the assessment of commercial fish stocks and to feed data into the ICES stock assessments which in turn determine the size and allocation of European quotas. These data along with commercial catch data are published in the Irish Stock Book and are also available in mapping formats in Ireland's Marine Atlas. The IGFS does not survey the Irish Sea or the far north of the island, these data gaps are filled by the UK – Northern Ireland Groundfish Survey (NIGFS) and the UK – Scottish West Coast Groundfish Survey (SCOWCGFS) under the coordination of the ICES International Bottom Trawl Survey Working Group (IBTSWG).

3.4.2 Fishing Activity

Ireland's Marine Atlas (Ireland's Marine Atlas, 2019b) indicates that dredge fishing is identified on different parts of the Foreshore Licence Site Investigation Area as shown in Figure 3-5. Areas of pot fishing and net fishing are also identified in the inshore section of the Foreshore Licence Site Investigation Area. Distribution of different fishing methods adjacent to and overlapping the Foreshore License Application Area are presented in Figure 3-5. VMS data mapped in the Atlas of Marine Fisheries (Gerritsen & Kelly, 2019) indicates that most fisheries effort by vessels >12m is by otter trawlers targeting nephrops in the Irish Sea east of the foreshore license application area.

In addition, dredging for razor clams and cockles is common in the NISA site is huge. Operators within this fishery for this site have GPS/iVMS monitoring systems on board and data is very good on this fishery.

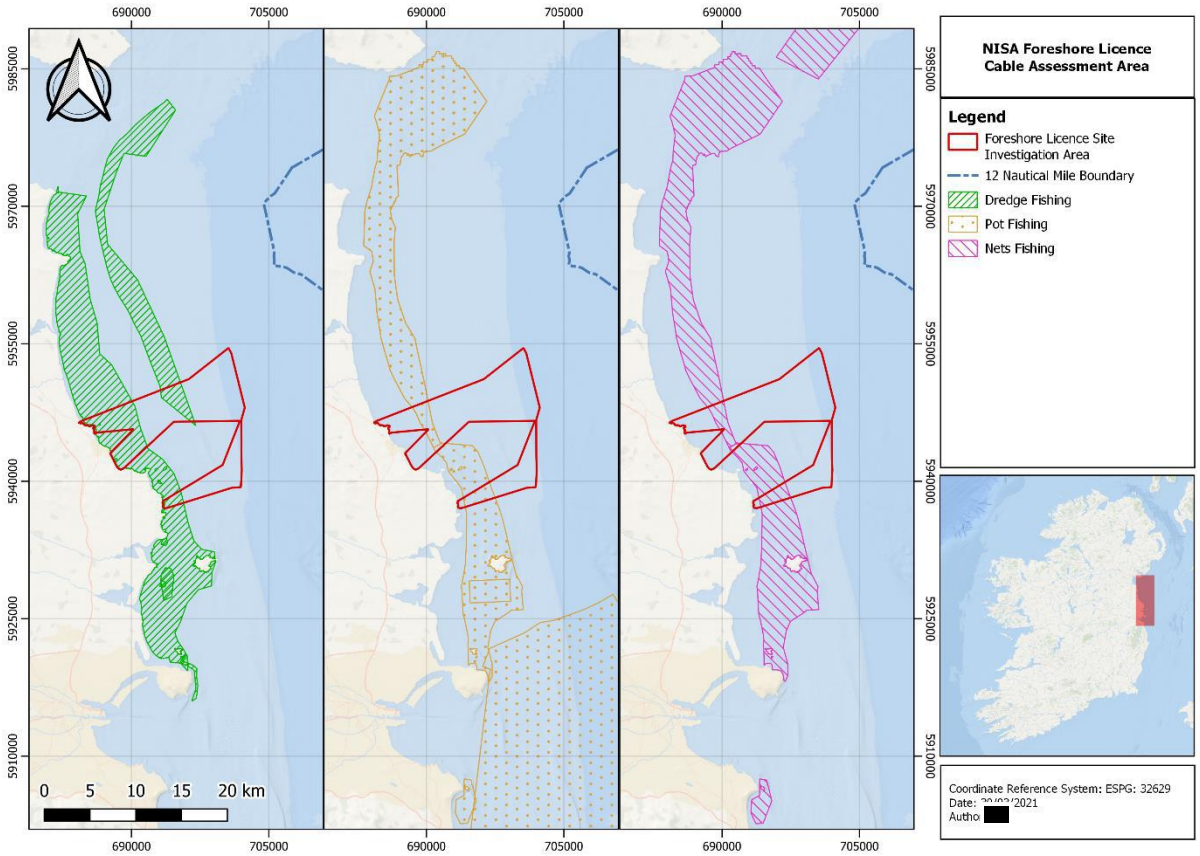

Figure 3-5: Commercial Fishing (Ireland Marine Atlas, 2019b)

Figure 3-6 presents shellfish waters in the vicinity of the Foreshore Licence Site Investigation Area showing that Balbriggan shellfish waters overlaps the area.

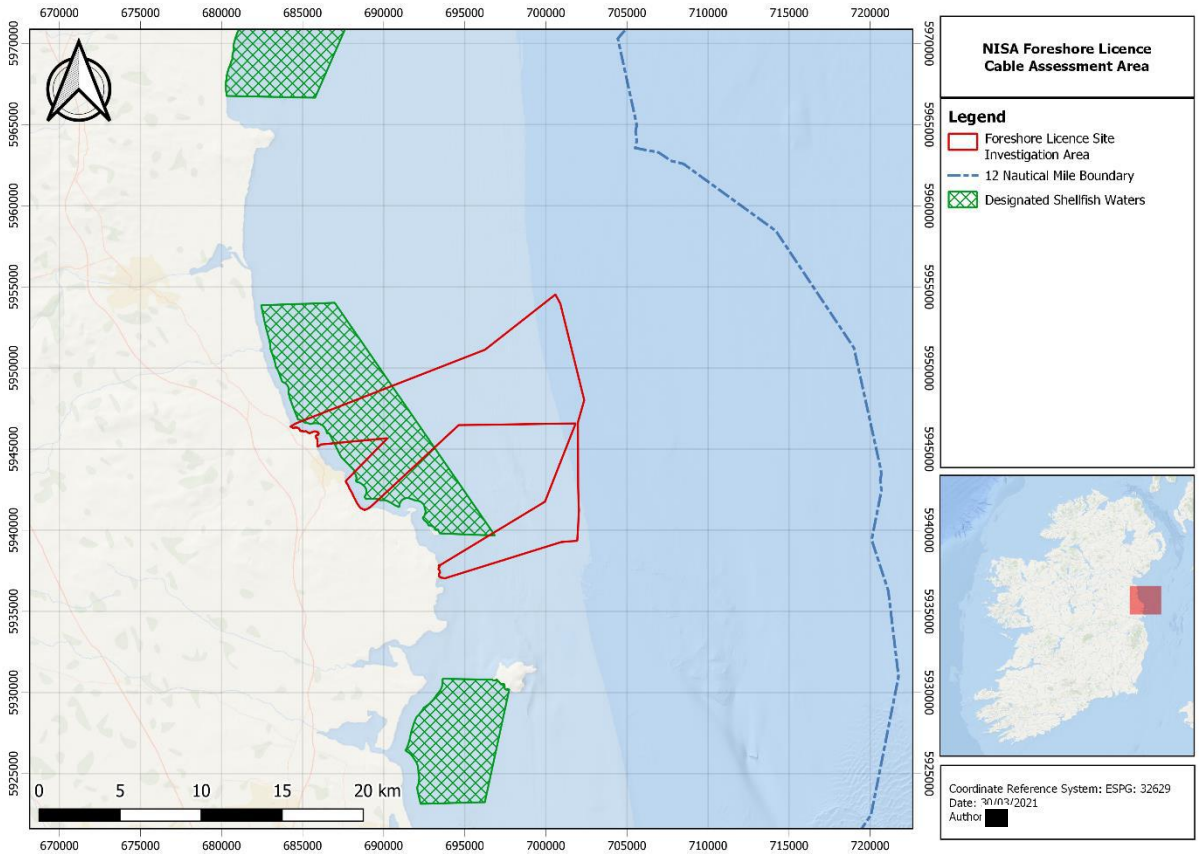

Figure 3-6: Shellfish Waters (DHLGH, 2014)

3.4.3 Fish Ecology

The Foreshore Licence Site Investigation Area overlaps with the nursery and spawning grounds of a number of commercial species of fish; Figure 3-7 shows overlap with herring nursery grounds along with whiting spawning and nursing grounds, Figure 3-8 shows overlap with mackerel nursery grounds along with haddock spawning and nursing grounds, Figure 3-9 shows overlaps with cod nursery and spawning grounds and Figure 3-10 presents the range of wild Atlantic Salmon in relation to the Foreshore Licence Site Investigation Area.

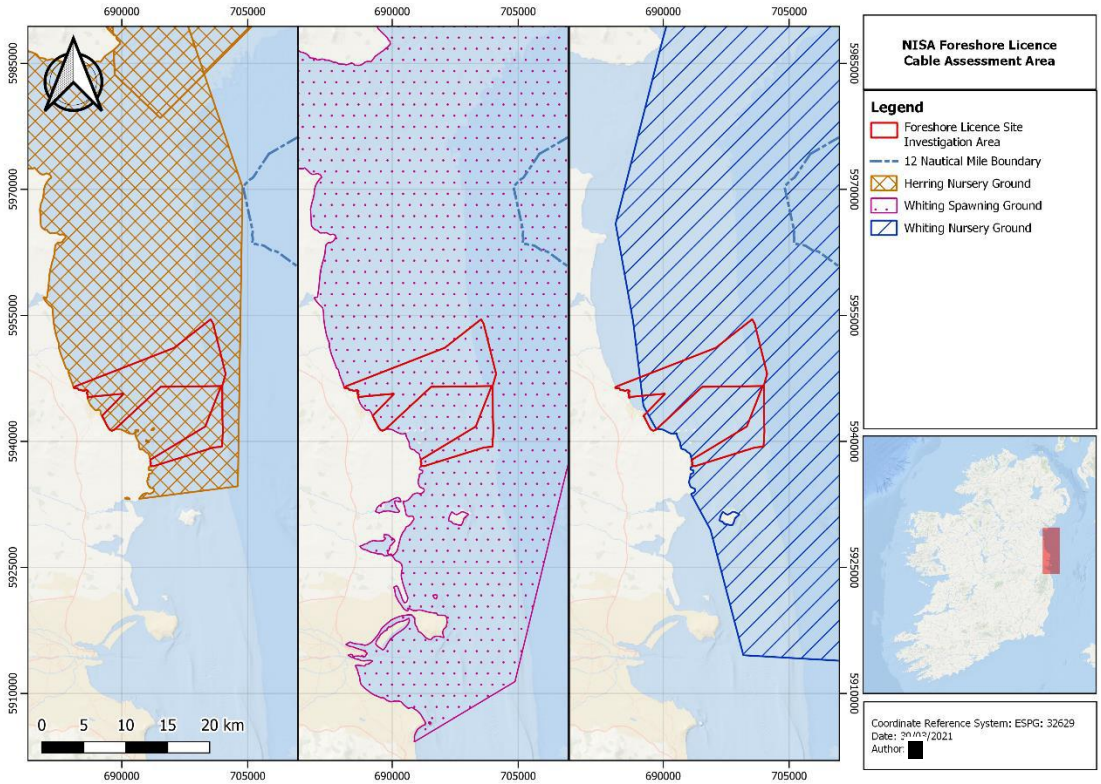

Figure 3-7: Herring Nursery Ground, Whiting Spawning and Nursing Ground (Ireland Marine Atlas, 2019b)

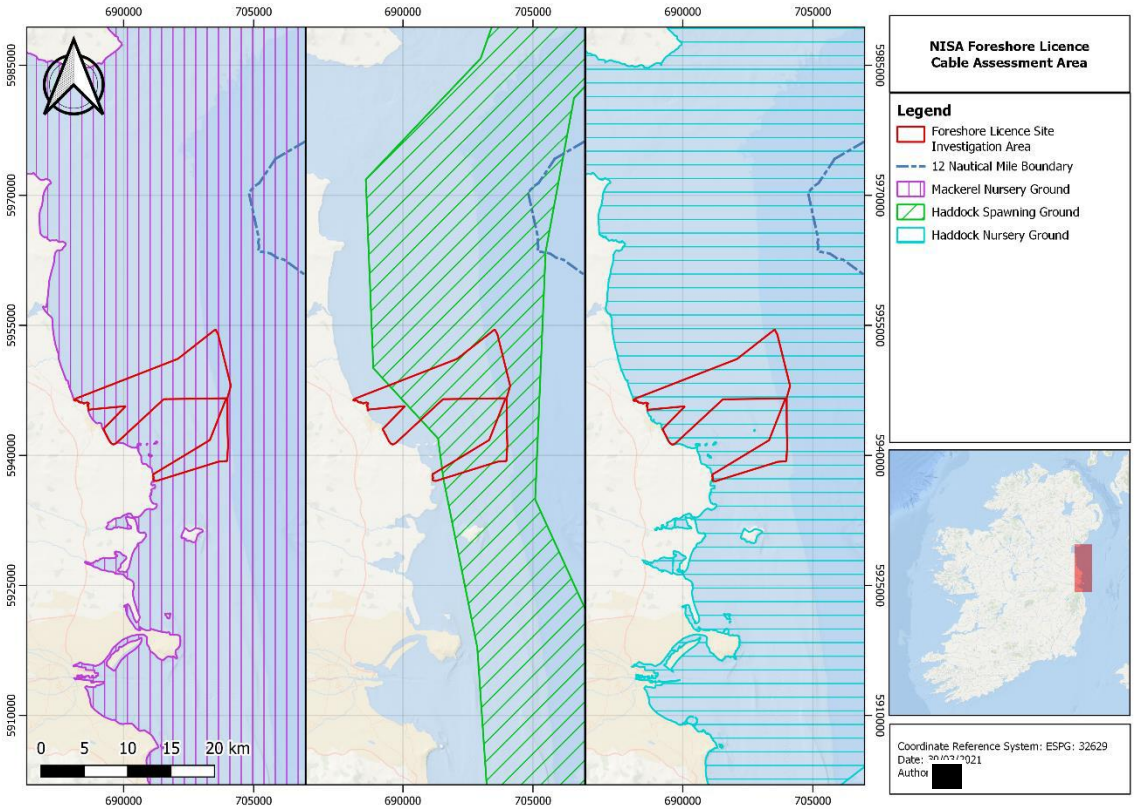

Figure 3-8: Mackerel Nursery Ground, Haddock Spawning and Nursing Ground (Ireland Marine Atlas, 2019b)

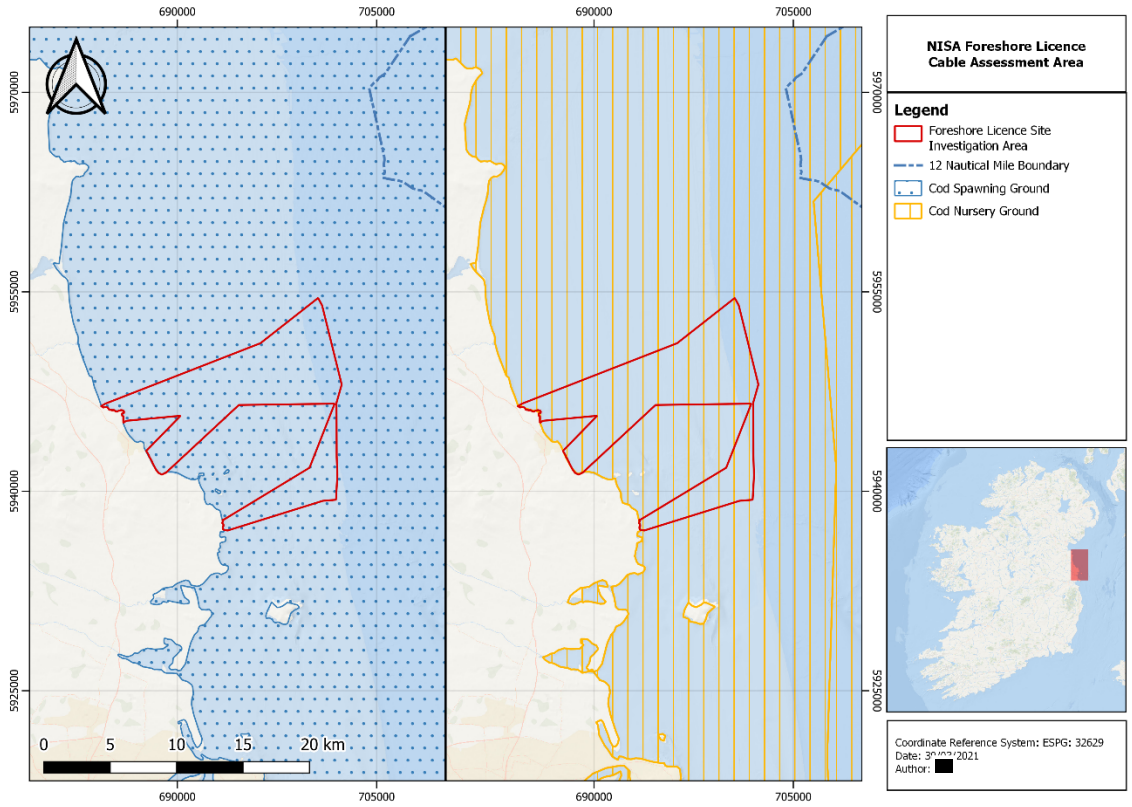

Figure 3-9: Cod Nursery and Spawning Grounds (Ireland Marine Atlas, 2019b)

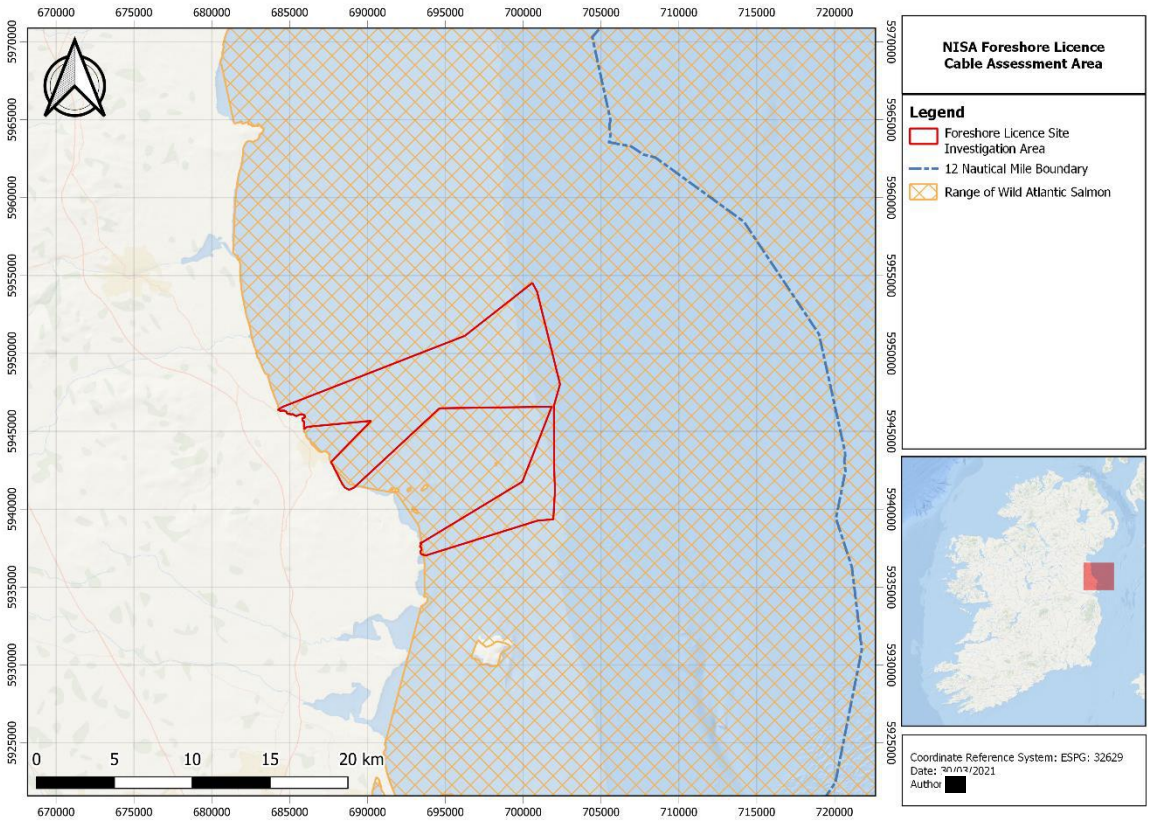

Figure 3-10: Wild Atlantic Salmon (Ireland Marine Atlas, 2019b)

3.5 Marine Traffic

The Irish Coastguard of the Department of Transport, Tourism and Sport (DTTAS) monitors the movement of vessels in Irish waters via an Automatic Identification System (AIS) for maritime transport safety and security. Figure 3-11 shows AIS data from the period from July 2018 to December 2018. The data is mapped on a 40 x 40 m grid and represented visually by the density of marine vessels over the six-month period.

The AIS data is temporally dynamic but it does highlight that most traffic trends in the Irish Sea are north south orientated. As shown in Figure 3-11, there is heavier vessel traffic observed at ports and harbours nearby.

Navigational channels within the site will be addressed through engagement with the relevant stakeholders including the Irish Coast Guard, local ports and harbours and users of the navigational channels, at the appropriate time, should site investigations planned for under this application together with a range of other studies indicate the feasibility of the development of an Offshore Wind Farm in this area.

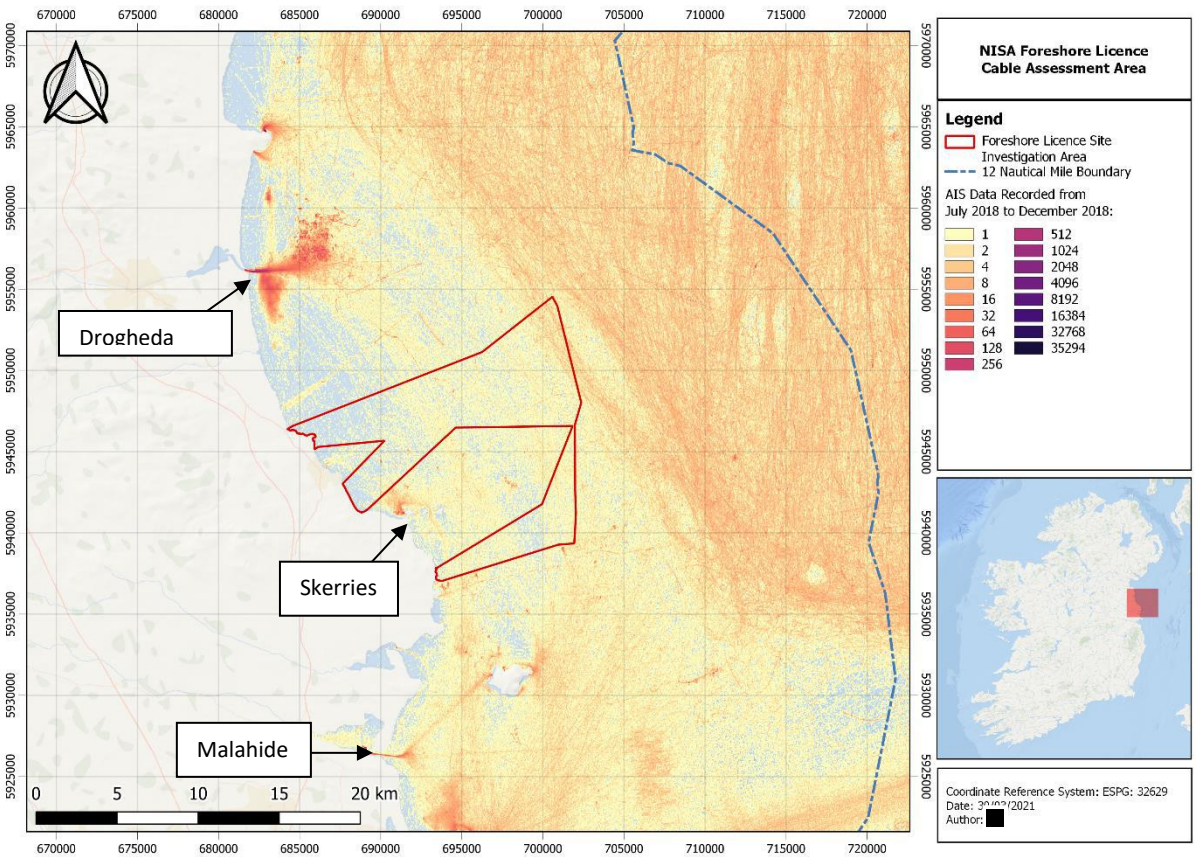

Figure 3-11: Coastguard AIS Traffic Frequency (DTTAS, 2018]

3.6 Subsea Infrastructure and Shipwrecks

Figure 3-12 shows that the 'Geo-Eirgrid' fibre optic submarine telecommunications cable system runs through the Foreshore Licence Site Investigation Area. One gas pipeline is located just south of Foreshore Licence Site Investigation Area, the Interconnector 1 Scotland to Ireland IC1 operated by Gas Networks Ireland and there are other additional cables further south, but these will not impact this Foreshore Licence Application.

Shipwreck data available through both the National Monuments Database and the INFOMAR project data is shown in Figure 3-13.

The National Monument Database identifies five shipwrecks within the Foreshore Licence Site Investigation Area. However, many of the wrecks from the National Monuments Database are unconfirmed unlike the INFOMAR data which has been recently confirmed through geophysical surveys. INFOMAR is a joint venture between the Geological Survey of Ireland and the Marine Institute surveying Ireland's seabed. Part of this involves the identification, mapping and archiving of shipwrecks in Irish waters. The INFOMAR shipwreck data shows that three shipwrecks are located within the Foreshore Licence Site Investigation Area.

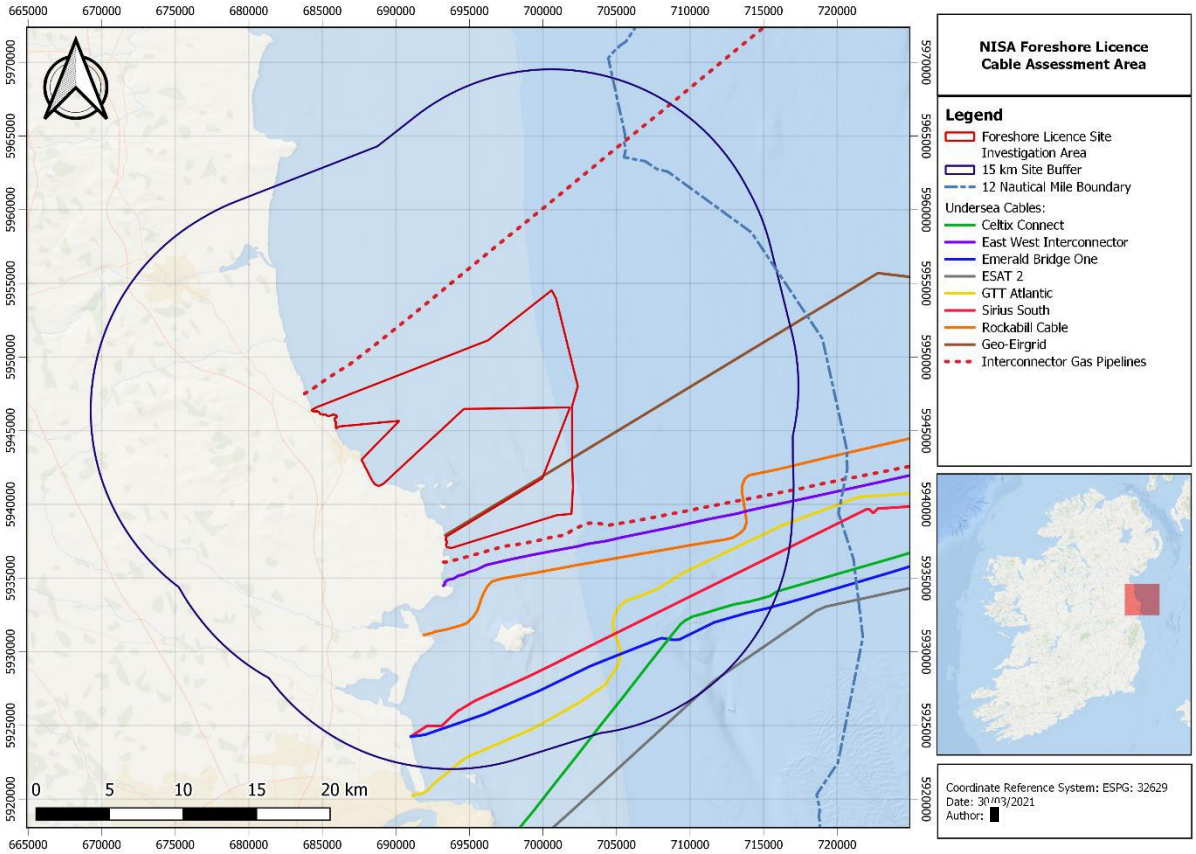

Figure 3-12: Plan of buried services adjacent and within the Foreshore Licence Site Investigation Area (Ref: Admiralty Chart)

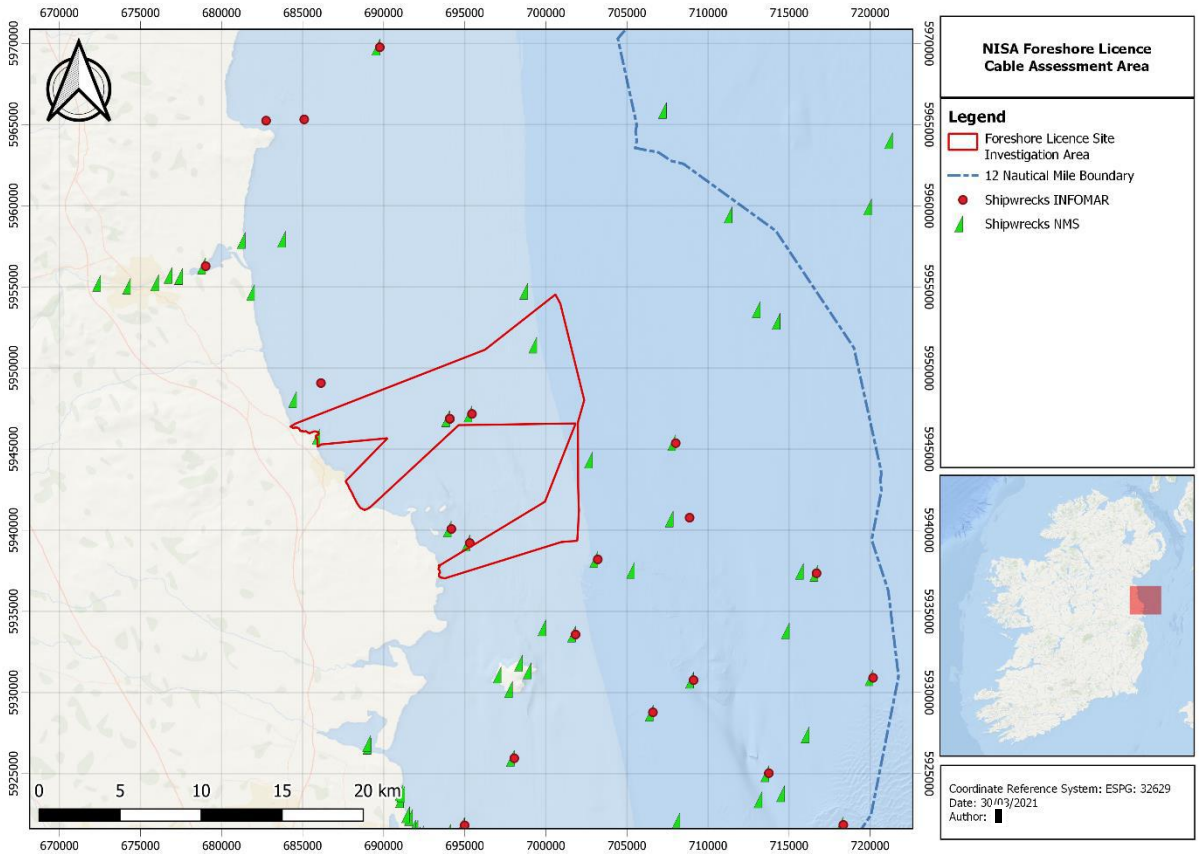

Figure 3-13: National Monument Service (NMS) and INFOMAR shipwreck data (NMS and INFOMAR, 2021)

3.7 Other Proposed Activities in the Area

A review of the DHLGH Foreshore License Applications and Determinations search tool (DHLGH, 2021), was undertaken for the surrounding area of the Foreshore Licence Site Investigation Area. Several applications for investigation licences pertaining to offshore developments are present in close proximity to the Foreshore Licence Site Investigation Area. Figure 3-14 shows the Foreshore License Area for the following applications:

- **Oriel Offshore Wind Farm (FS006840)** by Oriel Windfarm Limits including Geophyscial Surveys (MBES, magnetometer, SSS, SBP, UHRS), Geotechnical Surveys, Ecological and Metocean Surveys – Submitted October 2018.

  The application and determination documents are available at: https://www.gov.ie/en/foreshore-notice/0f8ec-oriel-windfarm-ltd/?referrer=http://www.gov.ie/en/publication/3f608-oriel-windfarm-ltd/

  Oriel Wind Farm area is located off the coast of county Louth, approximately 21.5km north of the Foreshore Licence Site Investigation Area. There is therefore not likely to be any interaction between the activities proposed under the two projects.

- **Cooley Point Offshore Wind Farm (FS006852**) by Hibernian Wind Power including Geophyscial Surveys (MBES, magnetometer, SBP, SSS), Geotechnical Surveys (grab samples, Cone Penetration Test, Vibrocore, boreholes) Ecological and Archaeological surveys – Submitted July 2018.

  The application and determination documents are available at: https://www.gov.ie/en/foreshore-notice/2e898-hibernian-wind-power-cooley-point-co-louth/?referrer=http://www.gov.ie/en/publication/d0e46-hibernian-wind-power-cooley-point-co-louth/

  Cooley Point Offshore Wind Farm is located of the coast off county Louth, approximately 4.62km north of the Foreshore Licence Application Area. There is no spatial or temporal overlap with the activities proposed under this application. There is therefore not likely to be any interaction between the activities proposed under the two projects.

- **Clogher Head Offshore Wind Farm (FS006787)** by Hibernian Wind Power including Geophyscial Surveys (MBES, magnetometer, SBP, SSS), Geotechnical Surveys (grab samples, Cone Penetration Test, Vibrocore) Ecological and Archaeological surveys – Submitted November 2017.

  The application and determination documents are available at: https://www.gov.ie/en/foreshore-notice/1d989-hibernian-wind-power-clogher-head/

  Clogher Head Offshore Wind Farm is located of the coast off county Louth, approximately 5.75 km north of the Foreshore Licence Application Area. There is no spatial or temporal overlap with the activities proposed under this application. There is therefore not likely to be any interaction between the activities proposed under the two projects.

- **Braymore Point Offshore Wind Farm (FS006973)** by SSE Renewables Ireland Limited including Geophyscial Surveys (MBES, magnetometer, SBP, SSS), Geotechnical Surveys (Cone Penetration Test, Vibrocore, boreholes), Wind Resource and Metocean Survey, Topography Survey and Environmental Survey – Submitted March 2019.

  The application documents are available at: https://www.gov.ie/en/foreshore-notice/7f010-sse-renewables-braymore-point/

  Braymore Point Offshore Wind Farm is located of the coast off county Dublin, Meath and Louth. There is spatial and possibly temporal overlap with the activities proposed under this Foreshore Licence Application Area.

- **Celtix Connect - Havhingsten Fibre Optic Telecommunication Cable (FS006915)** by Alcatel Submarine Networks for the installation of a telecommunications cable – Submitted January 2020.

The application documents are available at:
https://www.gov.ie/en/foreshore-notice/81926-celtix-connect-havhingsten-telecommunication-cable-dublin/?referrer=http://www.gov.ie/en/publication/5b49e-celtix-connect-havhingsten-telecommunication-cable-dublin/

Celtix Connect - Havhingsten Fibre Optic Telecommunication Cable installation is planned in Loughshinny co. Dublin. The proposed cable route of Celtix Connect overlaps spatially with the Foreshore Site Investigation Area. That application is at an advanced stage and the works will likely be complete well in advance of this licence being granted. The effects of those works have been deemed to be of temporary in nature and once the cable has been installed the cable burial channel will be returned to its original state. The as laid cable route will be avoided for any physically intrusive surveys as the export cable from the NISA site will not be laid over that cable.

- **PiPiper fibre optic cable (FS006762)** by PiPiper Infrastructure Limited for geophysical survey and localised site investigation for a submarine fibre optic cable – Submitted April 2017.

  The application documents are available at:
  https://www.gov.ie/en/foreshore-notice/14b70-pipiper-infrastructure-ltd/

  The PiPiper fibre optic cable is located off the coastline of county Meath and runs through the north-east corner of the Foreshore Site Investigation Area. This application was submitted in April 2017 however never progressed. There is therefore not likely to be any interaction between the activities proposed under the two projects.

- **North Irish Sea Array (NISA) Offshore Wind Farm Array Site (FS007031)** also by NISA Windfarm Limited including Geophysical Surveys, Geotechnical Surveys, Metocean Surveys, Ecology and Archaeological Survey – Submitted January 2020.

  The application documents are available at:
  https://www.gov.ie/en/foreshore-notice/75eec-fs007031-statkraft-north-irish-sea-array-nisa-site-investigations/?referrer=http://www.gov.ie/en/publication/cf656-fs007031-statkraft-north-irish-sea-array-nisa-site-investigations/

  North Irish Sea Array (NISA) Offshore Wind Farm Array Site is located off the coasts of counties Louth and Dublin and it is situated on the eastern boarder of the Foreshore Site Investigation Area.

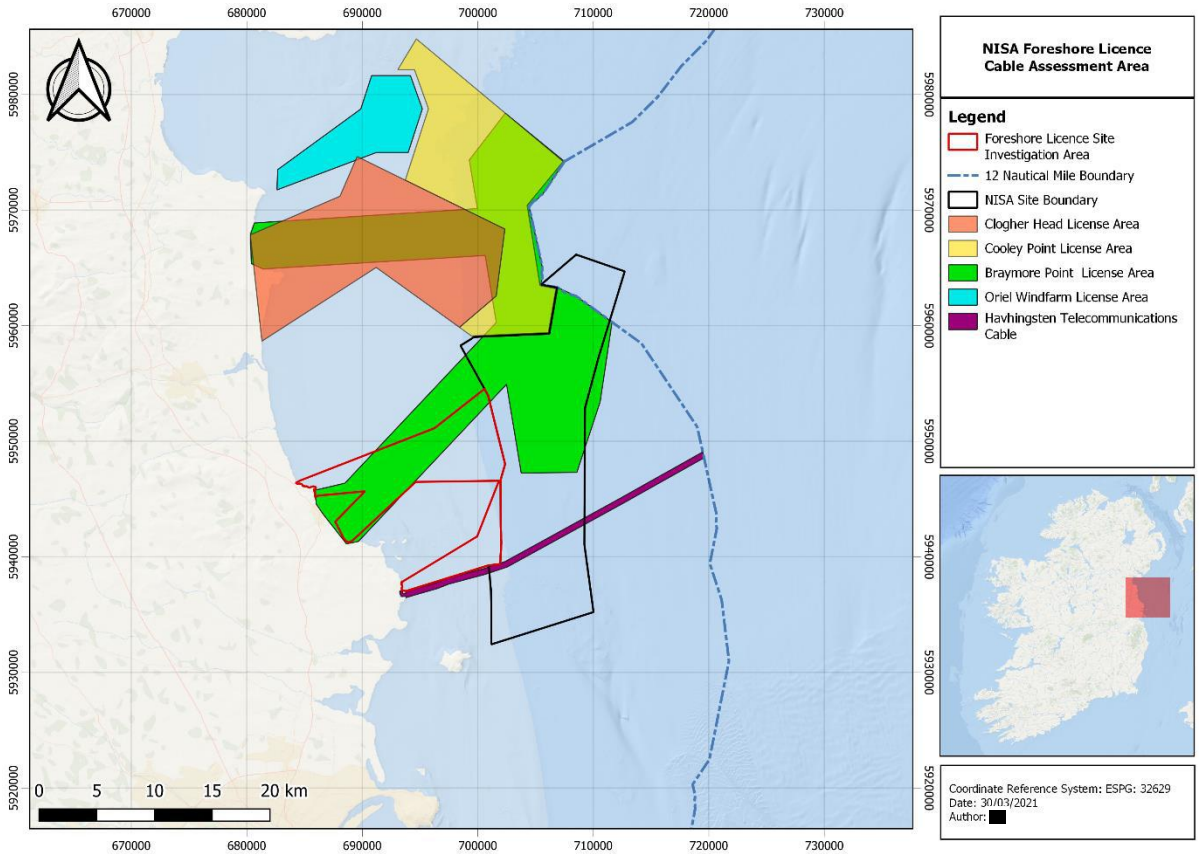

Figure 3-14: Proposed projects in close proximity to the Foreshore Licence Site Investigation Area

3.8 Dumping at Sea

A review of the EPA Dumping at Sea Register (EPA, 2021) was undertaken to identify dumping at sea activities. Any person who wishes to dispose of material at sea is required to apply for a Dumping at Sea permit. The Foreshore and Dumping at Sea (Amendment) Act 2009 empowers the Agency to decide on an application for a permit to dispose of material at sea. Dumping at Sea sites in close proximity to the Foreshore Licence Site Investigation Area are presented in Figure 3-15.

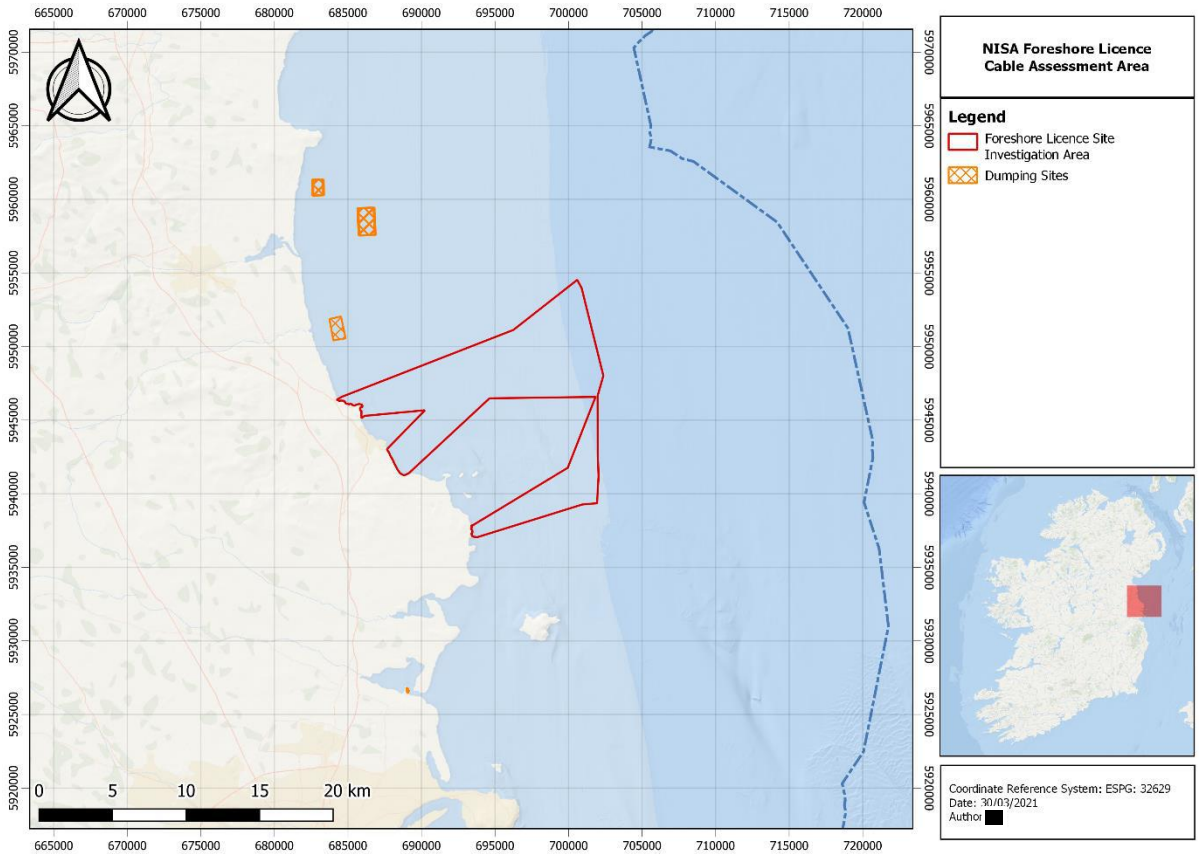

Figure 3-15: Dumping at Sea sites