An Roinn Tithíochta,
Rialtais Áitiúil agus Oidhreachta
Department of Housing,
Local Government and Heritage

APPROPRIATE ASSESSMENT REPORT FOR FORESHORE LICENCE APPLICATION – FST, SITE INVESTIGATIONS OFF THE COAST OF COUNTY GALWAY

Application No. FS007161

9th August 2023

Contents

Statement of Authority

This Appropriate Assessment screening report has been prepared by Yvonne Leahy.

Dr Yvonne Leahy is an experienced marine ecologist with a wide range of experience from conservation, developing quality index tool for Water Framework Directive, habitat mapping, aquaculture to deep water reef ecology. She completed a Ph.D. in the polychaete taxonomy and ecology in NUIG. Following which she undertook Post-Doctoral research on shallow water hydrothermal vent ecosystems in the Institute of Marine Biology of Crete. For the last 14 years she has worked with the National Parks and Wildlife Service as a marine ecologist where she developed the Site Specific Conservation objectives for all marine Special Areas of Conservation. In this position she also reviewed Appropriate Assessments for the Aquaculture Licences and drafted Departmental responses as part of the statutory consultations for this process. She has considerable experience in the Habitats Directive and Article 6 Assessments and the case law pertaining to them. With NPWS she developed and delivered Article 17 monitoring programmes for Annex I habitats and Annex V species. She is on the Natura 2000 Marine Expert Working Group, the OSPAR Benthic Habitats Expert Group and MSFD Integrated Monitoring Programme working group. She has been on a number of research steering groups including the NPWS/EPA co-funded CLEAR project on restoration of coastal lagoons, EcoSystem Services VIBES project and the Ecostructure project [https://www.ecostructureproject.eu].She has been Ireland's representative on the Marine and Coastal Biodiversity expert working group for the UN Convention on Biodiversity.

Section 1 Introduction

Article 6.3 of the Habitats Directive 92/43/EEC requires that any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect on it, either individually or in-combination with other plans or projects, must be assessed in view of the said site's conservation objectives. The competent authorities can agree to the plan or project only after having ascertained that it will not adversely affect the integrity of a European site and, if appropriate, after having obtained the opinion of the general public.

This process takes place is a four stage process in which Stage 1, screening process, determines if the proposed plan or project, either alone or in-combination with other plans or projects is likely to have significant effects on a European site in view of its conservation objectives. If significant effects are likely then a Stage 2 appropriate assessment must be undertaken by the competent authority using the Natura Impact Statement provided by the proponent of the plan or project.

A screening for Appropriate Assessment was carried out by the Department in November 2022. It was concluded that likely significant effects as a result of the proposed project could not be discounted for a number of European sites and therefore an Appropriate Assessment was required. This report represents the Appropriate Assessment of the activities that Fuinneamh Sceirde Teoranta (FST) which to carry out under the Foreshore Licence Application - FS007161.

1.1 Background

Fuinneamh Sceirde Teoranta (FST) are seeking a Foreshore Licence to carry out site investigation activities for the Sceirde Rocks Offshore Wind Farm located approximately 5km off the coast of County Galway. This work will provide a detailed understanding of the existing seabed and sub-seabed conditions. The overall area which is the subject of this application is 141km^2.

This Appropriate Assessment is being conducted in order to ascertain whether these site investigation activities, alone or in-combination with other plans or projects, will adversely affect the integrity of the European sites identified by Appropriate Assessment Screening process.

1.2 Application documents submitted

The following application documents were reviewed as part of this assessment:

i. Foreshore licence application to carry out site investigation activities for the Sceirde Rocks Offshore Wind Farm, Co. Galway 16/02/2022
ii. Site Layout Map 31/03/2022
iii. Sceirde Rocks Offshore Wind Farm Foreshore Licence Application 'Schedule of Activities' 22/02/2022
iv. Sceirde Rocks Offshore Wind Farm Foreshore Licence Application 'Report to inform AA Screening' 22/02/2022
v. Sceirde Rocks Offshore Wind Farm Foreshore Licence Application 'Environmental Assessment and EIA Screening Report' 22/02/2022
vi. Sceirde Rocks Offshore Wind Farm Foreshore Licence Area 'Natura Impact Statement' 14/04/23

These documents can be accessed at:
https://www.gov.ie/en/foreshore-notice/7a077-fuinneamh-sceirde-teoranta-site-investigations-for-the-proposed-sceirde-rocks-offshore-wind-farm/

1.3 Relevant consultation responses

An initial public consultation was undertaken as part of the foreshore licensing process between the 4th January 2023 and the 2nd February 2023. Notification of the Public Consultation details were published in the Irish Examiner, Clare Champion and the Connacht Tribune. And copies of the foreshore licence application and supporting documents, maps, plans and drawings were available for inspection at Clifden, Carna & Kilrush Garda Stations, Galway and Clare County Council Planning Departments and Clifden and Kilkee Libraries.

A second public consultation was held between the 30th January 2023 the 28th February 2023 to correct a typographical error in the public notices relating to the closure date and the reference numbers of the initial public consultation. Notification of the public consultation and copies of the documentation were available as per the first public consultation.

Following the Prescribed Bodies Consultation in January/February the Applicant submitted an updated Natura Impact Statement on the 14th April 2023. The updated Natura Impact Statement was examined by the Department's Marine Advisor Environment and deemed to contain sufficient additional information to require further public consultation. Therefore a Repeat Consultation period under Section 19 of the Foreshore Act 1933 and Regulation 42 of the European Communities (Birds and Natural Habitats) Regulations 2011 was carried out.

The repeat consultation was held between the 2nd May 2023 and the 31st May 2023. Notification of the public consultation and copies of the documentation were available as per the previous public consultations.

Thirty one public submissions were received during the first consultation and the second consultation. A further twenty eight public submissions were received during the repeat consultation period. These submissions and FST responses to them are listed in Section 3.5 of this report.

The prescribed bodies that responded had no objection, in principle, to the project and commentary submitted along with FST responses to them are also listed in Section 5 of this report. In summary, the prescribed body consultation did not raise any significant queries or provide any significant comments related to Appropriate Assessment or the protection of European sites.

1.4 Legislative context

Under the Foreshore Act 1933 (as amended) a lease or licence must be obtained from the Minister for Housing, Local Government and Heritage for the carrying out of works or placing of structures or material on, or for the occupation of or removal of material from State-owned foreshore. Foreshore is defined as from the High Water Mark to the 12nm limit.

The EU Habitats Directive (Council Directive 92/43/EC) and Birds Directive (2009/147/EC) are transposed into Irish law by the European Communities (Birds and Natural Habitats) Regulations 2011 (as amended) and by Part XAB of the Planning and Development Act 2000 (as amended). The 2011 Regulations outline the requirements for Screening for Appropriate Assessment and for Appropriate Assessment under Regulation 42:

42. (1) A screening for Appropriate Assessment of a plan or project for which an application for consent is received, or which a public authority wishes to undertake or adopt, and which is not directly connected with or necessary to the management of the site as a European Site, shall be carried out by the public authority to assess, in view of best scientific knowledge and in view of the conservation objectives of the site, if that plan or project, individually or in combination with other plans or projects is likely to have a significant effect on the European site.

(2) A public authority shall carry out a screening for Appropriate Assessment under paragraph (1) before consent for a plan or project is given, or a decision to undertake or adopt a plan or project is taken.

(6) The public authority shall determine that an Appropriate Assessment of a plan or project is required where the plan or project is not directly connected with or necessary to the management of the site as a European Site and if it cannot be excluded, on the basis of objective scientific information following screening under this Regulation, that the plan or project, individually or in combination with other plans or projects, will have a significant effect on a European site.

(9) Where a public authority is required to conduct an Appropriate Assessment pursuant to paragraph (6) in relation to a plan or project that it proposes to undertake or adopt, it shall:

(a) prepare a Natura Impact Statement,

(b) compile any other evidence including, but not limited to, scientific evidence that is required for the purposes of the Appropriate Assessment, and

(c) submit a Natura Impact Statement together with evidence compiled under subparagraph (b) to the Minister not later than six weeks before it proposes to adopt or undertake the plan or project to which the Natura Impact Statement and evidence relates.

(11) An Appropriate Assessment carried out under this Regulation shall include a determination by the public authority under this Regulation pursuant to Article 6(3) of the Habitats Directive as to whether or not a plan or project would adversely affect the integrity of a European site and the assessment shall be carried out by the public authority before a decision is taken to approve, undertake or adopt a plan or project, as the case may be.

(12) In carrying out an Appropriate Assessment under paragraph (11) the public authority shall take into account each of the following matters —

(a) the Natura Impact Statement,

(b) any other plans or projects that may, in combination with the plan or project under consideration, adversely affect the integrity of a European Site,
(c) any supplemental information furnished in relation to any such report or statement,
(d) if appropriate, any additional information sought by the authority and furnished by the applicant in relation to a Natura Impact Statement,
(e) any information or advice obtained by the public authority,
(f) if appropriate, any written submissions or observations made to the public authority in relation to the application for consent for proposed plan or project,
(g) any other relevant information.

Section 2 Description of proposed works

2.1 Site location

FST are seeking a foreshore licence to conduct site investigation activities for the Sceirde Rocks Offshore Wind Farm located off the coast of Galway (figure 1). The overall Foreshore Licence application Area is 141km^2.

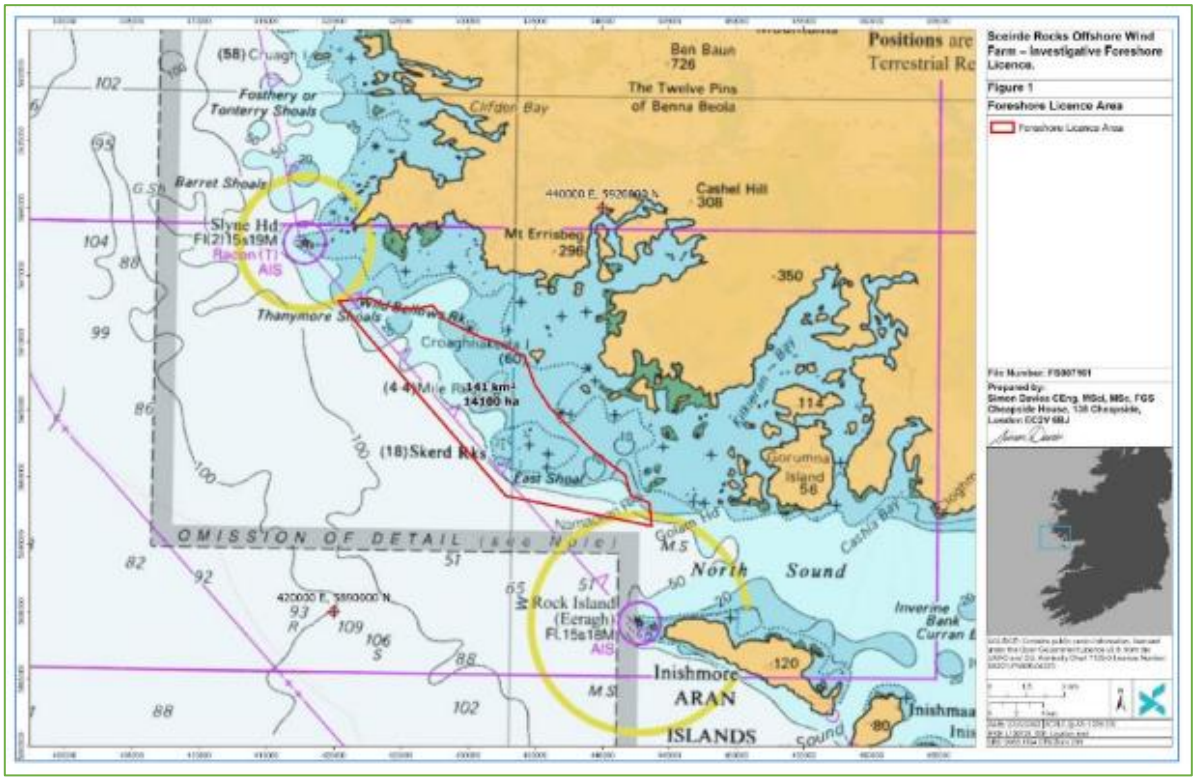

Figure 1 The Foreshore Licence Application Area for the array area of the proposed Sceirde Rocks Offshore Wind Farm.

2.2 Proposed site investigations

The Applicant has applied for a five year foreshore licence to carry out site investigations works. This will include geotechnical, geophysical, metocean, wind resource and benthic ecological surveys.

2.3 Description of the proposed survey works

2.3.1 Geotechnical survey

The aim of the geotechnical survey is to give a comprehensive view of the subsurface terrain. The primary geotechnical sampling to comprise of:

- Up to 60 boreholes which may include cable percussive or rotary coring techniques. Borehole depth will not exceed 70m
- Up to 60 seafloor Cone Penetration Tests (CPT)
- Shallow sampling, using Vibrocore techniques at up to 60 locations.

The geotechnical surveys will be performed at various water depths by either a Dynamic Positioning (DP) controlled, heave-compensated drillship, a Jack-up vessel, or by means of seabed drilling equipment.

Vessels will be fully equipped with ultra-short baseline (USBL) system for accurate positioning of boreholes. The survey methodology will comprise a combination of drilling techniques, such as cable percussive drilling, with follow-on rotary coring techniques.

2.3.1.1 Cable percussive drilling

This is a drilling technique to target seabed and sub-seabed sediments which overlie rock. This includes coarse-grained sediments such as sand and gravel, and fine-grained sediments such as clay and silt. Casing will be utilised to stabilise the borehole walls through the superficial sediment. Within coarse-grained sediments, percussive sampling, such as hammer samples, will be undertaken at regular intervals. In-situ standard penetration testing (SPT) will also be undertaken, generally alternating with percussive sampling. Bulk-disturbed and small-disturbed samples will be taken, where appropriate.

Within fine-grained sediments, hammer or push samples will be taken at regular intervals, alternating with SPT testing. Undisturbed, bulk disturbed and small disturbed samples are anticipated to be taken to enable a range of laboratory tests.

Samples will be appropriately preserved and stored prior to transportation to onshore laboratories for geotechnical testing. An offshore laboratory will also be provided on the vessel to enable classification and index testing to be undertaken, along with preliminary core and sample logging.

2.3.1.2 Rotary coring

Rotary coring is anticipated to comprise double or triple-tubed coring depending on the nature of the rock. The drilling operations typically utilise a drilling fluid to help flush drill cuttings from the bore, cool the drill bit and generally aid drilling performance; drilling fluids are typically certified for offshore use and may comprise biodegradable, miscible guar gum, or similar, and seawater.

The retrieved core is anticipated to be approximately 100mm in diameter but may potentially be reduced to 70mm. The majority of the underlying rocks are anticipated to be high-strength granitoid rocks, with minor zones of limestone around the southern margin.

The extracted rock core will be photographed, logged and sub-sampled offshore. Samples will be appropriately preserved and stored prior to transportation to onshore laboratories for geotechnical testing. Classification and index testing of the rock to be undertaken in the offshore laboratory.

2.3.1.3 Down-hole Testing including Acoustic Imaging

It is anticipated that some level of down-hole testing may be undertaken which could include video imaging, acoustic imaging and dilatometer testing. The purpose of down-hole acoustic imaging is to provide an image of the rock structure to determine the nature, orientation and spacing of any rock discontinuities within the Foreshore Licence Application Area.

The process involves sending an acoustic imaging camera down the borehole which takes a 360° image of the rock face. This can show features such as voids or fractures and can also give an indication of the orientation of discontinuities. The images can also be used to assess zones of core loss and adjust borehole logs accordingly.

Acoustic imaging requires a stable borehole and therefore requires casing through unstable surficial sediments and extension of casing to support deeper unstable zones. Acoustic imaging cannot be undertaken through the cased section of a borehole and therefore the

strategy for performing the survey may require modification based on the general nature of the rock encountered.

2.3.1.4 Shallow sampling

A combination of grab samples, vibrocores, and gravity cores may be used to determine the near surface sediment properties. These techniques would range from 0.5m to 6m penetration and would extract a shallow sample for further lab testing and visual description.

2.3.1.5 Cone Penetration Tests (CPT)

Seabed CPTs consist of a self-contained and automated CPT test unit housed within a seabed frame and connected to the DP vessel via a lift wire and data transfer umbilical. The frame is kept on deck of the DP vessel and deployed over the side using a dedicated Launch Recovery System (LARS) or through a moonpool. Once positioned on the seafloor the cone is pushed at a constant rate into the seabed until either target penetration is achieved or refusal reached. Refusal may be due to maximum thrust reached, excessive load experience on the tip or the sleeve, or excessive cone inclination.

The configuration of the CPT unit used for the preliminary survey will be defined by the target penetration depth. The maximum penetration depth anticipated for this Foreshore Licence Area is circa 50m, however final selection of the CPT unit will be determined on the basis of sediment thicknesses estimated from the geophysical survey data. This preliminary depth places this CPT site investigation within the category of deep seabed CPT testing which would require a 20 to 25 tonne CPT unit. CPT testing at these depths takes a few hours from unit deployment to recovery back on deck. Where the technical requirements are not met at a location the CPT unit may be lifted a small distance from the seabed and repositioned horizontally so that another test can be attempted.

2.3.1.6 USBL Specification and use

Ultra-short baseline (USBL) systems are used to determine the position of subsea survey equipment, towed devices and grab samplers. A USBL system consists of a transducer which is mounted on the vessel and a transponder attached to the deployed equipment. The transducer transmits acoustics through the water and the transponder sends a response which is detected by the transducer. The survey vessel will visit each individual borehole location in turn. Accurate positioning of the boreholes will be achieved using an USBL system. Transponders emit pulses of medium frequency sound. The peak sound pressure level (SPL) was estimated as 207 dB re 1 µPa at 1m for the Kongsberg HiPap 500 (Austin *et al.*, 2012).
Transmissions are not continuous but consist of short ‘chirps’ with a duration that ranges from 3 to 40 milliseconds. Transponders will not emit any sound when on standby. For general positioning and when lowering the seabed frame they will emit one chirp every five seconds. When required for precise positioning they will emit one chirp every second. Use of the USBL and beacon is expected to take from a few minutes to 1.5 hours per station depending on the water depth. Once the seabed frame is on the seabed, stationary and a final fix has been recorded, the USBL will be turned off.

2.3.1.7 Coring fluids and discharges

Borehole coring will be conducted using seawater with no added chemicals wherever possible. If coring fluids are required the most likely fluid to be used is an organic, biodegradable, high performance water-based mud (HPWBM). Bentonite will also be carried on board in case it is needed and this may sometimes be mixed with soda ash. All proposed coring fluid products are rated as PLONOR (posing little or no risk to the environment) and

contain only OCNS Gold/Silver, E or D rated chemicals. Final details of the coring fluids to be used will be known upon appointment of the survey contractor.
Only minimal amounts of cuttings will be discharged because 80 - 90% of the core is recovered for analysis. Cuttings that are discharged and will settle close to the seabed and are estimated to amount to <0.25m^3 per borehole.

The proposed geotechnical survey will take place for one to two months over several phases within the five year period.

2.3.2 Geophysical survey

Geophysical surveys are required to give a better understanding of water depths, topography and relief structure of the seabed and its subsurface structure. To inform the suitability of a cable corridor area and understanding the top ~5m is crucial.

The proposed geophysical survey programme will use a multibeam echosounder, side scan sonar, magnetometer and sub-bottom profiler. A seismic survey using a slightly higher energy source will be used only if sufficient depth data cannot be obtained using the sub-bottom profiler.

2.3.2.1 Multibeam Echosounder (MBES)

A Multibeam Echosounder system will be used to provide detailed bathymetric mapping throughout the survey area. MBES dual head system will be hull mounted. Operating frequencies for offshore array area are in the region of 200kHz (minimum) and can be up to 700kHz. MBES may be undertaken across the site to a suitable percentage cover.

2.3.2.2 Side Scan Sonar (SSS)

Side Scan Sonar is a sensor which is towed behind the vessel on an armoured tow cable. The SSS system will be used to provide detailed imagery of the seabed throughout the survey area which will aid with seafloor sediment/bedrock and geomorphology mapping as well as for identifying any shallow geohazards. The operating frequency range for the proposed project is between 300 to 900 kHz. SSS survey will be undertaken across the site to a suitable percentage cover.

2.3.2.3 Magnetometer

A magnetometer is a passive device that is towed behind a survey vessel. It is used to detect ferrous objects on the surface or in the subsurface. This work will be carried out alongside the SSS survey work.

2.3.2.4 Sub-bottom Profiler (SBP)

Shallow Sub-Bottom Profiling aims to create a 2-D image of the subsurface up to potential depths of approximately 10-50m below seabed. The SBP system will be used to determine the stratigraphy across the site and quantify the variability in the lateral and vertical extents to a depth of at least 50m below seabed. A typical SBP system is a hull-mounted pinger system with an expected operating frequency range of approximately 2-16kHz and sound pressure levels of 200dB re1µPa at 1 metre range. SBP survey will be undertaken across the site to a suitable percentage cover.

2.3.2.5 Ultra High Resolution Seismic

Higher energy seismic sources (boomer and sparker) may be used to determine the stratigraphy across the site and quantify the variability in the lateral and vertical extents to a depth of at least 50m below the seabed. A typical boomer source would have an expected operating frequency of approximately 2.5kHz with sound pressure levels in the range of 208-

215dB re1µPa at 1 metre range. A typical towed sparker system with sound pressure levels in the range of 204-216dB.

Multi-channel acoustic surveys using higher energy sources are used to image the subsurface and categorise sediment strata. These surveys can create ultra-high resolution 2D or 3D images of the subsurface whilst achieving greater depths than sub-bottom profiling systems. The intensity of the source can vary depending on the requirements of the survey. These surveys will only be used if sufficient depth data is not achieved with the use of the SBP method. This Ultra High Resolution Seismic survey will be undertaken across the site to a suitable percentage cover.

The geophysical surveys will take place for two to three months in several phases over the five year period.

2.3.3 Metocean survey

Metocean site investigations are used to evaluate the wave and current conditions across the Foreshore Licence Application Area. The data will be used to help define the design parameters of the Sceirde Rocks Offshore Wind Farm foundations, as well as the conditions to be expected during the installation and maintenance phases of the project. The site investigations will require the deployment of two wave buoys for a minimum 12 months but possibly up to 24 months.

The wave buoys are designed to follow movement at the water surface and gather the relevant wave data. Each wave buoy is anchored to the sea floor using a length of highly elastic rubber chord and suitably sized anchor structure. The elasticity of this chord allows the buoy to ride and follow the movement of the water surface. A real time data feed with a Global System for Mobile communications (GSM) and satellite communication system transmits the collected data from the buoy to a receiver station onshore. The wave buoy specifications include: an LED light for detection, an integrated datalogger, GPS position, a solar powered battery and an internal backup battery pack.

2.3.4 Wind Resource survey

Wind resource measurements are required to accurately estimate the wind conditions across the Sceirde Rocks Offshore Wind Farm site. The data collected will be used to assess the energy production from the wind farm, including daily and seasonal patterns. The wind data is also used as one of the inputs for the engineering design of the wind turbine, turbine layout and foundation structures.

The wind resource survey, using a floating LiDAR (FLS), will last a minimum of 12 months but could last more than 24 months. It is expected that there will be up to two wind measurement locations within the Foreshore Licence Application Area. Two FLS buoys will be deployed in this area in order to improve the accuracy of the wind resource estimates, as well as provide additional contingency.

Each FLS is usually a small, 2m to 3m diameter, buoy moored using a gravity anchor. It houses a LiDAR (Light Detection And Ranging) device which uses laser to measure wind speed and direction at a range of heights, up to 100m to 200m above the device. The buoy also houses the necessary processing equipment, power supply systems (solar panels, small scale wind turbine generators, and batteries), additional measurement systems required for the data monitoring (such as key metocean and atmospheric characteristics), as well as auxiliary

systems for marine navigation safety. The data is stored on the device and is also uploaded to a remote storage via a GSM or satellite link.

There are several FLS providers and the final design used for the measurement survey at Sceirde Rocks Offshore Wind Farm will be known following appointment of the survey contractor. The FLS would be deployed, serviced, and decommissioned using an installation vessel.

2.3.5 Benthic Ecological surveys

The purpose of the benthic ecological surveys is to identify the extent and distribution of marine benthic communities and habitats within the Foreshore Licence Application Area. The sample locations will be selected to ensure that samples are collected from different habitats to generate a representative overview of the benthos in the Foreshore Licence Application Area.

A drop down camera/Remotely Operated Vehicle (ROV), water column sampling and grab sampling will used to characterise the benthic communities. This will include intertidal and subtidal sediment and reef communities. For subtidal reef drop down camera or ROV and possibly supplemented diver survey will be used to characterise the community.

It is proposed that up to 40 grab sample stations (using day grab or van Veen grab) will be taken across the site. A stratified random sampling regime across the Foreshore Licence Application Area has been adopted to determine the baseline environment. Some of the proposed benthic grab stations will coincide with the proposed geotechnical borehole locations. The remainder will be spread across the area to include the range of depths and exposures present.

The benthic sampling will include up to four replicate grabs at each station. Three replicates will be used for macrofaunal analysis and the fourth will be sub-sampled for Particle size analysis (PSA) and organic carbon content. The replication of samples is proposed to provide a statistically robust macrofaunal data set to inform the environmental baseline and future monitoring.

A total of up to 160 grabs are expected to be taken each disturbing an area of $0.1m^2$. Therefore the total area of seabed that would be directly affected by the grab sampling regime will be $16m^2$. Where benthic sampling is not possible drop down video/camera analysis will be used to establish the benthic community present.

2.3.6 Survey Vessels

A range of vessels will be used to carry out the various surveys to be undertaken in the Foreshore Licence Application Area. Given the nature of the surveys the vessel will be slow moving.

The survey contractor vessels will comply with international and national statute as appropriate including but not limited to:

- European Communities (Birds and Natural Habitats) Regulations 2011;
- Sea Pollution Act 1991 and International Convention for the Prevention of Marine Pollution from Ships (MARPOL 73/78);
- Sea Pollution (Amendment) Act 1999 and International Convention on Oil Pollution Preparedness, Response and Co-operation 1990;
- S.I No. 372/2012 Sea Pollution (Prevention of Pollution by Garbage from Ships) Regulations 2012;

- S.I. No. 492/2012 Sea Pollution (Prevention of Pollution by Sewage from Ships) (Amendment) Regulations 2012; and
- SI. No. 507/2012 Merchant Shipping (Collision Regulations) (Ships and Water-Craft on the Water) Order 2012

2.3.7 Noise from survey works

Underwater noise generated as a result of the survey activities is given in table 1. Noise emissions associated with the survey vessels are continuous in nature. Use of a Dynamic Positioning (DP) system constitutes the greatest noise source for this type of vessel. Hartkin *et al.* (2011) found that source pressure levels reached a maximum of 170 dB within 1m of the trustors whilst the vessel was on DP.

The source noise levels for rotary coring is 165dB re 1µpa @1m and source noise levels for percussive drilling is 185dB re 1µpa @1m (Subacoustech Environmental Ltd, 2018).
Ultra-short baseline SBL system will be used to determine the position of equipment when it is deployed. It will be used on Remotely Operated Vehicles (ROVs), towed devices, grab samplers, etc. This involves the emission of sound from a vessel-mounted transducer to a subsea transponder. Transponders will not emit any sound when on standby. The USBL systems can be used either continuously or intermittently through the operation they are supporting. Transmissions are not continuous but consist of short 'chirps' with a duration that ranges from 3 to 40 milliseconds. For general positioning and when lowering the seabed frame, they will emit one chirp every five seconds. When required for precise positioning they will emit one chirp every second. Use of the USBL and beacon is expected to take from a few minutes to 1.5 hours per station depending on the water depth. Once the seabed frame is on the seabed, stationary and a final fix has been recorded, the USBL will be turned off.

Table 1 Summary of noise sources from Survey works from the Screening for Appropriate Assessment Report (Xodus, 2023)

Noise Source	Typical Frequency	Typical Sound Pressure Level (dB re 1µPa @ 1m)
USBL	19.5 – 33.5 kHz	207
Geotechnical Drilling	2Hz – 50kHz	160 - 185
Shipping Noise	<1 kHz	160 - 185
Multi-beam echo sounder	200 – 700kHz	200 - 228
Side Scan Sonar	300 – 900kHz	228
SBP (Pinger, Chirp, Parametric)	2 – 16kHz	200 - 226
UHRS (Sparker/Boomer)	2.5kHz	204-216/208-215

Section 3 Appropriate Assessment

3.1 Appropriate Assessment Screening

As the Consenting Authority for Foreshore Licensing and in line with Regulation 42.1 of the European Communities (Birds and Natural Habitats) Regulations 2011 (as amended) the Department carried out a screening for Appropriate Assessment for these site investigations off the coast of County Galway. All documents associated with this application can be viewed on the Department's website https://www.gov.ie/en/foreshore-notice/7a077-fuinneamh-sceirde-teoranta-site-investigations-for-the-proposed-sceirde-rocks-offshore-wind-farm/.

The source-pathway-receptor method was used to assess the potential for likely significant effects (OPR 2021). The source was identified as elements of the proposed project that may effects ecological receptors. The ecological receptors were the Qualifying Interests or Special Conservation Interests in European sites within the Zone of Influence. The Zone of Influence of the project is dependent on the species or habitat under consideration. Only marine and coastal Annex I habitats were considered in this screening process.

3.2 Identification of European sites likely to be affected

The Screening for Appropriate Assessment Report (DHLGH, 2022) identified 36 SACs and 2 SPAs which were considered to be within the Zone of Influence of the proposed project. The Annex II species, Salmon and four marine mammals, Harbour porpoise, Bottlenose dolphin, Grey seal and Harbour seal, were directly affected by underwater noise for geophysical and geotechnical surveys. The Freshwater Pearl Mussel was indirectly effected as it requires Salmon for its parasitic larval stage. The diving seabirds, Gannet and Guillemot, were also considered to be directly affected by the underwater noise produced during this activity as they are deep diving species.

The Qualifying Interests and Special Conservation Interests of these sites and the possible impact on them as result of the proposed project are given in tables 1 and 2, respectively.

3.2.1 Description of the Qualifying Interests effected

Marine Mammals

Harbour seal occurs in estuarine, coastal and offshore waters but also utilises a range of intertidal and terrestrial habitats for important life history functions such as breeding, moulting, resting and social activity. Its aquatic range for foraging and inter-site movement extends into continental shelf waters. When hauling out ashore harbour seals tend to prefer comparatively sheltered locations where there is minimal exposure to wind, wave action and precipitation. In Ireland therefore the species is more commonly found ashore in sheltered bays, inlets and enclosed estuaries. Harbour seals are vulnerable to disturbance during periods spent ashore or in shallow waters whether as individuals or groups. Times spent ashore occur immediately prior to and during the annual breeding season which takes place predominantly during the months of May to July. Pups are born on land, usually on sheltered shorelines, islets or skerries and uninhabited islands removed from the risk of predation and human interference. Pups are able to swim soon after birth and may be observed accompanying their mother close to shore in the early days or weeks of life. They are nursed for a period of several weeks by the mother prior to weaning and abandonment. During this period adult females mate with adult males, an activity that takes place in the water. Specific

established sites tend to be used annually for breeding-associated behaviour by adult males, adult females and their new-born pups. Harbour seal is a qualifying interest of Kilkieran Bay and Islands SAC (Table 1).

Grey seals occur in estuarine, coastal and offshore waters but also uses a range of intertidal and terrestrial habitats for important life history functions such as breeding, moulting, resting and social activity. Its aquatic range for foraging and inter-site movement extends predominantly into continental shelf and slope waters. Breeding occurs from August to December approximately, with moulting occurring from December to April. Grey seals are vulnerable to disturbance during periods in which time is spent ashore as individuals or in groups. This occurs immediately prior to and during the annual breeding season which takes place predominantly during the months of August to December. Pups are born on land, usually on remote beaches and uninhabited islands or in sheltered caves. They are nursed there for a period of several weeks by the mother prior to weaning and abandonment. Specific established sites are used annually for breeding-associated behaviour by adult females, adult males, new-born pups and weaned pups. During this period, adult females mate with adult males at or adjacent to these breeding sites. Grey seal is a qualifying interest of six SACs, Slyne Head Islands SAC, Inishbofin and Inishshark SAC, Duvillaun Islands SAC, Inishkea Islands SAC, Blasket Islands SAC and Slieve Tooey/Tormore Island/Loughros Beg Bay SAC (Table 1).

Harbour porpoise occurs in estuarine, coastal and offshore waters. Its distribution extends predominantly throughout continental shelf waters where it can range over many hundreds or thousands of kilometres. Group sizes tend to be small, commonly 2-3 individuals although larger aggregations may occasionally be recorded, particularly in the summer months. Harbour porpoise breeds annually in Ireland, the principal calving period in Irish waters is thought to occur in the months of May and June, although it may extend throughout the summer months and early autumn. New-born calves are weaned before they are one year old. Mating commonly occurs several weeks after the calving season. Harbour porpoise feeds on a wide variety of fish, cephalopod and crustacean species occurring in the water column or close to the seabed. Dive depths in excess of 200m have been recorded for the species. Foraging areas for harbour porpoise are often associated with areas of strong tidal current and associated eddies, and are commonly seen close to shore or adjacent to islands and prominent. Harbour porpoise is a qualifying interest in 27 SACs within the Celtic and Irish Seas management unit for this species (IAMMWG, 2015) (Table 1).

Bottlenose dolphin occurs in estuarine, coastal and offshore waters where it carries out breeding, foraging, resting, social activity and other life history functions. Distribution extends throughout continental shelf and slope waters and groups have also been recorded in waters more than 2,500m deep. Several resident coastal populations are described in western European waters, however individuals and/or groups of the species may also range over many hundreds or thousands of kilometres. Recently there have been records of a few individual dolphins ranging extensively through Irish coastal waters and into Northern Irish, Scottish and southern English waters. Groups of dolphins are present in the wider Connemara-Mayo region throughout the year and there is also repeated occurrence of known individuals within and between years indicating site fidelity. A genetic distinction exists between members of this population and populations occurring in the Shannon Estuary and offshore. The species breeds annually in Irish waters and indications are that the birth and early rearing of new-born calves takes place predominantly during the summer and early autumn months (i.e. May

to September). However female bottlenose dolphins do not produce a new calf each year and instead an average interval of 3-4 years or more between individual calving is described for the species. New-born calves depend primarily upon their mother's nutrient-rich milk for their first year and are generally weaned before they are two years old. Maternal investment in the growing juvenile typically continues until the birth of a new calf, while successful mating activity appears to take place primarily during the same season that calving is taking place. Bottlenose dolphin is a successful aquatic predator that feeds on a wide variety of fish (e.g. mackerel, horse mackerel, salmonids, gadoids, eels, flatfish and dogfish), cephalopods (e.g. squid) and occasionally crustacean species that occur in the water column or close to or within the seabed. Foraging areas for bottlenose dolphin are often associated with areas of strong tidal current and associated eddies, therefore foraging dolphins are often sighted close to shore or adjacent to cliffs, islands, prominent headlands and tidal narrows. Bottlenose Dolphin is a qualifying interest in four SACs, Slyne Head Islands SAC, Slyne Head Peninsula SAC, West Connacht Coast SAC and Duvillaun Islands SAC which are in the West Coast of Ireland management unit (IAMMWG, 2015) (Table 1).

Migratory fish and Freshwater Pearl Mussel

In Ireland juvenile salmon usually stay in rivers for two to three years before migrating to sea. Once there they migrate to their feeding grounds primarily off the coast of Greenland. After one or more winters at sea they migrate back to freshwater, arriving at the rivers in which they were born in spring or early summer. Salmon is a qualifying interest for Maumturk Mountains SAC, Connemara Bog Complex SAC and Twelve Bens/Garraun Complex SAC (Table 1) whose waterways connect to Kilkieran Bay northern east of the proposed survey area.

Sea Lamprey spend most of its adult life at sea, where they are widely dispersed and possibly feed in deeper offshore waters (OSPAR, 2009). They spawn annually in May to July in the lower reaches of large rivers, the adults die after spawning. After hatching larval lamprey drift downstream to find suitable substrate to burrow into, they spend several years in this juvenile state. After six to eight years they become free-swimming adults making their way downstream and to the sea. Sea lamprey are external parasites to fish including salmon. They spend up to three years at sea before returning back up the river to spawn in late May. Sea Lamprey is a qualifying interest of River Corrib SAC (Table 1).

Freshwater pearl mussel is an endangered species of bivalve which live on the beds of clean, fast flowing rivers where they can be buried partly or wholly in coarse sand or fine gravel. They have a complex life cycle in which they live for their first year on the gills of young Atlantic salmon or sea trout fish. Freshwater pearl mussel is a qualifying interest of Twelve Bens/Garraun Complex SAC (Table 1).

Table 1 The Special Areas of Conservation (SAC), their qualifying interests and the possible impacts of the proposed project on them. (Red text = screened-in).

European Site	Distance from survey area	Relevant qualifying interests	Possible Impacts
Kilkieran Bay and Islands SAC [Site code IE002111]	adjacent	Phoca vitulina (Harbour Seal) [1365]	Disturbance from underwater noise.
		Mudflats and sandflats not covered by seawater at low tide [1140] Coastal lagoons [1150] Large shallow inlets and bays [1160] Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] Mediterranean salt meadows (Juncetalia maritimi) [1410] Machairs (* in Ireland) [21A0] Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea [3130] Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis) [6510] Najas flexilis (Slender Naiad) [1833] Reefs [1170] Lutra lutra (Otter) [1355]	No possible impacts
Slyne Head Islands SAC [Site code IE000328]	3km	Tursiops truncatus (Common Bottlenose Dolphin) [1349] Halichoerus grypus (Grey Seal) [1364]	Disturbance from underwater noise.
		Reefs [1170]	No possible impacts
Slyne Head Peninsula SAC [Site code IE002074]	3km	Tursiops truncatus (Common Bottlenose Dolphin) [1349]	Disturbance from underwater noise.
		Coastal lagoons [1150] Large shallow inlets and bays [1160] Reefs [1170] Annual vegetation of drift lines [1210]	No possible impacts

European Site	Distance from survey area	Relevant qualifying interests	Possible Impacts
		Perennial vegetation of stony banks [1220] Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] Mediterranean salt meadows (Juncetalia maritimi) [1410] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120] Machairs (* in Ireland) [21A0] Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) [3110] Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea [3130] Hard oligo-mesotrophic waters with benthic vegetation of Chara spp. [3140] European dry heaths [4030] Juniperus communis formations on heaths or calcareous grasslands [5130] Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210] Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) [6410] Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis) [6510] Alkaline fens [7230] Petalophyllum ralfsii (Petalwort) [1395] Najas flexilis (Slender Naiad) [1833]	
Connemara Bog Complex SAC [Site code IE002034]	3km	Salmo salar (Salmon) [1106]	Disturbance from underwater noise.

European Site	Distance from survey area	Relevant qualifying interests	Possible Impacts
		Coastal lagoons [1150] Reefs [1170] Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) [3110] Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea [3130] Natural dystrophic lakes and ponds [3160] Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260] Northern Atlantic wet heaths with Erica tetralix [4010] European dry heaths [4030] Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) [6410] Blanket bogs (* if active bog) [7130] Transition mires and quaking bogs [7140] Depressions on peat substrates of the Rhynchosporion [7150] Alkaline fens [7230] Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] Euphydryas aurinia (Marsh Fritillary) [1065] Najas flexilis (Slender Naiad) [183] Lutra lutra (Otter) [1355]	No possible impacts
West Connacht Coast SAC [Site code IE002998]	9km	Tursiops truncatus (Common Bottlenose Dolphin) [1349]	Disturbance from underwater noise.
Twelve Bens/Garraun Complex SAC [Site code IE002031]	21km	Margaritifera margaritifera (Freshwater Pearl Mussel) [1029] Salmo salar (Salmon) [1106]	Direct and indirect disturbance from underwater noise.

European Site	Distance from survey area	Relevant qualifying interests	Possible Impacts
		Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) [3110] Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea [3130] Alpine and Boreal heaths [4060] Blanket bogs (* if active bog) [7130] Depressions on peat substrates of the Rhynchosporion [7150] Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani) [8110] Calcareous rocky slopes with chasmophytic vegetation [8210] Siliceous rocky slopes with chasmophytic vegetation [8220] Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] Lutra lutra (Otter) [1355] Najas flexilis (Slender Naiad) [1833]	No possible impacts
Lough Corrib SAC [Site code IE000297]	54km	Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) [3110] Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea [3130] Hard oligo-mesotrophic waters with benthic vegetation of Chara spp. [3140] Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260] Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210] Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) [6410]	No possible impacts

European Site	Distance from survey area	Relevant qualifying interests	Possible Impacts
		Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the Rhynchosporion [7150] Calcareous fens with Cladium mariscus and species of the Caricion davallianae [7210] Petrifying springs with tufa formation (Cratoneurion) [7220] Alkaline fens [7230] Limestone pavements [8240] Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] Bog woodland [91D0] Margaritifera margaritifera (Freshwater Pearl Mussel) [1029] Austropotamobius pallipes (White-clawed Crayfish) [1092] Lampetra planeri (Brook Lamprey) [1096] Rhinolophus hipposideros (Lesser Horseshoe Bat) [1303] Lutra lutra (Otter) [1355] Najas flexilis (Slender Naiad) [1833] Hamatocaulis vernicosus (Slender Green Feather-moss) [6216]	
		Petromyzon marinus (Sea Lamprey) [1095] Salmo salar (Salmon) [1106]	Disturbance from underwater noise.
Inishbofin and Inishshark SAC [Site code IE000278]	27km	Halichoerus grypus (Grey Seal) [1364]	Disturbance from underwater noise.

European Site	Distance from survey area	Relevant qualifying interests	Possible Impacts
		Coastal lagoons [1150] Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) [3110] Northern Atlantic wet heaths with Erica tetralix [4010] European dry heaths [4030]	No possible impacts
Maumturk Mountains SAC [Site code IE002008]	36km	Salmo salar (Salmon) [1106]	Disturbance from underwater noise.
		Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) [3110] Northern Atlantic wet heaths with Erica tetralix [4010] Alpine and Boreal heaths [4060] Blanket bogs (* if active bog) [7130] Depressions on peat substrates of the Rhynchosporion [7150] Siliceous rocky slopes with chasmophytic vegetation [8220] Salmo salar (Salmon) [1106] Najas flexilis (Slender Naiad) [1833]	No possible impacts
Duvillaun Islands SAC [Site code IE000495]	80km	Tursiops truncatus (Common Bottlenose Dolphin) [1349] Halichoerus grypus (Grey Seal) [1364]	Disturbance from underwater noise.
Inishkea Islands SAC [Site code IE000507]	81km	Halichoerus grypus (Grey Seal) [1364]	Disturbance from underwater noise.
		Machairs (* in Ireland) [21A0] Petalophyllum ralfsii (Petalwort) [1395]	No possible impacts
Blasket Islands SAC [Site code IE002172]	125km	Phocoena phocoena (Harbour Porpoise) [1351] Halichoerus grypus (Grey Seal) [1364]	Disturbance from underwater noise.
		Reefs [1170] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] European dry heaths [4030]	No possible impacts

European Site	Distance from survey area	Relevant qualifying interests	Possible Impacts
		Submerged or partially submerged sea caves [8330]	
Slieve Tooey/Tormore Island/Loughros Beg Bay SAC [Site code IE 000190]	114km	Halichoerus grypus (Grey Seal) [1364]	Disturbance from underwater noise.
		Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] Mediterranean salt meadows (Juncetalia maritimi) [1410] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Decalcified fixed dunes with Empetrum nigrum [2140] Atlantic decalcified fixed dunes (Calluno-Ulicetea) [2150] Dunes with Salix repens ssp. argentea (Salicion arenariae) [2170] Humid dune slacks [2190] Alpine and Boreal heaths [4060] Blanket bogs (* if active bog) [7130] Vertigo angustior (Narrow-mouthed Whorl Snail) [1014] Lutra lutra (Otter) [1355]	No possible impacts
Roaringwater Bay and Islands SAC [Site code IE000101]	228km	Phocoena phocoena (Harbour Porpoise) [1351]	Disturbance from underwater noise.
		Large shallow inlets and bays [1160] Reefs [1170] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] European dry heaths [4030] Submerged or partially submerged sea caves [8330]	No possible impacts

European Site	Distance from survey area	Relevant qualifying interests	Possible Impacts
		Lutra lutra (Otter) [1355] Halichoerus grypus (Grey Seal) [1364]	
Rockabill to Dalkey SAC [IE003000]	Within the MU for Harbour Porpoise	Phocoena phocoena (Harbour Porpoise) [1351]	Disturbance from underwater noise.
		Reefs [1170]	No possible impacts
North Anglesey Marine / Gogledd Môn Forol [UK 0030398]	Within the MU for Harbour Porpoise	Phocoena phocoena (Harbour Porpoise) [1351]	Disturbance from underwater noise.
Bristol Channel Approaches / Dynesfeydd Môr Hafren [UK0030396]	Within the MU for Harbour Porpoise	Phocoena phocoena (Harbour Porpoise) [1351]	Disturbance from underwater noise.
North Channel [UK 0030399]	Within the MU for Harbour Porpoise	Phocoena phocoena (Harbour Porpoise) [1351]	Disturbance from underwater noise.
West Wales Marine / Gorllewin Cymru Forol [UK 0030397]	Within the MU for Harbour Porpoise	Phocoena phocoena (Harbour Porpoise) [1351]	Disturbance from underwater noise.
Récifs et landes de la Hague [FR2500084]	Within the MU for Harbour Porpoise	Phocoena phocoena (Harbour Porpoise) [1351]	Disturbance from underwater noise.
Anse de Vauville [FR2502019]	Within the MU for Harbour Porpoise	Phocoena phocoena (Harbour Porpoise) [1351]	Disturbance from underwater noise.

European Site	Distance from survey area	Relevant qualifying interests	Possible Impacts
Banc et récifs de Surtainville [FR2502018]	Within the MU for Harbour Porpoise	Phocoena phocoena (Harbour Porpoise) [1351]	Disturbance from underwater noise.
Chausey [FR2500079]	Within the MU for Harbour Porpoise	Phocoena phocoena (Harbour Porpoise) [1351]	Disturbance from underwater noise.
Baie du Mont Saint-Michel [FR2500077]	Within the MU for Harbour Porpoise	Phocoena phocoena (Harbour Porpoise) [1351]	Disturbance from underwater noise.
Estuaire de la Rance [FR5300061]	Within the MU for Harbour Porpoise	Phocoena phocoena (Harbour Porpoise) [1351]	Disturbance from underwater noise.
Baie de Lancieux, Baie de l'Arguenon, Archipel de Saint Malo et Dinard [FR5300012]	Within the MU for Harbour Porpoise	Phocoena phocoena (Harbour Porpoise) [1351]	Disturbance from underwater noise.
Cap d'Erquy-Cap Fréhel [FR5300011]	Within the MU for Harbour Porpoise	Phocoena phocoena (Harbour Porpoise) [1351]	Disturbance from underwater noise.
Baie de Saint-Brieuc – Est [FR5300066]	Within the MU for Harbour Porpoise	Phocoena phocoena (Harbour Porpoise) [1351]	Disturbance from underwater noise.
Tregor Goëlo Est [FR5300010]	Within the MU for Harbour Porpoise	Phocoena phocoena (Harbour Porpoise) [1351]	Disturbance from underwater noise.
Côte de Granit rose-Sept-Iles [FR5300009]	Within the MU for Harbour Porpoise	Phocoena phocoena (Harbour Porpoise) [1351]	Disturbance from underwater noise.

European Site	Distance from survey area	Relevant qualifying interests	Possible Impacts
Nord Bretagne DH [FR2502022]	Within the MU for Harbour Porpoise	Phocoena phocoena (Harbour Porpoise) [1351]	Disturbance from underwater noise.
Baie de Morlaix [FR5300015]	Within the MU for Harbour Porpoise	Phocoena phocoena (Harbour Porpoise) [1351]	Disturbance from underwater noise.
Abers - Côte des legends [FR5300017]	Within the MU for Harbour Porpoise	Phocoena phocoena (Harbour Porpoise) [1351]	Disturbance from underwater noise.
Ouessant-Molène [FR5300018]	Within the MU for Harbour Porpoise	Phocoena phocoena (Harbour Porpoise) [1351]	Disturbance from underwater noise.
Côtes de Crozon [FR5302006]	Within the MU for Harbour Porpoise	Phocoena phocoena (Harbour Porpoise) [1351]	Disturbance from underwater noise.

3.2.2 Description of the Species of Conservation Interest affected

Two species of seabird, Guillemot and Cormorant, where identified as likely to be significantly affected by the underwater noise from underwater noise as a result of the proposed survey.

Guillemots comes ashore to nest from May onwards. They nest amongst boulders at the base of cliffs, in rock crevices and in man-made structures, such as piers. They may nest singularly and in loose colonies. Nest sites are deserted by the first week in August. They winter in the vicinity of their breeding sites and can be seen inshore throughout the year. They feed on fish and crustaceans. Guillemot is a Species of Conservation Interest of Inishmore SPA which it utilises as breeding site. (Table 2).

Cormorants breed on stacks, rocky islets, cliffs or rocky promontories. Primarily a ground nesting coastal breeding bird but new colonies have established on trees associated with inland wetlands. Timing of breeding in Cormorants can differ between individuals in the same colony but is largely between April and July. Winters at sea and inland. They feed on fish and are deep divers capable of diving from the sea surface to around 6m for 30 seconds at a time. Cormorant is a Species of Conservation Interest of Connemara Bod Complex SPA where it uses Lough Scannive as a breeding site (Table 2).

European Site	Distance from survey area	Relevant qualifying interests	Possible Impacts
Inishmore SPA [IE004152]	4km	Kittiwake [A188] Arctic Tern [A194] Little Tern [A195]	No disturbance from an additional vessel in busy maritime area.
		Guillemot [A199]	Disturbance from underwater noise.
Connemara Bog Complex SPA [IE004181]	4km	Golden Plover [A140] Common Gull [A182] Merlin [A098]	No disturbance from an additional vessel in busy maritime area. No connectivity between the principle supporting habitat of Merlin and the proposed project
		Cormorant [A017]	Disturbance from underwater noise.

Table 2 The Special Protection Areas (SPA), their Special Conservation Interest and the possible impacts of the proposed project on them (Red text = screened-in).

3.2.3 Conservation Objectives of Species likely to be affected

Conservation objectives are intended to define as precisely as possible the desired state or degree of conservation to be reached in a particular site. The measures taken under the Habitats Directive are to ensure that the species and habitats listed in the Annexes achieve Favourable Conservation Status. The objective of the Birds Directive is formulated slightly differently but the ambition is the same.

The Favourable Conservation Status of a species is achieved when:

- the population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats

- the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future
- there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term bases.

The most recent Article 17 report on the conservation status of the Annex II species The Annex II species likely to be affected by the proposed project

The site specific conservation objectives for the qualifying interests which were identified to be carried forward to stage 2 Appropriate Assessment in the screening process and their Conservation Status (2013-2018) are presented in table 3. Site specific conservation objectives were not available for Harbour Porpoise at the French sites or for Bottlenose Dolphin at Slyne Head Islands SAC, Slyne Head Peninsula SAC and Duvillaun Islands SAC. In the absence of conservation objectives it is assume as a minimum that the objective is to ensure that the habitat of species is significantly present on the site does not deteriorate below the current level and that the species is not significantly disturbed.

Table 3 The conservation objectives of Annex II species and their national conservation status (2013-2018). [Full site specific conservation objectives in section 4].
*denotes were site specific conservation objectives were not available at time of writing.

Site Name and Qualifying Interest	Conservation Objective	Conservation Status[1] (2013-2018)
Kilkieran Bay and Islands SAC IE002111 Harbour Seal [1365]	To maintain the favourable conservation condition of Harbour Seal in Kilkieran Bay and Islands SAC	Favourable
Slyne Head Islands SAC IE000328 Grey Seal [1364] Common Bottlenose Dolphin [1349]*	To maintain the favourable conservation condition of Grey Seal in Slyne Head Islands SAC.	
Slyne Head Peninsula SAC IE002074 Common Bottlenose Dolphin [1349] *		
Connemara Bog Complex SAC IE002034 Salmon [1106]	To restore the favourable conservation condition of Atlantic Salmon in Connemara Bog Complex SAC.	
West Connacht Coast SAC IE002998 Common Bottlenose Dolphin [1349]	To maintain the favourable conservation condition of Common Bottlenose Dolphin in West Connacht Coast SAC	
Lough Corrib SAC IE000297 Freshwater Pearl Mussel [1029] Sea Lamprey [1095]	To restore the favourable conservation condition of Freshwater Pearl Mussel in Lough Corrib SAC To restore the favourable conservation condition of Sea Lamprey in Lough Corrib SAC	Unfavourable Bad

[1] https://eunis.eea.europa.eu/species

Site Name and Qualifying Interest	Conservation Objective	Conservation Status[1] (2013-2018)
Salmon [1106]	To maintain the favourable conservation condition of Salmon in Lough Corrib SAC	Unfavourable Inadequate
Twelve Bens/Garraun Complex SAC IE002031 Freshwater Pearl Mussel [1029]	To restore the favourable conservation condition of Freshwater Pearl Mussel in The Twelve Bens/Garraun Complex SAC. To maintain the favourable conservation condition of Atlantic Salmon in The Twelve Bens/Garraun Complex SAC.	Unfavourable Bad
Inishbofin and Inishshark SAC IE000278 Grey Seal [1364]	To maintain the favourable conservation condition of Grey Seal in Inishbofin and Inishshark SAC.	Favourable
Maumturk Mountains SAC IE002008 Salmon [1106]	To maintain the favourable conservation condition of Atlantic Salmon in Maumturk Mountains SAC.	Unfavourable Inadequate
Duvillaun Islands SAC IE000495 Grey Seal [1364] Common Bottlenose Dolphin [1349]*	To maintain the favourable conservation condition of Grey Seal in Duvillaun Islands SAC	Favourable
Inishkea Islands SAC IE000507 Grey Seal [1364]	To maintain the favourable conservation condition of Grey Seal in Inishkea Islands SAC.	
Blasket Islands SAC IE002172 Harbour Porpoise [1351] Grey Seal [1364]	To maintain the favourable conservation condition of Harbour Porpoise in Blasket Islands SAC. To maintain the favourable conservation condition of Grey Seal in Blasket Islands SAC.	
Slieve Tooey/Tormore Island/Loughros Beg Bay SAC IE000190 Grey Seal [1364]	To maintain the favourable conservation condition of Grey Seal in Slieve Tooey/Tormore Island/Loughros Beg Bay SAC.	
Roaringwater Bay and Islands SAC IE000101 Harbour Porpoise [1351]	To maintain the favourable conservation condition of Harbour Porpoise in Roaringwater Bay and Islands SAC.	
Rockabill to Dalkey SAC IE003000 Common Bottlenose Dolphin [1349]	To maintain the favourable conservation condition of Harbour porpoise in Rockabill to Dalkey Island SAC.	
North Anglesey Marine SAC UK0030398 Harbour Porpoise [1351]	To ensure that the integrity of the site is maintained and that it makes the best possible	

Site Name and Qualifying Interest	Conservation Objective	Conservation Status[1] (2013-2018)
	contribution to maintaining Favourable Conservation Status (FCS) for Harbour Porpoise in UK waters.	
Bristol Channel Approaches SAC UK003039 Harbour Porpoise [1351]	To ensure that the integrity of the site is maintained and that it makes the best possible contribution to maintaining Favourable Conservation Status (FCS) for Harbour Porpoise in UK waters.	
North Channel SAC UK0030399 Harbour Porpoise [1351]	To ensure that the integrity of the site is maintained and that it makes the best possible contribution to maintaining Favourable Conservation Status (FCS) for Harbour Porpoise in UK waters.	
West Wales Marine SAC UK0030397 Harbour Porpoise [1351]	To ensure that the integrity of the site is maintained and that it makes the best possible contribution to maintaining Favourable Conservation Status (FCS) for Harbour Porpoise in UK waters.	
Récifs et landes de la Hague SAC FR2500084 Harbour Porpoise [1351]*		Unfavourable Bad
Anse de Vauville SAC FR2502019 Harbour Porpoise [1351]*		
Banc et récifs de Surtainville SAC FR2502018 Harbour Porpoise [1351]*		
Chausey SAC FR2500079 Harbour Porpoise [1351]*		
Tregor Goëlo Est FR5300010 Harbour Porpoise [1351]*		
Côte de Granit rose-Sept-Iles SAC FR5300009 Harbour Porpoise [1351]*		
Nord Bretagne DH SAC FR2502022 Harbour Porpoise [1351]*		
Baie de Morlaix SAC FR5300015 Harbour Porpoise [1351]*		
Abers - Côte des legends SAC FR5300017 Harbour Porpoise [1351] *		
Ouessant-Molène SAC FR5300018 Harbour Porpoise [1351]*		
Côtes de Crozon SAC FR5302006 Harbour Porpoise [1351]*		

The site specific conservation objectives for the species of conservation interest which were screened in for Appropriate Assessment are presented in table 4. The population trends for these species from the most recent article 12 report (NPWS, 2019b) are also included here.

Site Name and Qualifying Interest	Conservation Objective	Population trend[2] (1998/2002 - 2015/2018)
Inishmore SPA IE004152 Guillemot [A199]	To maintain or restore the favourable conservation condition of Guillemot in Inishmore SPA.	Short term +28% Long term +72%
Connemara Bog Complex SPA IE004181 Cormorant [A017]	To restore the favourable conservation condition of Cormorant in Connemara Bog Complex SPA.	Short term +15% Long term +18%

Table 4 The conservation objectives of Annex II species and their population trends. [Full site specific conservation objectives in section 4]

3.2.3 Pressures and threats to Annex II species and Annex I species

The most recent Habitats Directive Article 17 report (NPWS 2019a) identified the main pressures and threats to individual Annex II species to reaching Favourable Conservation Status (table 5).

Table 5 Pressures and Threats on Annex II species as assessed for the 2019 Article 17 report.

Annex II Species	Pressure	Threat
Freshwater Pearl Mussel [1029]	**A31** Drainage for use as agricultural land (H) **B27** Modification of hydrological conditions, or physical alteration of water bodies and drainage for forestry (including dams) (H) **F31** Other modification of hydrological conditions for residential or recreational development (H) **A26** Agricultural activities generating diffuse pollution to surface or ground waters (H) **B23** Forestry activities generating pollution to surface or ground waters (H) **F12** Discharge of urban waste water (excluding storm overflows and/or urban run-offs) generating pollution to surface or ground water (M) C05 Peat extraction (M) **F28** Modification of flooding regimes, flood protection for residential or recreational development (M) **D02** Hydropower (dams, weirs, run-off-the-river), including infrastructure (M)	**A31** Drainage for use as agricultural land (H) **B27** Modification of hydrological conditions, or physical alteration of water bodies and drainage for forestry (including dams) (H) **F31** Other modification of hydrological conditions for residential or recreational development (H) **A26** Agricultural activities generating diffuse pollution to surface or ground waters (H) **B23** Forestry activities generating pollution to surface or ground waters (H) **F12** Discharge of urban waste water (excluding storm overflows and/or urban run-offs) generating pollution to surface or ground water (M) C05 Peat extraction (M) **F28** Modification of flooding regimes, flood protection for residential or recreational development (M) **D02** Hydropower (dams, weirs, run-off-the-river), including infrastructure (M)

[2] https://www.npws.ie/sites/default/files/publications/pdf/IWM114.pdf

Annex II Species	Pressure	Threat
	F33 Abstraction of ground and surface waters (including marine) for public water supply and recreational use (M)	**F33** Abstraction of ground and surface waters (including marine) for public water supply and recreational use (M)
Salmon [1106]	**A26** Agricultural activities generating diffuse pollution to surface or ground waters (H) **G19** Other impacts from marine aquaculture, including infrastructure (H) **K05** Physical alteration of water bodies (H) **J01** Mixed source pollution to surface and ground waters (limnic and terrestrial) (H) **A25** Agricultural activities generating point source pollution to surface or ground waters (M) **B23** Forestry activities generating pollution to surface or ground waters (M) **D02** Hydropower (dams, weirs, run-off-the-river), including infrastructure (M) **G11** Illegal harvesting, collecting and taking (M) **G20** Abstraction of water, flow diversion, dams and other modifications of hydrological conditions for freshwater aquaculture (M) **L06** Interspecific relations (competition, predation, parasitism, pathogens) (M)	**A26** Agricultural activities generating diffuse pollution to surface or ground waters (H) **G19** Other impacts from marine aquaculture, including infrastructure (H) **K05** Physical alteration of water bodies (H) **N01** Temperature changes (e.g. rise of temperature & extremes) due to climate change (H) **A25** Agricultural activities generating point source pollution to surface or ground waters (M) **B23** Forestry activities generating pollution to surface or ground waters (M) **F12** Discharge of urban waste water (excluding storm overflows and/or urban run-offs) generating pollution to surface or ground water (M) **F28** Modification of flooding regimes, flood protection for residential or recreational development (M) **G11** Illegal harvesting, collecting and taking (M) **I02** Other invasive species (other than species of Union concern) (M)
Sea Lamprey [1095]	**D02** Hydropower (dams, weirs, run-off-the-river), including infrastructure (H) **N03** Increases or changes in precipitation due to climate change (H) **A19** Application of natural fertilisers on agricultural land (M) **A20** Application of synthetic (mineral) fertilisers on agricultural land (M) **A31** Drainage for use as agricultural land (M) **G01** Marine fish and shellfish harvesting (professional, recreational) causing reduction of species/prey populations (M) **Xo** Threats and pressures from outside the Member State (M)	**D02** Hydropower (dams, weirs, run-off-the-river), including infrastructure (H) **N03** Increases or changes in precipitation due to climate change (H) **A19** Application of natural fertilisers on agricultural land (M) **A20** Application of synthetic (mineral) fertilisers on agricultural land (M) **A31** Drainage for use as agricultural land (M) **G01** Marine fish and shellfish harvesting (professional, recreational) causing reduction of species/prey populations (M) **Xo** Threats and pressures from outside the Member State (M)

Annex II Species	Pressure	Threat
		N01 Temperature changes (e.g. rise of temperature & extremes) due to climate change (M) **N02** Droughts and decreases in precipitation due to climate change (M)
Grey Seal [1364]	**C09** Geotechnical surveying (M) **G01** Marine fish and shellfish harvesting (professional, recreational) causing reduction of species/prey populations and disturbance of species (M)	**C09** Geotechnical surveying (M) **G01** Marine fish and shellfish harvesting (professional, recreational) causing reduction of species/prey populations and disturbance of species (M)
Harbour seal [1365]	**C09** Geotechnical surveying (M) **G01** Marine fish and shellfish harvesting (professional, recreational) causing reduction of species/prey populations and disturbance of species (M)	**C09** Geotechnical surveying (M) **G01** Marine fish and shellfish harvesting (professional, recreational) causing reduction of species/prey populations and disturbance of species (M)
Harbour Porpoise [1351]	**C09** Geotechnical surveying (M) **G01** Marine fish and shellfish harvesting (professional, recreational) causing reduction of species/prey populations and disturbance of species (M)	**C09** Geotechnical surveying (M) **G01** Marine fish and shellfish harvesting (professional, recreational) causing reduction of species/prey populations and disturbance of species (M)
Bottlenose dolphin [1349]	**C09** Geotechnical surveying (M) **G01** Marine fish and shellfish harvesting (professional, recreational) causing reduction of species/prey populations and disturbance of species (M)	**C09** Geotechnical surveying (M) **G01** Marine fish and shellfish harvesting (professional, recreational) causing reduction of species/prey populations and disturbance of species (M)

It should be noted that under the European Environment Agency guidance on Article 17 guidance noise pollution from marine seismic surveys was to be reported under C09 Geotechnical Surveying.

The most recent Birds Directive Article 12 report (Cummins et al., 2019) identified the main pressures and threats to Annex I breeding seabirds (table 6). A specific threat to guillemots and cormorants is water pollution (J02). Cormorants may be subject to some levels of persecution at a very localised level (G10).

Table 6 Pressures and Threats on Annex I species as assessed for the 2019 Article 12 report.

Code	Description	Percentage relevance
D01	Wind, wave and tidal power, including infrastructure	92
G12	Bycatch and incidental killing (due to fishing and hunting activities)	79
N06	Desynchronisation of biological / ecological processes due to climate change	75

Code	Description	Percentage relevance
N07	Decline or extinction of related species (e.g. food source / prey, predator / parasite, symbiote, etc.) due to climate change	75
I02	Other invasive alien species (other than species of Union concern)	71
F22	Residential or recreational activities and structures generating marine macro- and micro- particulate pollution (e.g. plastic bags, Styrofoam)	54
F23	Industrial or commercial activities and structures generating marine macro- and micro- particulate pollution (e.g. plastic bags, Styrofoam)	54
F07	Sports, tourism and leisure activities	46
G01	Marine fish and shellfish harvesting (professional, recreational) causing reduction of species/prey populations and disturbance of species	46
I04	Problematic native species	33
A09	Intensive grazing or overgrazing by livestock	29
J02	Mixed source marine water pollution (marine and coastal)	29
M08	Flooding (natural processes)	25
L06	Interspecific relations (competition, predation, parasitism, pathogens)	21
G10	Illegal shooting/killing	4
N04	Sea-level and wave exposure changes due to climate change	4

3.3 Assessment of Impacts

No Annex I Habitat is considered to be within the Zone of Influence of the proposed project. The direct and indirect effects as a result of underwater noise on marine mammals, migratory fish species and diving sea bird species within the Zone of Influence of the proposed project cannot be excluded.

The impact of the proposed project was identified as disturbance to Annex II species Salmon, Grey and Harbour seal, Bottlenose dolphin and Harbour porpoise and on the Annex I species, Guillemot and Cormorant as a result of underwater noise from geophysical and geotechnical surveys. This disturbance may cause the displacement of individuals, changes in species behaviour, or the risk of morbidity or mortality.

3.3.1 Impacts to Annex II species

Marine mammals evolved from terrestrial predecessors and have adapted to life in the sea by effectively exploiting sound properties in water to make it their primary sense. They depend on sound for a wide range functions including navigation, perception of their environment, communication, prey identification and capture, and the detection of predators. The hearing system of marine mammals, being highly sensitive and adapted to respond to changes in pressure in an aquatic environment, is particularly susceptible to damage.

Auditory injury in marine mammals can be defined as a permanent threshold shift (PTS) leading to non-reversible auditory injury, or as a temporary threshold shift (TTS) in hearing sensitivity, which can have negative effects on the ability to communicate, navigate, or locate prey for a period of minutes, hours or days. Generally impulsive sounds have physical characteristics (e.g. high peak sound pressures and rapid rise times) that make them more injurious than non-impulsive sound sources. Impulsive noise types include e.g. seismic air guns, impact piling or underwater explosions.

Hearing plays an important role for fish in providing information often over great distances. Sound is used for communication, for mating behaviour, detection of prey and predators, for orientation, migration and habitat selection (Popper and Hawkins, 2019). Most fish are capable of hearing sound within the frequency range of 50Hz to 200-1,500Hz. While exposure to very intense sound may lead to mortality, less intensive sounds may lead to altered behaviour, including deviation from migration routes or feeding or breeding habitats, or prevent detection of other important biological sounds (Popper and Hawkins, loc. cit.).

3.3.1.2 Mitigation

Appropriate mitigation for the effects of underwater noise on marine mammals is the implementation of the Department of Arts, Heritage and the Gaeltacht's guidance on risk to marine mammals from man-made sound in the marine environment (DAHG, 2014). When carrying out geotechnical and geophysical surveys particular attention should be paid to sections 4.3.2 (i) and 4.3.4 (ii) of the guidance. The use of soft-start and ramp-up procedures for any sound-generating survey undertaken is deemed suitable mitigation for migrating fish species.

3.3.2 Impacts to Annex I species

During the breeding season cormorants can forage over waters up to 35km from their colony while guillemots have a mean foraging range of 37.8km in the breeding season (DAHG, 2014). At this time the highest densities of guillemot performing non-site-specific behaviours, such as courtship, bathing and preening, occurs within 1km of the colony (Reid and Webb, 2005).

The closest point of the Foreshore Licence Application Area to Inishmore SPA is 4km. While the closet point of the Application Area to Connemara Bog Complex SPA is also 4km, cormorants in this site breed on an inland lake, Lough Scannive, approximately 12km from the survey area. The recommended displacement buffer for most seabirds is 2km and 4km for divers (JNCC 2017, updated 2022[3]). Therefore it can be determined that underwater noise would have no effect on breeding seabirds in the vicinity of the survey area.

Information on the underwater hearing abilities of diving birds and evidence of the effects of underwater anthropogenic noise is very limited. Studies suggest that mortality occurs when in close proximity to the event (Danil & St Leger 2011). Both Cormorant and Guillemot are sensitive to displacement (SNCB, 2022). Flushing disturbance would be expected to displace these diving seabirds from close proximity to the survey vessel and any towed equipment, thereby limiting their exposure to the highest sound pressures generated. The likelihood of these birds being in the vicinity of a noise generating operation is very low due to the surface activity associated with such operations disturbing the birds prior to commencement of the

[3] Joint SNCB Interim Displacement Advice Note - joint-sncb-interim-displacement-advice-note-2022.pdf

underwater noise (BEIS, 2019; Fliessbach et al. 2019, Garthe & Hüppop, 2004; Leopold & Camphuysen, 2009).

Given the very low likelihood of interaction between the sound source and a diving bird due to the intervening distances, relatively short exposure time, the temporary and short-term nature of the survey work, the mobile nature of the surveys and the displacement of most diving species due to flushing disturbance, it can be determined that underwater noise would have no effect on diving seabirds in the vicinity of the survey area.

3.3.2.1. Mitigation

No mitigation is not required.

3.4 Assessment of In-combination Impacts

In a search of the Department's Foreshore licence applications website and Galway County Councils website on the 4th of August 2023, a number of applications were identified which may have potential to have in-combination effects with the proposed project (Table 7).

Of these projects only those which have a temporal overlap with the proposed project are likely to have in-combination effects.

Table 7 Plans and projects considered for in-combination effects with the proposed project.

Foreshore Application	Location	Works and possible in-combination impacts	Application Stage
Fuinneamh Sceirde Teoranta Ltd FS007543	Co. Galway	Site Investigation Surveys - under water noise from geophysical and geotechnical surveys.	Applied May 2022
Aigean Renewables Ltd FS007063	Counties Clare & Kerry	Site Investigation Surveys - under water noise from geophysical and geotechnical surveys.	Paused until completion of the DMAP process
Clarus Offshore Wind Farm Ltd FS006886	Counties Clare & Kerry	Site Investigation Surveys - under water noise from geophysical and geotechnical surveys	Paused until completion of the DMAP process
Mainstream Renewable Power Ltd FS007375	Counties Clare & Kerry	Site Investigation Surveys - under water noise from geophysical and geotechnical surveys.	Paused until completion of the DMAP process
Irish Water FS007085	Co. Galway	Site investigation works. Screened out for significant effect, no possible in-combination effects.	Determination March 2023
Marine Institute FS006566	Co. Galway	Testing of prototype wind, wave and tidal energy devices. Screened out for significant effect, no possible in-combination effects.	Consultation November to December 2020
Illen Offshore Wind Farm FS007244	Counties Clare & Kerry	Site investigations for proposed wind farm.	Paused until completion of the DMAP process.

Western Star Wind Ltd.	Co. Clare	Site investigations for proposed wind farm.	Paused until completion of the DMAP process.
Clarus Offshore Wind Farm FS006886	Counties Clare & Kerry	Site investigations for proposed wind farm.	Paused until completion of the DMAP process.
Moneypoint Offshore FS007137	Counties Clare & Kerry	Site investigations for proposed wind farm.	Paused until completion of the DMAP process.
Moneypoint Offshore FS006318	Co. Clare	Construction of two wind turbines and an anemometer mast.	Works completed.
Rian FS007435	Counties Clare & Kerry	Site investigations for proposed wind farm.	Paused until completion of the DMAP process.
Kerry Offshore Wind FS007363	Counties Clare & Kerry	Site investigations for proposed wind farm.	Paused until completion of the DMAP process.
Munster Sea wind FS007366	Co. Clare	Site investigations for proposed wind farm.	Paused until completion of the DMAP process.
Mainstream Renewable Power Ltd FS007375	Counties Clare & Kerry	Site investigations for proposed wind farm.	Paused until completion of the DMAP process.
Atlantic Offshore Renewable Energy 2 FS007495	Co. Galway	Site investigations for proposed wind farm.	Paused until completion of the DMAP process.
GRSI Energy FS6458	Co. Galway	Site investigations for deployment of a 1/4 scale Wave Energy Converter.	Application withdrawn
Deep Sea Fibre Networks FS007016	Co. Galway	Cable route survey and site investigations.	Determined 2/10/2020 for one year.
Kerry Offshore Wind Ltd. FS007363	Counties Clare & Kerry	Site investigations for proposed wind farm.	Paused until completion of the DMAP process.
Aigean Renewables Ltd. FS007063	Co. Kerry	Site investigations for proposed wind farm.	Paused until completion of the DMAP process.
IRIS sub-sea fibre optic cable FS007246	Co. Galway	Main lay and construction works for the installation of the IRIS sub-sea fibre optic cable system. No in-combination effects.	Works under taken June to July 2022

The Irish Government has paused site investigation for Offshore Renewable Energy until the Designated Maritime Area Plan (DMAP) process is finalise. Therefore there is no possibility of in-combination with these projects.

Of the remaining project identified they have either been completed and there is no residual environmental effects remaining or where screened out for possible environmental effects. There are no cumulative effects with these projects and the proposed project.

3.4.1 Mitigation

However while it is unlikely that any of these projects will overlap temporally, adopting the precautionary principle project involving geophysical and geotechnical surveys which are within 40km of one another should consult with one another to ensure that there is overlap temporally with activities likely to cause in-combination effects.

3.5 Consultation Phase

On the 8th of November 2022 the Department determined that an Appropriate Assessment of the proposed project was required. Under Section 19 of the Foreshore Act 1933, and Regulation 42 of the European Communities (Birds and Natural Habitats) Regulations 2011 a public consultation was necessary. The initial consultation was due to take place from 4th January and 2nd February 2023. A second public consultation was required to correct a typographical error in the public notices relating to the closure date and the reference numbers of the initial public consultation. This second public consultation was held between 30th January and 28th February 2023. The following documents were published on the Department's website:

- Screening Determination for Appropriate Assessment [dated 24th November 2022 in Irish & English]
- Marine Advisor's Environmental Screening Stage Report [dated 8th November 2022]
- Screening for Appropriate Assessment Report [dated 7th November 2022]
- AA Screening Submission to Minister [in Irish & English]

The consultation submissions received following the consultation from the Prescribed Bodies and Applicant's responses are presented in Table 7. Only the public submissions which are related to the Habitats and Birds Directives are presented in Table 8.

Table 8 The Prescribed Bodies comments received and the Applicant's response.

Statutory Consultee	Topic	Overview of Comments	Applicant Response
Dept. of Housing, Local Government and Heritage – Marine Advisor Engineering	Coastal process	The proposed site investigation works will have no impact on the existing coastal processes.	Noted
	Public Interest	Having considered and assessed the relevant issues associated with the proposed site investigation, while taking note that the state owned foreshore is finite resource which must be utilised sustainably, I am satisfied that the proposed works are in the Public Interest	Noted
	Policy	Having reviewed and assessed the information on file for this application to conduct an ORE Site Investigation against the objectives of the NMPF, I am satisfied the proposed works do not act significantly against any objective within the NMPF. Furthermore, the project is aligned and secures key sectoral/activity objectives including Energy – Offshore Renewable.	Noted
	Conclusion	No objection to granting the foreshore licence with recommended conditions attached.	Consideration of the recommended conditions is for the Department.
Department of the Housing, Local Government and Heritage – Marine Advisor Environment	Conclusion	No objections to the application, detailed report and licence condition recommendations to follow.	Consideration of the recommended conditions is for the Department.

Statutory Consultee	Topic	Overview of Comments	Applicant Response
Marine Institute	Aquaculture	Given the nature of the proposed site investigations, impacts on aquaculture are not considered likely	Noted
	Fishing	It is noted that the applicant has appointed a Fisheries Liaison Officer who will engage with the fishing interests in the area during investigations. It would be important the views and concerns of the fishers in the areas to be surveyed be adequately addressed to the satisfaction of the Department.	In advance of surveys being undertaken, the Applicant will consult with fishermen, their representative Producer Organisations, relevant Inshore Fisheries Forums and charter vessel operators with the objective of ensuring that survey activities can be completed safely and without damage to fishing gear, survey equipment or vessels. Commencement of survey activities is subject to Foreshore Licence consent and the availability of suitable survey contractor. The Applicant will consult with local fishermen to develop and implement where possible a survey programme which minimises the risk of any potential losses through effective planning and coordination of the survey activities.
	Marine Mammals	As mitigation, a number of actions are suggested that should reduce the risk. Foremost among these is the use of marine mammal observers (MMO) during operations including a 'soft start' protocol. The MI is satisfied that such measures will mitigate any risk to marine mammals during the site investigations	Noted. Surveys will be undertaken in compliance with the NWPS 2014 guidance "Guidance to manage risk to marine mammals from man-made sound sources".
	Cumulative	If any similar geophysical surveys may be carried along the west coast be identified and	The cumulative assessment carried out and included in our application documents

Statutory Consultee	Topic	Overview of Comments	Applicant Response
		that they not coincide with this survey. It would be important that any geophysical surveys be carried out in isolation so as to avoid any potential cumulative effects on marine mammals.	concludes that there would not be a significant cumulative effect as all other surveys should also be undertaken in compliance with the NWPS 2014 guidance "Guidance to manage risk to marine mammals from man-made sound sources". Therefore there would be no cumulative impact on marine mammals. The nearest project (other than Sceirde Rocks' other foreshore application FS007543) with a foreshore licence for investigative marine surveys is Clarus Offshore Wind Farm (FS006886) and is approximately 40km from the Sceirde Rocks foreshore licence area.
	Conclusion	On the basis of the above and considering the nature, scale and location of the proposed site investigations the Marine Institute is satisfied that the site investigations as proposed will not have a significant impact on the marine environment in the survey area and will not have a significant impact on other legitimate uses/users of the area and therefore has no objections to a licence being granted (with recommended conditions).	Consideration of the recommended conditions is for the Department.
Irish Lights	Aid to Navigation	Before any aid to navigation can be established, altered or disestablished, consent in the form of Statutory Sanction under the Merchant Shipping Act must be obtained from the Commissioners of Irish Lights. The aid must be coloured and marked as per IALA	Noted. The Applicant will liaise with Commissioners of Irish Lights prior to survey commencement.

Statutory Consultee	Topic	Overview of Comments	Applicant Response
		(International Association of Marine Aids to Navigation and Lighthouse Authorities) Standards.	
	Marine Notice	Recommend that a marine notice should be issued detailing the works and duration	This will be done prior to survey commencement.
Inland Fisheries Ireland	Mitigation	IFI note the mitigation measures to be employed for marine mammals with a soft start ramp up procedure. IFI would point out that the mitigation measures and guidance of NPWS in regard to marine mammals are not transferrable to fish species. The fish remain invisible to any shore- or boat-based observer. Mitigation measures should aim to reduce the sound generated, in intensity and duration. The use of soft-start and ramp-up procedures for any sound-generating surveys undertaken – both on a day-to-day basis and on re-start after any stoppages within any day should be undertaken.	Surveys will be undertaken in compliance with the NWPS 2014 guidance "Guidance to manage risk to marine mammals from manmade sound sources" which will include a soft start/ramp up procedure.
	Fish ecology	Special consideration may need to be paid to resident and migratory fish species which could be passing through the area and potentially effected by noise (sound) and vibration effects introduced into the water column due to investigation works. The timing of the proposed works should be carefully considered in order to reduce potential interference with the natural movements of	The assessment reports submitted in support of the FSL application have provided a robust assessment of the potential effects on fish from the survey activities including those species that are qualifying features of designated sites. The assessments conclude that there will be no significant effect on fish species largely as a result of distance of the FSL area to designated sites, the ability of fish

Statutory Consultee	Topic	Overview of Comments	Applicant Response
		these diadromous species (salmon, eel and lamprey).	when migrating as they adapt to environmental pressures such as predation and increased metabolic requirements. In additional, surveys will be undertaken in compliance with the NWPS 2014 guidance "Guidance to manage risk to marine mammals from man-made sound sources" which will include a soft start/ramp up procedure which will also be applicable to reducing potential effects on fish.
Sea Fisheries Protection Authority	Fishing	Site investigations may cause spatial squeeze for both the inshore and offshore sectors of the fishing industry during the duration of the proposed site investigations. Access restrictions will be in place when the surveys are underway (proposed annual surveys are 1-5 months over a 5 year period). Static fishing gear will have to be removed from the grounds which can be problematic for the smaller vessels due to alternative grounds being accessible, inclement weather and proximity of the vessels home ports.	In advance of surveys being undertaken, the Applicant will consult with fishermen, their representative Producer Organisations, relevant Inshore Fisheries Forums and charter vessel operators with the objective of ensuring that survey activities can be completed safely and without damage to fishing gear, survey equipment or vessels. Commencement of survey activities is subject to Foreshore Licence consent and the availability of suitable survey contractor. The Applicant will consult with local fishermen to develop and implement where possible a survey programme which minimises the risk of any potential losses through effective planning and coordination of the survey activities.
		Effective communication between the FLO and the fishing community and the timely publishing of notice to mariners is required.	Agree

Statutory Consultee	Topic	Overview of Comments	Applicant Response
		It is not envisaged that the site investigations will cause difficulties with conducting official controls for the SFPA within the applied area	Noted
		The SFPA should have no difficulty in conducting official controls in the proposed area	Noted
		Contamination from an accidental pollution spill is the main concern for the fish and shellfish species within the applied area. Effective communication between the applicant and its contracted parties with the SFPA should any pollution event occur can reduce the risk of potentially contaminated shellfish being placed on the market for consumption.	The Applicant will ensure that all survey contracts work in compliance with International Maritime Organisation standards .The risk from releases of fuel during bunkering is removed as there will be no offshore bunkering. A hydrocarbon spill due to loss of fuel inventory following a vessel collision would require the following sequence of events: •A cause of vessel interaction must result in a collision •The collision must have enough force to penetrate the vessel hull •The collision must be in the exact location of the fuel tank •The fuel tank must be full, or at least of volume whereby the fuel level is higher than the point of penetration. The probability of this chain of events aligning to result in a breach of fuel tanks resulting in a spill that could potentially affect the marine environment is considered remote and

Statutory Consultee	Topic	Overview of Comments	Applicant Response
			therefore such a release is not considered a credible scenario. The only credible type of accidental release from the site investigations is the spillage of hydrocarbons (diesel fuel, hydraulic oil and lubricants) or chemicals (coring fluids) from vessel decks during storage or handling. Only very small amounts of fuel or chemicals could be released in this way, and measures will be in place to prevent or respond to any such releases. Given the short duration of the site investigation activities and the low risks to the environment from accidental releases, it is concluded that significant environmental effects associated with hydrocarbon or chemical spills are highly unlikely and can be discounted from further assessment. In the highly unlikely event of any accidental spillage, the Applicant will contact SFPA.
Underwater Archaeology Unit /NPWS	Archaeology	The assessment does not adequately assess the archaeological potential of the survey area and therefore the adequacy of mitigation cannot be addressed without further information. As such a number of licence conditions are recommended.	Publicly available desk based data on archaeological wrecks was used in the Environmental Assessment and EIA Screening Report. The Applicant recognises that buried archaeology is an unknown and therefore the geophysical survey data collected as part of the surveys included in this foreshore licence will be used to inform the archaeological baseline for the future Sceirde Rocks project EIA.

Statutory Consultee	Topic	Overview of Comments	Applicant Response
			Consideration of the recommended conditions is for the Department.
	Nature Conservation	It is recommended that the application of "Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Waters" should be implemented in full as a condition of consent.	Surveys will be undertaken in compliance with the NWPS 2014 guidance "Guidance to manage risk to marine mammals from manmade sound sources".
		It must be noted that all cetaceans are listed under Annex IV (including those in Annex II) of Council Directive 92/43/EEC (the Habitats Directive). Accordingly, under Article 12 of that Directive, it is an offence to deliberately capture, disturb or kill a cetacean or take actions that result in deterioration or destruction of their breeding sites or resting places.	Noted
		The proponent should note that it is recommended that they should apply at earliest opportunity for a Regulation 54 consent to ensure that activities can be appropriately considered in terms of the potential for disturbance that may arise from their proposed site investigations.	Noted
Marine Survey Office	Navigation	No objection on navigation safety grounds with recommended conditions.	Consideration of the recommended conditions is for the Department.
Department of Agriculture, Food	Trees	If the application involves felling or removing trees then a Felling Licence must be obtained.	This FSL application is for marine surveys. There will be no removal of trees.

Statutory Consultee	Topic	Overview of Comments	Applicant Response
and the Marine - Felling Section	Planning	Comments made in relation to requirements when applying for planning permission to Local Authority or An Bord Pleanala.	This FSL application is for marine surveys only and therefore only an application for a foreshore licence is required.
Department of Agriculture, Food and the Marine - Sea Fisheries	Sea Fisheries	The lack of VMS data cannot be taken to mean that inshore vessels do not fish near the FLA. A large number of vessels less than 12m operate and are not included in the VMS data.	In advance of surveys being undertaken, the Applicant will consult with fishermen, their representative Producer Organisations, relevant Inshore Fisheries Forums and charter vessel operators with the objective of ensuring that survey activities can be completed safely and without damage to fishing gear, survey equipment or vessels. Commencement of survey activities is subject to Foreshore Licence consent and the availability of suitable survey contractor. The Applicant will consult with local fishermen to develop and implement where possible a survey programme which minimises the risk of any potential losses through effective planning and coordination of the survey activities.
		Strongly recommend consultation with: • The National Inshore Fisheries Forum • The West Regional Inshore Fisheries Forum • The Irish Islands Marine Resource Organisation • The National Inshore Fishermen's Association	In advance of surveys being undertaken, the Applicant will consult with fishermen, their representative Producer Organisations, relevant Inshore Fisheries Forums and charter vessel operators with the objective of ensuring that survey activities can be completed safely and without damage to fishing gear, survey equipment or vessels. Commencement of survey activities is subject to Foreshore Licence

Statutory Consultee	Topic	Overview of Comments	Applicant Response
			consent and the availability of suitable survey contractor. The Applicant will consult with local fishermen to develop and implement where possible a survey programme which minimises the risk of any potential losses through effective planning and coordination of the survey activities.
		Inner Galway Bay is a Special Area of Conservation (SAC) and a Special Protection Area (SPA). The MI advised that the foreshore licence application area (proposed cable route) does not encroach onto the SAC but it is unclear what works will be required on the foreshore at landfall (Kilcolgan Point). There is foreshore also east of this Point, an area potentially sensitive to disturbance with respect to birds in the SPA.	The Applicant has confirmed that no intrusive survey work will take place within an SAC or SPA. The assessments provided in the Report to Inform Appropriate Assessment and Natura Impact Statement demonstrates that survey work outside the designated sites will have no significant effect on the qualifying features of designated sites in the vicinity of the survey work.
		DAFM welcomes the appointment of a Fisheries Liaison Officer to engage with the fishing community to ensure effective communications during the planning and execution of the proposed surveys. DAFM would urge timely consultation and active engagement.	In advance of surveys being undertaken, the Applicant will consult with fishermen, their representative Producer Organisations, relevant Inshore Fisheries Forums and charter vessel operators with the objective of ensuring that survey activities can be completed safely and without damage to fishing gear, survey equipment or vessels. Commencement of survey activities is subject to Foreshore Licence consent and the availability of suitable survey contractor. The Applicant will consult with local fishermen to

Statutory Consultee	Topic	Overview of Comments	Applicant Response
			develop and implement where possible a survey programme which minimises the risk of any potential losses through effective planning and coordination of the survey activities.
Department of Agriculture, Food and the Marine - Foreshore Section	Fishing	Marine Engineering Division of this Department has no objection to any licence that issues	Noted
		Site investigations could impact on fisheries as the FSL are is active fishing grounds and local communities depend on inshore fishing.	The information provided in our Environmental Assessment and EIA Screening Report demonstrates that any disruption from survey activity will be short term, temporary and not significant on both fishing activity and fish ecology. In advance of surveys being undertaken, the Applicant will consult with fishermen, their representative Producer Organisations, relevant Inshore Fisheries Forums and charter vessel operators with the objective of ensuring that survey activities can be completed safely and without damage to fishing gear, survey equipment or vessels. Commencement of survey activities is subject to Foreshore Licence consent and the availability of suitable survey contractor. The Applicant will consult with local fishermen to develop and implement where possible a survey programme which minimises the risk of any potential losses through

Statutory Consultee	Topic	Overview of Comments	Applicant Response
			effective planning and coordination of the survey activities.

Table 9 The Public comments related to the Habitats and Birds Directives which were received during the Consultation process.

Submission	Topic	Overview of Comments	Applicant Response
2. Anonymous	Survey Area	The FSL area is larger than the relevant project area.	The Sceirde Rocks Relevant Project area is located within the FSL area which we have applied for. The reason for the wider survey area requested is to enable data to be collected outside the relevant project boundary that will still support project design and future EIA work streams. It is important when developing and designing a project to have data on the environment in the area surrounding the project. In addition the FSL survey area was submitted before the MAC for the project had been confirmed.
7. Anonymous	Biodiversity	Effects on biodiversity and natural habitat.	A suite of supporting reports were provided with the FSL application to demonstrate the surveys will have no significant effect on the environment.
8. Anonymous	Maritime ecology	Any development on the sea bed around Sceirde would be detrimental to maritime ecology, to fragile ecosystems around the coast and would negatively impact the coast and surrounding areas.	A suite of supporting reports were provided with the FSL application to demonstrate the surveys will have no significant effect on the environment.
9. Anonymous	Environment	Impact the proposed mega turbines will have on environment and landscape.	Impacts from the presence of project turbines are not relevant to the surveys being requested in this FSL application and are therefore not considered. A future Environmental Impact Assessment (EIA) Report will be submitted with a development consent application for the construction and operation of an offshore wind farm.
10. Anonymous - Resident	Environment	Why is the application for 60 boreholes when only 25-30 turbines?	The FSL application is for up to 60 boreholes to be taken across the survey area in order to collect a range of important baseline information to inform turbine site selection, foundation design and future environmental assessments. It is not the case of one borehole per turbine.
		Is a larger survey area needed to allow for more, smaller turbines?	The Sceirde Rocks Relevant Project area is located within the FSL area which we have applied for. The reason for the wider survey area requested is to enable data to be collected outside the relevant project boundary that will still

Submission	Topic	Overview of Comments	Applicant Response
			support project design and environmental impact assessment of the broader area.
		Deep drilling and equipment impacts on seafloor marine environment	The assessments provided in our application reports (Environmental Assessment and EIA Screening Report, Report to Inform Appropriate Assessment Screening) demonstrate the small footprint of our survey works relative to the wider area of habitat that is available. Each borehole, including equipment, will have a maximum footprint of only 20m^2. This allows us to conclude that there will be no significant effect on seabed habitats due to the small scale and temporary nature of the survey works included within this FSL application. The seabed in the Foreshore Licence Area is expected to consist of mixed sediments with significant areas of exposed bedrock. None of the survey locations are situated in protected areas designated for seabed habitats and there are no records of sensitive habitats within the area. The area directly affected will be highly localised within the footprint of the equipment deployed. Any sessile epifauna on which equipment is placed may be damaged or lost. In soft sediments, the equipment may penetrate a few centimetres into the sediment which may cause displacement or loss of individual infaunal animals. The geotechnical sampling equipment will typically remain in position for three days or less at each location, after which it will be recovered, and nothing will be left on the seabed. In very soft sediments, small depressions may be left in the seabed. Recovery from the minor disturbance is expected to begin immediately due to natural processes. The biota in the Foreshore Licence Area are naturally habituated to sediment transport processes and are therefore less susceptible to the impacts of temporarily increased sedimentation rates. The following control measures will be taken to avoid or reduce any potential impacts on the seabed: • The geotechnical boring and CPT equipment will be accurately positioned on the seabed at each pre-determined location where safe and practicable

Submission	Topic	Overview of Comments	Applicant Response
			to do so, reducing any seabed impacts where possible. All deployment and recovery activities will be undertaken as per pre-determined procedures. • A drop-down underwater camera or ROV will be used at each benthic sampling station and the grab will only be deployed if soft sediments are present, thereby avoiding unnecessary damage to potential rocky reef habitats. The photographic equipment itself will not contact the seabed. Given the dynamic nature of the seabed in the Foreshore Licence Area potential sediment suspension and re-settlement around those activities causing seabed disturbance is only likely to have a temporary effect and to occur in close proximity to the areas directly impacted. Considering the relatively small scale and temporary nature of the seabed impact and the potential for rapid recovery once the short-term activities are competed, there will be no likely significant effect.
		Underwater noise impacts on marine mammals and mitigation.	A suite of supporting reports were provided with the FSL application to demonstrate the surveys which provided a detailed assessment of underwater noise (including modelling) and the potential effects on marine mammals. This has been fully considered in the Environmental Assessment and EIA Screening Report, the Report to Inform Appropriate Assessment and the Natura Impact Statement. Mitigation and monitoring measures proposed are entirely compliant with those recommended for such survey activities by the NWPS 2014 guidance "Guidance to manage risk to marine mammals from man-made sound sources".
11. Anonymous - Resident	Benthic	The Environmental Assessment and EIA Screening Report has not considered the impact of the survey works on blue carbon sequestration.	The environmental assessment documents submitted with the FSL application are solely focused on assessing potential impacts of the survey activities included in the FSL application. Given the nature of the survey works and the relatively small footprint (as considered in the assessment on seabed habitats) it is not considered that there will be any impact on blue carbon sequestration. The future EIA Report that will consider the whole Project development will include blue carbon and

Submission	Topic	Overview of Comments	Applicant Response
			all construction/operation impacts and will be submitted with a future development consent application.
	Kelp	The Environmental Assessment and EIA Screening Report has not considered the impact of the survey works on the marine environment holistically, particularly on the basis of the food web. There is no mention in the report of the important seagrass and kelp forests in the survey area.	Any impact to kelp would be consistent with that described in our assessment reports which demonstrate the small footprint of our survey works relative to the wider area of habitat that is available. Each borehole, including equipment, will have a maximum footprint of only $20m^2$. This allows us to conclude that there will be no significant effect on seabed habitats due to the small scale and temporary nature of the survey works included within this FSL application.
	Marine mammals and reptiles	The Environmental Assessment and EIA Screening Report fails to note the conservation status of marine species. For example, the leatherback turtle is reported as vulnerable, with a declining population, in the International Union for Conservation of Nature (IUCN) red list.	Whilst this is correct, the assessment presented in the Environmental Assessment and EIA Screening Report, in particular the Annex IV species risk assessment section, provides robust justification for why the survey activities will have no significant impact on leatherback turtles. Rogan et al., (2018) recorded three leatherback turtles over a two-year period, all in the summer and all over the continental shelf. The mitigation measures that will be in place for protection of marine mammals from noise sources (adherence to the NPWS 2014 "Guidance to manage risk to marine mammals from man-made sound sources") will also serve to provide protection to any marine turtles that may occur in the area at the time. The survey vessels will be moving at slow speed or will be stationary. Given the short duration and temporary nature of the site investigation activities, it is extremely unlikely that any turtles will encounter the site investigation activities. There are no likely significant effects upon the population status of any marine turtle species
	Birds	The Environmental Assessment and EIA Screening Report has not considered the potential impact of the survey works on seabirds.	Potential impacts on birds are included in the Environmental Assessment and EIA Screening Report but are covered in more detail within the Report to Inform Appropriate Assessment.

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	Legislative compliance	The Environmental Assessment and EIA Screening Report concludes that "the proposed activities will have no likely significant effects on the identified environmental receptors". It is impossible for the scale of survey works proposed to have no significant effects on the identified environmental receptors. This conclusion must surely call into question the validity of the Environmental Assessment and EIA Screening that has been carried out.	The assessments provided demonstrate that survey work will have no significant effect on the qualifying features of designated sites in the vicinity of the survey work or other environmental receptors. These assessments were undertaken by independent experts with decades of experience in environmental assessments and the interaction of survey works such as these with designated sites. Therefore the Applicant is confident in the robustness of the assessments provided.
	Survey activities	Schedule of Activities' states that "A foreshore license with a timeline of 5 years is being requested to allow phases of survey activity". It is stated that the phasing will consist of preliminary investigation for general ground conditions and potential hazard assessment, main investigation for specific ground conditions, and infill survey covering additional locations or to investigate newly identified hazards. However, the schedule of activities appears to provide	The geotechnical survey details provided in the Schedule of Activities, and therefore requested under this foreshore licence, cover what is required for all geotechnical surveys (which may or may not be split into a preliminary and main survey phase).

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		details only for the preliminary investigation.	
13. Anonymous	Marine ecology	The responder states that site investigation [taken as being the works proposed under FS007161] would cause major disruption to the sea bed and all living creatures.	The Applicant has assessed potential impacts on biodiversity, and has presented this within the Environmental Assessment, EIA Screening Report and Natura Impact Statement. The impacts resulting from this proposed survey have been assessed as being short term and transient, and in the Applicant's assessment they would not lead to significant impacts on species and habitats, nor will they have adverse effects on the integrity of Natura (European) protected sites designated for conservation of habitats and species.
	Socio-economic; Biodiversity	Biodiversity loss is as important an issue as climate change. Biodiversity needs to be protected along with stunning seascapes, tourism and local fishing economy.	This is an application for a Foreshore Licence for geotechnical and environmental site investigations under the Foreshore Acts. This is not an application to construct the Sceirde Rocks wind farm. This submission does not make reference to the impact of the proposed activities for which the Applicant is seeking a Foreshore Licence.
14. Anonymous - Resident	Kelp	No assessment of macroalgal communities (kelp) in the 'Screening for Appropriate Assessment Report' of 'Natura Impact Statement'. No information on the presence of and therefore potential impacts of kelp beds	Kelp is not a qualifying interest feature of any designated sites that interact with the proposed survey activities and is therefore not included in the Report to Inform Appropriate Assessment Screening. Any impact to kelp would be consistent with that described in our assessment reports which demonstrate the small footprint of our survey works relative to the wider area of habitat that is available. Each borehole, including equipment, will have a maximum footprint of only 20m^2. This allows us to conclude that there will be no significant effect on seabed habitats due to the small scale and temporary nature of the survey works included within this FSL application. The purpose of the surveys being requested as part of the FSL application will provide data and evidence on presence of kelp habitats to inform future project design and micro-siting where possible. The level of disturbance and impact being referred to by the consultee is of relevance to the future assessment of the whole Sceirde Rocks offshore wind

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			farm project and not the small scale, local disturbance impacts of the survey activities of the FSL application.
21. Galway Bay Inshore Fishermen's Association	Cumulative impact	Cumulative impact of both FS007161 and FS007543	The information provided in our Environmental Assessment and EIA Screening Report demonstrates that any disruption from survey activity will be short term, temporary and not significant on both fishing activity and fish ecology and there will be no significant cumulative impact. In advance of surveys being undertaken, the Applicant will consult with fishermen, their representative Producer Organisations, relevant Inshore Fisheries Forums and charter vessel operators with the objective of ensuring that survey activities can be completed safely and without damage to fishing gear, survey equipment or vessels. Commencement of survey activities is subject to Foreshore Licence consent and the availability of suitable survey contractor. The Applicant will consult with local fishermen to develop and implement where possible a survey programme which minimises the risk of any potential losses through effective planning and coordination of the survey activities.
	Designated Sites	Concerned of the impact of the surveys on the Galway Bay SAC and other SACs	The Applicant has confirmed that no intrusive survey work will take place within an SAC or SPA. The assessments provided in the Report to Inform Appropriate Assessment and Natura Impact Statement demonstrates that survey work will have no significant effect on the qualifying features of designated sites in the vicinity of the survey work.
	Crustaceans	Concern of the impact on increase suspend solids on marine benthic organisms and fish from coring fluids and cuttings particularly on brown crab and lobster (female carrying eggs).	Borehole coring may be conducted with seawater only, with no added chemicals. It is possible that coring fluids may be used when required. The most likely fluid in this case would be an organic, biodegradable, high performance water-based mud (HPWBM). Bentonite will also be carried on board in case it is needed and this may sometimes be mixed with soda ash. All proposed coring fluid products are rated as PLONOR (posing little or no risk to the environment). Only minimal amounts of cuttings will be discharged because 80 - 90% of the core is recovered for analysis. Cuttings are discharged and will settle close to the seabed and are estimated to amount to <0.25 m^3 per borehole.

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			Potential seabed impacts from the coring of each borehole are likely to be minor and localised. Given the highly dynamic marine environment in the Foreshore Licence Area, it is expected that any chemicals from coring fluid and suspended particles will be quickly dispersed in the water column to negligible concentrations. Given the small size of the boreholes (up to 70m depth and 100mm diameter), the very low toxicity of the fluids and the very small quantities of cuttings discharged at the seabed (estimated at <0.25m^3), there will be no likely significant effect on benthic species and habitats from cuttings or coring fluid discharges.
	Cables	EMF impacts from power cables on fish and shellfish.	No installation of cables will take place as part of the surveys being proposed in the FSL application and therefore these impacts (including EMF) are not considered at this stage.
	Project impacts	Landing point at Kilcolgan Point - what are the next steps to bring power ashore and interaction with SAC and SPA sites.	To support of development consent application for the Sceirde Rocks OWF project an EIA Report and Natura Impact Statement will be produced that considers all potential construction, operation and decommissioning impacts from the project itself. The surveys proposed in this FSL application will provide essential data to support future project design, micro-siting and cable routeing activities.
	Galway Bay Complex SAC	Concerned that benthic, CPT and vibrocore surveying due to take place in and around the Galway Bay SAC is likely to have a significant effect. Do not accept the conclusion that the survey works are likely to not have a significant effect.	The Applicant has confirmed that no intrusive survey work will take place within an SAC or SPA. The assessments provided in the Report to Inform Appropriate Assessment and Natura Impact Statement demonstrates that survey work will have no significant effect on the qualifying features of designated sites in the vicinity of the survey work. These assessments were undertaken by independent experts with decades of experience in environmental assessments and the interaction of survey works such as these with designated sites. Therefore the Applicant is confident in the robustness of the assessments provided.
	Marine mammals	Concerned about impacts on other protected species - bottlenose	Humpback whales are known to prefer deeper waters and are therefore unlikely to be encountered across the foreshore licence area. The Report to Inform Appropriate Assessment and Natura Impact Statement submitted with

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		dolphin, common seal, grey seal, humpback whale and otters.	the FSL application provide detail and evidence of why there will be no significant effect from the survey activities on marine mammal protected species (including those listed in the consultee response) and otters. In addition the surveys will be undertaken in strict adherence to the NWPS 2014 guidance ""Guidance to manage risk to marine mammals from man-made sound sources" which provides suitable mitigation to remove any impact on all marine mammal species including bottlenose dolphin, common seal, grey seal, humpback whale and otters. To support of development consent application for the Sceirde Rocks OWF project an EIA Report and Natura Impact Statement will be produced that considers all potential construction, operation and decommissioning impacts from the project itself.
	Noise	We are concerned about noise on the SAC and species we fish.	Section 4.3 of the Report to Inform Appropriate Assessment a robust justification is provided as to why the fish species which are qualifying features of the nearby designated sites are highly unlikely to experience any disturbance or barrier effect from underwater noise from the survey activities. Typically marine invertebrate species which lack a swim bladder or other air-filled space (such as crustaceans found in Irish waters, e.g. lobster, crab and prawn) are not considered to be sensitive to sound pressure (Marine Scotland, 2018). Sound waves in water are comprised of two parts, particle motion and pressure (Nedelec, 2016). It is thought that marine invertebrates will only detect the particle motion at low frequencies (Mooney et al., 2010 & 2012). In comparison with fish species, it has been noted that the marine invertebrates seem to be less sensitive to particle motion (Marine Scotland, 2018). While the sensitivity of marine invertebrates to particle motion is still in early stages of research (Lewandowski et al., 2016) there is little evidence to suggest underwater sound from geophysical surveys could have significant impacts on crustacean species. Focusing on lobsters and crabs within the marine invertebrate group, it is understood that they detect noise in the form of particle motion through

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			mechano-receptors. These types of receptors include internal statocysts (a fluid filled chamber containing a relatively dense material (statolith)); chordontal organs (ciliated stretch receptors acting as proprioceptors in insects and Crustacea which may also have a role in detecting particle motion); and superficial surface receptors (Marine Scotland, 2018). Decapod crustaceans (such as lobster and crab) have been noted to have physiological resilience to underwater noise due to the lack of gas filled spaces. It has been noted that no lethal effects from underwater noise have been observed for crustacean species including edible crab *Cancer pagurus*, European lobster *Homarus gammarus* or the Norway lobster *Nephrops norvegicus*, although there is evidence sub-lethal physiological and behavioural effects among these species (Edmonds et al, 2016). One proposed geotechnical sampling method is vibratory coring (known as vibro coring). Vibro coring involves an oscillating motor attached to the core barrel which causes localised liquefaction in the sediments along the core barrel surface which allows the core barrel to penetrate easier into the sediment. Vibro coring is not considered to be a particularly noisy activity, although sound associated with vibro coring would likely be audible above the sound of the vessel that the rig is deployed from (e.g. 180-190 dB (rms) re 1 micropascal @ 1 metre). Any impacts from sound generated during vibro coring will be short-lived due to the nature of how vibro coring rigs operate, i.e. short, intermittent pulses of vibration. This activity will not cause any long term significant environmental effects. In terms of physical vibrations, the short pulses of vibration will transfer through the core barrel into the sediment, but will not have an impact beyond the immediate vicinity of the coring operations as the energy dissipates through the sediment. Studies have looked at the sensitivity of crustaceans to substrate-borne vibrations considered and noted the greatest sensitivity at frequencies below 200 Hz (Marine Scotland, 2018). Other studies have looked at a species-specific example of *N. norvegicus* (can detect sounds between 20–180 Hz), and *Panopeus* crabs (can detect sounds between 90 -200Hz). Prawn

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			(*Palaemon serratus*) is understood to detect sounds (through particle motion) at frequencies < 2000 Hz (Lovell et al., 2005). The potential geophysical surveys undertaken will likely emit noise between 20-200Hz (Edmonds et al, 2016). Whilst this sound source is within the range of sensitivity of important crustacean species (crab, lobster, *Nephrops*, prawn) it is likely that any impacts would be minor due to the short term and temporary, localised impacts, and the physiological and behavioural resilience to underwater noise of those important crustacean species in the region. Long term impacts would not be expected beyond the duration of the geophysical/geotechnical surveys. Geotechnical drilling does not generate large amplitude sounds. One study reported sound output of 142 – 145 dB re 1 µPa at 1 metre (Erbe & McPherson, 2017) (note that noise from associated vessels could be significantly higher than the sound produced by geotechnical drilling). Decapod crustaceans are considered to be physiologically resilient to noise as they have no gas-filled cavities in their bodies; as a result, the likelihood of impact of geotechnical drilling on either *Homarus* or *Nephrops* species (decapod lobsters found in Irish waters) is very low. Erbe & McPherson (2017) recorded drilling sound from a comparable, small geotechnical drilling rig in shallow water. While the sounds recorded were ca. 35 dB above the ambient soundscape, and thus probably audible by marine animals, the sound levels recorded were tens of dB lower than the amplitude of sounds typically considered to be harmful in marine impact assessment, and are likely no louder than typical inshore vessel activity (Parsons et al., 2021). Sounds of this amplitude, across the duration of a campaign of geotechnical investigations lasting several days or a few weeks, may have minor behavioural impacts on crustaceans, as was observed in shore crabs exposed to seabed vibration (20 Hz) in laboratory conditions (Aimon et al., 2021). This species has also been observed to demonstrate reduced foraging and antipredator behaviour in the presence of elevated ambient noise levels (Wale et al., 2013). However, the geotechnical drilling is likely to be completed within a short campaign (ca. 3

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			days or less at each borehole) and is not believed to cause long-term impacts to these species. Following the completion of the geotechnical investigations at each location it is likely that behaviour of crustaceans found in Irish waters, e.g. lobster, crab and prawn will return to normal, with no long-lasting effects.
	Survey locations	Exact locations of sampling locations unknown. Whilst the applicant has stated no intrusive surveys within an SAC or SPA, this does not account for contamination or disturbance through tides/winds.	Indicative survey locations is a common approach to FSL applications with exact locations confirmed at a later date. All locations will be within the FSL area. Borehole coring may be conducted with seawater only, with no added chemicals. It is possible that coring fluids may be used when required. The most likely fluid in this case would be an organic, biodegradable, high performance water-based mud (HPWBM). Bentonite will also be carried on board in case it is needed and this may sometimes be mixed with soda ash. All proposed coring fluid products are rated as PLONOR (posing little or no risk to the environment). Only minimal amounts of cuttings will be discharged because 80 - 90% of the core is recovered for analysis. Cuttings are discharged and will settle close to the seabed and are estimated to amount to <0.25 m^3 per borehole. Potential seabed impacts from the coring of each borehole are likely to be minor and localised. Given the highly dynamic marine environment in the Foreshore Licence Area, it is expected that any chemicals from coring fluid and suspended particles will be quickly dispersed in the water column to negligible concentrations. Therefore it is highly unlikely that there will be any significant increase is suspended sediment within any designated sites. Given the small size of the boreholes (up to 70 m depth and 100 mm diameter), the very low toxicity of the fluids and the very small quantities of cuttings discharged at the seabed (estimated at <0.25 m^3), there will be no likely significant effect on species and habitats from cuttings or coring fluid discharges. Benthic and geotechnical survey sampling will also cause a small amount of sediment to become suspended in the water and subsequently dispersed and deposited on the seabed at a location depending on wave and tidal

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			conditions. However, any deposition of material will be insignificant compared to baseline levels of sediment movement within the Foreshore Licence Area. In addition, equipment required or installed as part of the site investigation activities will not cause any physical obstruction or cause any potential alteration to the natural physical processes (water and sediment movement) of any designated site.
		It is impossible for the applicant to have complied with its legislative requirements pursuant to the Foreshore Acts and the Planning and Development Acts and Regulations and the EIA Directive 2011/92/EC and Habitats Directive	The Galway Bay Inshore Fishermen's Association has not explained, or provided any evidence to support, how or why it is alleged that it is impossible for the applicant to have complied with its legislative requirements. The Applicant considers that it has complied with all of these, to the extent that they are relevant. For completeness, we have considered the applicability of the legislation referenced in this submission: - The Planning and Development Acts 2000 - 2022 and Planning and Development Regulations 2001 - 2022 are not applicable to any application for a Foreshore Licence for site investigations. - Environmental Impact Assessment Directive The applicant prepared a screening report for the purposes of Directive 2011/92/EC (the Environmental Impact Assessment ("EIA") Directive). This was submitted, together with an Environmental Assessment, as part of the Sceirde Rocks' Foreshore Licence application. It was concluded, in the EIA Screening Report, that the proposed site investigations: • Do not fall under the description of activities included within Annex I or Annex II of the Directive; and • Are of such a nature, scale and location that there are no foreseeable significant effects on the environment arising from the proposed activities. On that basis, the need for an EIA to be carried out in respect of the proposed site investigations works can be screened out. For completeness, it should be noted that windfarm project itself will be subject to the EIA Directive and an EIA Report will be prepared. Foreshore Acts

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			- The applications for Foreshore Licences were submitted in full compliance with the relevant provisions of the Foreshore Acts 1933 (as amended). Habitats Directive - An Appropriate Assessment Screening Report and Natura Impact Statement were submitted with the application, and which were prepared in compliance with the relevant provisions of the Habitats Directive and European Communities (Birds and Natural Habitats) Regulations 2011 (as amended).
22. Cumann Iascairi Oileain Arann - Anonymous	Cumulative	Cumulative impact of both FS007161 and FS007543.	The information provided in our Environmental Assessment and EIA Screening Report demonstrates that any disruption from survey activity will be short term, temporary and not significant on both fishing activity and fish ecology and there will be no significant cumulative impact. In advance of surveys being undertaken, the Applicant will consult with fishermen, their representative Producer Organisations, relevant Inshore Fisheries Forums and charter vessel operators with the objective of ensuring that survey activities can be completed safely and without damage to fishing gear, survey equipment or vessels. Commencement of survey activities is subject to Foreshore Licence consent and the availability of suitable survey contractor. The Applicant will consult with local fishermen to develop and implement where possible a survey programme which minimises the risk of any potential losses through effective planning and coordination of the survey activities.
	Project impacts	Concern over long term impacts of displacement, wind farm construction and cable laying.	The construction and operation of a wind farm and export cable route are not the subject of this FSL application. The future EIA Report that will consider the whole Project development and all potential construction/operation impacts and will be submitted with a future development consent application.
	Designated Sites	Concerned of the impact of the surveys on the Galway Bay SAC and other SACs.	The Applicant has confirmed that no intrusive survey work will take place within an SAC or SPA. The assessments provided in the Report to Inform Appropriate Assessment and Natura Impact Statement demonstrates that

Submission	Topic	Overview of Comments	Applicant Response
			survey work will have no significant effect on the qualifying features of designated sites in the vicinity of the survey work.
	Crustaceans	Concern of the impact on increase suspend solids on marine benthic organisms and fish from coring fluids and cuttings particularly on brown crab and lobster (female carrying eggs).	Borehole coring may be conducted with seawater only, with no added chemicals. It is possible that coring fluids may be used when required. The most likely fluid in this case would be an organic, biodegradable, high performance water-based mud (HPWBM). Bentonite will also be carried on board in case it is needed and this may sometimes be mixed with soda ash. All proposed coring fluid products are rated as PLONOR (posing little or no risk to the environment). Only minimal amounts of cuttings will be discharged because 80 - 90% of the core is recovered for analysis. Cuttings are discharged and will settle close to the seabed and are estimated to amount to <0.25 m^3 per borehole. Potential seabed impacts from the coring of each borehole are likely to be minor and localised. Given the highly dynamic marine environment in the Foreshore Licence Area, it is expected that any chemicals from coring fluid and suspended particles will be quickly dispersed in the water column to negligible concentrations. Given the small size of the boreholes (up to 70m depth and 100mm diameter), the very low toxicity of the fluids and the very small quantities of cuttings discharged at the seabed (estimated at <0.25m^3), there will be no likely significant effect on benthic species and habitats from cuttings or coring fluid discharges.
	Cables	EMF impacts from power cables on fish and shellfish	No installation of cables will take place as part of the surveys being proposed in the FSL application and therefore these impacts (including EMF) are not considered at this stage.
	Project impacts	Landing point at Kilcolgan Point - what are the next steps to bring power ashore and interaction with SAC and SPA sites	To support of development consent application for the Sceirde Rocks OWF project an EIA Report and Natura Impact Statement will be produced that considers all potential construction, operation and decommissioning impacts from the project itself. The surveys proposed in this FSL application will provide essential data to support future project design, micro-siting and cable routeing activities.

Submission	Topic	Overview of Comments	Applicant Response
	Marine mammals	Concerned about impacts on other protected species - bottlenose dolphin, common seal, grey seal, humpback whale and otters.	Response it the same as that given to respondent 21. Galway Bay Inshore Fishermen's Association and their concerns regarding Marine mammals.
	Underwater noise	We as local fishermen have had some negative experiences with underwater eco sounding/blasting in the area. In 2019, a survey took place in the area to review the ground adjacent to the pier on Inis Oírr. A member of our Cumann Iascairi Oileáin Árann group had 3 boxes of lobster stored in the pier ready for sale. When the store pots were pulled out of the water, all of the lobsters were dead and omitted a white powder like substance. We suspect the surveying caused great stress to the lobsters and caused their death. We are attaching photos. We accept that the intention behind the offshore wind farm projects is to create green energy for environmental reasons however, we are concerned that the surveying and building methods will cause environmental damage to the habitats and species in the area. The application accepts that noise could be an	Response it the same as that given to respondent 21. Galway Bay Inshore Fishermen's Association and their concerns of the impact of noise on the species they fish.

Submission	Topic	Overview of Comments	Applicant Response
		issue for certain species but makes no reference and assessment to crustaceans.	
	Cable laying	We have concerns for the environmental impact on various hard ground outcrops along with cable corridor investigative track. If a licence is granted and the project moves onto the cable laying stage, we are concerned as to whether the cable along these hard outcrops (that cannot be buried) will be exposed, covered with concrete matressing or rock armour.	No installation of cables will take place as part of the surveys being proposed in the FSL application and therefore these impacts are not considered at this stage. The future EIA Report that will consider the whole Project development and all potential construction /operation impacts and will be submitted with a future development consent application.
	Scale	We submit that the proposed investigations are excessive and not necessary at this stage. It seems the applicant is seeking extensive survey permission for various landfall points including significant CPT/vibrocore, benthic and borehole locations	The surveys proposed in this FSL application will provide essential data to support future project design, micro-siting and cable routeing activities which has the overall aim of reducing potential environmental impacts from the construction and operation of the offshore wind farm.
	Survey Locations	Exact locations of sampling locations unknown. Whilst the applicant has stated no intrusive surveys within an SAC or SPA, this does not account for contamination or disturbance through tides/winds	The response is the same as that given to 21. Galway Bay Inshore Fishermen's Association concerns over exact locations of sampling.

Submission	Topic	Overview of Comments	Applicant Response
	Legislative compliance	It is impossible for the applicant to have complied with its legislative requirements pursuant to the Foreshore Acts and the Planning and Development Acts and Regulations and the EIA Directive 2011/92/EC and Habitats Directive	The response is the same as that given to 21. Galway Bay Inshore Fishermen's Association concerns over Legislative compliance.
25. Iascairi Sceirde fishing group - Anonymous	Data	In circumstances where the Applicant is relying on inaccurate maps and data, it is obvious the assessments carried out are not reliable.	The Applicant welcomes the references for additional data sources which can be used in future assessments in support of the offshore wind farm development consent application. The Applicant is confident in the robustness of the assessment of potential impacts from the proposed survey works and fish and shellfish species in the area with a strong focus on the short term, temporary nature of the surveys and the small seabed footprint of the surveys in relation to the wider habitat availability.
	Designated Sites	The Applicant has concluded no likely significant effects, we do not accept this assertion and the assessments are not reliable.	The Applicant has confirmed that no intrusive survey work will take place within an SAC or SPA. The assessments provided in the Report to Inform Appropriate Assessment and Natura Impact Statement demonstrates that survey work will have no significant effect on the qualifying features of designated sites in the vicinity of the survey work. These assessments were undertaken by independent experts with decades of experience in environmental assessments and the interaction of survey works such as these with designated sites. Therefore the Applicant is confident in the robustness of the assessments provided.
	Water quality	Do not accept the conclusion that discharges from coring fluids and cuttings are not likely to cause significant effect on protected species.	Indicative survey locations is a common approach to FSL applications with exact locations confirmed at a later date. All locations will be within the FSL area. Borehole coring may be conducted with seawater only, with no added chemicals. It is possible that coring fluids may be used when required. The most likely fluid in this case would be an organic, biodegradable, high performance water-based mud (HPWBM). Bentonite will also be carried on

Submission	Topic	Overview of Comments	Applicant Response
			board in case it is needed and this may sometimes be mixed with soda ash. All proposed coring fluid products are rated as PLONOR (posing little or no risk to the environment). Only minimal amounts of cuttings will be discharged because 80 - 90% of the core is recovered for analysis. Cuttings are discharged and will settle close to the seabed and are estimated to amount to <0.25 m^3 per borehole. Potential seabed impacts from the coring of each borehole are likely to be minor and localised. Given the highly dynamic marine environment in the Foreshore Licence Area, it is expected that any chemicals from coring fluid and suspended particles will be quickly dispersed in the water column to negligible concentrations. Therefore it is highly unlikely that there will be any significant increase is suspended sediment within any designated sites. Given the small size of the boreholes (up to 70 m depth and 100 mm diameter), the very low toxicity of the fluids and the very small quantities of cuttings discharged at the seabed (estimated at <0.25 m3), there will be no likely significant effect on species and habitats from cuttings or coring fluid discharges. Benthic and geotechnical survey sampling will also cause a small amount of sediment to become suspended in the water and subsequently dispersed and deposited on the seabed at a location depending on wave and tidal conditions. However, any deposition of material will be insignificant compared to baseline levels of sediment movement within the Foreshore Licence Area. In addition, equipment required or installed as part of the site investigation activities will not cause any physical obstruction or cause any potential alteration to the natural physical processes (water and sediment movement) of any designated site.
	Habitats	Adverse impact on sensitive habitats has not be properly assessed. Applicant has yet to provide details of exact locations of boreholes.	Indicative survey locations is a common approach to FSL applications with exact locations confirmed at a later date. All locations will be within the FSL area. The area directly affected will be highly localised within the footprint of the equipment deployed. Any sessile epifauna on which equipment is placed may

Submission	Topic	Overview of Comments	Applicant Response
			be damaged or lost. In soft sediments, the equipment may penetrate a few centimetres into the sediment which may cause displacement or loss of individual infaunal animals. The geotechnical sampling equipment will typically remain in position for three days or less at each location, after which it will be recovered, and nothing will be left on the seabed. In very soft sediments, small depressions may be left in the seabed. Recovery from the minor disturbance is expected to begin immediately due to natural processes. The biota in the Foreshore Licence Area are naturally habituated to sediment transport processes and are therefore less susceptible to the impacts of temporarily increased sedimentation rates. The following measures will be taken to avoid or reduce any potential impacts on the seabed: • The geotechnical boring and CPT equipment will be accurately positioned on the seabed at each pre-determined location where safe and practicable to do so, reducing any seabed impacts where possible. All deployment and recovery activities will be undertaken as per pre-determined procedures. • A drop-down underwater camera or ROV will be used at each benthic sampling station and the grab will only be deployed if soft sediments are present, thereby avoiding unnecessary damage to potential rocky reef habitats. The photographic equipment itself will not contact the seabed. Given the dynamic nature of the seabed in the Foreshore Licence Area, potential sediment suspension and re-settlement around those activities causing seabed disturbance is only likely to have a temporary effect and to occur in close proximity to the areas directly impacted. Considering the relatively small scale and temporary nature of the seabed impact and the potential for rapid recovery once the short-term activities are competed, there will be no likely significant effect.
	Cumulative	Cumulative impact of both FS007161 and FS007543 and long term effect of removing various stages of the life cycle of shellfish	A cumulative and in-combination assessment has be undertaken and presented in the supporting assessment reports submitted with the FSL application. The assessment concludes no significant impact due to the relatively small footprint of the survey works in relation to the wider habitat

Submission	Topic	Overview of Comments	Applicant Response
		species in the area is not adequately considered.	availability. Any impact on shellfish would be would be small, highly localised, temporary and therefore not significant.
	HRA	Screening for Appropriate accepts that effects from underwater noise from the project on migratory fish cannot be excluded. No proper assessment has been done.	Following receipt of the DHLGH's AA Screening Report, the Applicant has provided a refreshed Natura Impact Statement.
	Legislative compliance	EIA and AA Screening carried out by the promoter is based on inadequate information. EIA screening fails to recognise that the proposed investigation activity is an integral part of an intended offshore wind farm for which the requirement for EIA cannot be excluded.	The surveys are an activity not a project of a class that requires EIA. A full EIA will be submitted for the windfarm project in due course. The surveys do not form part of an EIA project, rather they are surveys to inform the preparation of the EIAR for the windfarm project. This is a fundamental misunderstanding of the EIA Directive and case law. For completeness, the Applicant prepared a screening report for the purposes of Directive 2011/92/EC (the Environmental Impact Assessment ("EIA") Directive). This was submitted, together with an Environmental Assessment, as part of the Sceirde Rocks' Foreshore Licence application. It was concluded, in the EIA Screening Report, that the proposed site investigations: • Do not fall under the description of activities included within Annex I or Annex II of the Directive; and • Are of such a nature, scale and location that there are no foreseeable significant effects on the environment arising from the proposed activities. On that basis, the need for an EIA to be carried out in respect of the proposed site investigations can be screened out.
	Onshore works	The application is made without any consideration of the onshore grid connection and potential impacts on land based European Sites. The promoter is trying to leave route options open is causing	There appears to be a misunderstanding in relation to what a licence is being sought for. The FSL application is for marine surveys only and therefore does not require the consideration of land based designations with which there is no pathway for connectivity.

Submission	Topic	Overview of Comments	Applicant Response
		unnecessary damage to the environment and European sites.	
	Legislative compliance	It is submitted the approach taken by the promoter in providing information to the Board in terms of AA departs in a number of significant respects from the overall requirements of the EU Commission.	Iascairi Sceirde Fishing Group has not identified or explained how or on what basis it has alleged that the applicant's approach to providing information to the Department (not the Board) departs from the overall requirements of the Commission. The Appropriate Assessment Screening Report and Natura Impact Statement were prepared in compliance with the Commission Guidance document 'Managing Natura 2000 sites, The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC', as well as the Habitats Directive.
		European and Irish case law emphasises that any conclusions reached in the context of AA or screening for AA to be carried out by the competent authority must be based on scientific findings. If there are any lacunae or gaps in the information, the threshold of 'beyond reasonable scientific doubt' cannot be achieved.	This submission is noted. We confirm that this is the standard to which the Appropriate Assessment Screening Report and Natura Impact Statement were prepared.
26. Wild Ireland Defence CLG - Secretary	Legislative compliance	Required statutory environmental assessments by competent authorities consistent with the provisions of relevant EU Directives are absent: 1. the Strategic Environmental Assessment (SEA) Directive 2. the Environmental Impact Assessment (EIA) Directive 3. the Birds and Habitats Directives 4. the Maritime Spatial Planning (MSP) Directive	Wild Defence Ireland CLG has not identified or explained what required statutory environmental assessments it alleges are absent, nor has it identified which relevant EU Directives it is referring to. The Applicant considers that it has complied with all of the relevant statutory requirements. For completeness, we have considered the applicability of the relevant EU Directives below: The Habitats and Birds Directives An Appropriate Assessment is being carried out by the Minister under and in compliance with the Habitats Directive. The NIS submitted as part of the Foreshore Licence application includes information to support the Minister undertaking Appropriate Assessment as required under the Habitats Regulations, to ensure compliance with the Habitats Directive. The report

Submission	Topic	Overview of Comments	Applicant Response
			provides the necessary information to the competent authority to enable the Minister to determine whether the proposed site investigation activities at Sceirde Rocks Offshore Wind Farm, individually or in combination with other plan or projects, will result in any adverse effects on the integrity of the relevant European Sites, having regard to their conservation objectives, screened in during the Stage 1 Appropriate Assessment Screening (see 'Report to Inform Appropriate Assessment Screening' (Document Ref L100725-S00-A-REPT-005) also submitted as part of the licence application and Screening Determination for Appropriate Assessment FS007543 and Screening Determination for Appropriate Assessment FS007161). An Annex IV Species Report has also been submitted. Environmental Impact Assessment As outlined above, the applicant prepared a screening report for the purposes of Directive 2011/92/EC (the Environmental Impact Assessment ("EIA") Directive). This was submitted, together with an Environmental Assessment, as part of the Sceirde Rocks' Foreshore Licence application. It was concluded, in the EIA Screening Report, that the proposed site investigations: • Do not fall under the description of activities included within Annex I or Annex II of the Directive; and • Are of such a nature, scale and location that there are no foreseeable significant effects on the environment arising from the proposed activities. Strategic Environmental Assessment Directive The Strategic Environmental Assessment Directive is not engaged as this is an activity, not a plan or programme. The Maritime Spatial Planning Directive The National Marine Planning Framework is Ireland's first comprehensive marine spatial planning framework, which is required under the Maritime Spatial Planning (MSP) Directive 2014/89/EU. The Marine Spatial Planning Directive is not engaged here as it is relevant only to the proposed offshore windfarm and not the site investigation works the subject of the within application for foreshore licences for site investigations.

Submission	Topic	Overview of Comments	Applicant Response
		Case Law C-127/02 (Waddensee) C-323/17 (People Over Wind, Peter Sweetman and Coillte) C-418/04 (Commission v Ireland) C-258/11 (Sweetman – Galway bypass) C-98/03 (Commission v Germany)	Wild Defence Ireland CLG has referenced a number of cases, without providing any context or detail as to the basis upon which it is seeking to rely on these cases or setting out why they consider them to be of relevance. We have endeavoured to respond below to each of these cases. <u>C-323/17 (People Over Wind, Peter Sweetman and Coillte)</u> This decision of the CJEU relates to the application of mitigation measures at AA Screening Stage. As a Natura Impact Statement has been submitted, and the Minister has confirmed that a Stage 2 Appropriate Assessment is required, this case is not relevant. C-127/02 (Waddenzee) and C-157/96 (The Queen v Ministry of Agriculture, Fisheries and Food and Commissioners of Customs & Excise, ex parte National Farmers' Union and Others) C-418/04 (Commission v Ireland) These decisions of the CJEU relate to the application of the precautionary principle which has been applied here as an NIS was prepared and a Stage 2 Appropriate Assessment will be carried out. <u>C-258/11 (Sweetman – Galway bypass)</u> This decision relates to the standard to be applied at AA Screening stage to determine whether a site / species should be carried forward to Stage 2 Appropriate Assessment. <u>C-98/03 (Commission v Germany)</u> This decision of the CJEU confirmed that practice indicates that a screening decision should be recorded in writing and be available to the public. This has been done by the Minister.
		C-124/16 (Ianos Tranca)	<u>C-124/16 (Ianos Tranca)</u> This case appears to relate to criminal proceedings and its alleged relevance is entirely unclear.
		C-441/17 - Commission v Poland (Bialowieza Forest) Kelly v. An Bord Pleanála [2014] IEHC 400	<u>C-441/17 - Commission v Poland (Bialowieza Forest)</u> Relates to the obligation to carry out an Appropriate Assessment where a plan or project is not connected to the conservation objectives of a site and is likely

Submission	Topic	Overview of Comments	Applicant Response
		C-243/15 (Lesoochranárske zoskupenie VLK C-461/17 (Holohan and others)	to have a significant effect upon the relevant European site. An AA will be carried out by the Minister. Kelly v. An Bord Pleanála [2014] IEHC 400 This decision relates to how the Minister must carry out his Appropriate Assessment, and confirms that the Minister: (i) Must identify, in the light of the best scientific knowledge in the field, all aspects of the development project which can, by itself or in combination with other plans or projects, affect the European site in the light of its conservation objectives. This clearly requires both examination and analysis. (ii) Must contain complete, precise and definitive findings and conclusions and may not have lacunae or gaps. The requirement for precise and definitive findings and conclusions appears to require analysis, evaluation and decisions. Further, the reference to findings and conclusions in a scientific context requires both findings following analysis and conclusions following an evaluation each in the light of the best scientific knowledge in the field. (iii) May only include a determination that the proposed development will not adversely affect the integrity of any relevant European site where upon the basis of complete, precise and definitive findings and conclusions made the Board decides that no reasonable scientific doubt remains as to the absence of the identified potential effects. C-243/15 (Lesoochranárske zoskupenie VLK) ("Brown Bear II") This relates to public participation and in this case the public have had an opportunity to make submissions in relation to the Appropriate Assessment process. C-461/17 (Holohan and others) Relates to the content of the NIS and confirms that all the habitat and species types for which a site is protected must be assessed and considered together with implications for habitat types and species to be found outside the boundaries of that site, provided that those implications are likely to affect the conservation objectives of the site. This has been done here and the Report to Inform Appropriate Assessment and NIS considers all designated

Submission	Topic	Overview of Comments	Applicant Response
			sites with potential connectivity to the foreshore licence area and survey activities.
		C-258/11 (Sweetman – Galway bypass) C-164/17 (Grace and Sweetman) C-387/15 (C-387/15 - Orleans and Others), C-388/15 (Malcorps and others)	C-258/11 (Sweetman – Galway bypass), C-164/17 (Grace and Sweetman), C-387/15 (C-387/15 - Orleans and Others), C-388/15 (Malcorps and others) All four decisions of the CJEU related to a loss of habitat within a designated European site. The proposed site investigations to be carried out under the proposed Foreshore Licence will not result in a loss of habitat. In particular the Applicant has committed that no intrusive surveys will be undertaken within and SAC or SPA.
30. Anonymous	Marine Mammals	We know that the humpback whale also travels through the area proposed for the survey licence. The islands and the sea surrounding them are rich in biodiversity and we do not want to see that biodiversity or any marine mammal harmed, or for any whales or dolphins to become beached	Response it the same as that given to respondent 21. Galway Bay Inshore Fishermen's Association and their concerns of the impact of noise on the species they fish.
	Benthic	Concern over benthic impacts and SACs. Whilst the applicant has stated no impact on an SAC, this does not account for tides/winds.	Response is the same as that given to respondent 25. Iascairi Sceirde fishing group and their concerns over water quality.
31 Irish Whale and Dolphin Group – MMO Officer	Cumulative	MMO reports from 2022 surveys should form part of the submission of information relevant to this licence under the cumulative assessment.	These surveys had not been undertaken at the time of writing the assessments in support of the FSL application.
	Data	The Aarhus Convention guarantees the public right to information on	This is an application for foreshore licences for site investigations under the Foreshore Acts. The Applicant has complied with the Foreshore Acts and all

Submission	Topic	Overview of Comments	Applicant Response
		the state of the environment and as such the MMO reports for previous surveys carried out prior to the licence being issued should be included in this submission for evaluation of compliance and environmental impact and is entirely relevant to this application which requests the right to geophysical surveying over a five year period and it is necessary to know if the geophysical surveys are already completed (prior to the licence being issued) or if further surveys are required and over what duration?	relevant environmental legislation and the application is being made subject to public consultation. The applications contain sufficient information in order to enable the Minister to undertake the relevant assessments required under this legislation.
	Data	It is noted the Marine Advisors Screening Stage Reports (both dated November 2022) appear unaware of earlier completed geophysical surveys and have not checked compliance to date but merely stated the work will be conducted in compliance with DAHG (2014) guidance. Such reports that exist to confirm compliance therefore do not appear to have been checked. Why not? Further in the Screening for Appropriate Assessment Report the Marine Advisor appears	This is an application for foreshore licences for site investigations under the Foreshore Acts. The Applicant has complied with the Foreshore Acts and all relevant environmental legislation and the application is being made subject to public consultation. The applications contain sufficient information in order to enable the Minister to undertake the relevant assessments required under this legislation.

Submission	Topic	Overview of Comments	Applicant Response
		unaware of already completed geophysical works which are proposed in these applications and this calls into question the knowledge of the regulator and ability to regulate the offshore environment.	

3.5 Mitigation measures

As per the applicants April 2023 Natura Impact Statement, the following mitigation measures are recommended to ensure that there will be no adverse effects on the integrity of any European site:

1. Strict adherence to the protocol 'Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Waters' (DAHG, 2014).
2. Liaising with other operators within 60km of the boundary of the Foreshore Licence Application Area engaging in surveys likely to produce in-combination effects, including geophysical, geotechnical and seismic surveys.

The 60km zone reflects the importance of this area to the marine mammals considered in this Appropriate Assessment (NPWS, 2019a). Details of these mitigation measures are given in table 10.

3.5 Transboundary effects

No transboundary effects will result from this proposed project.

Table 10 Mitigation measures required to ensure no adverse effects on the conservation objectives of European Sites.

Adverse Effects	Description of measures details on Implementation, effectiveness, monitoring				
Disturbance from underwater noise Harbour Seal Grey Seal Harbour Porpoise Bottlenose Dolphin Salmon Sea lamprey Freshwater Pearl mussel	1. The operating frequencies of the geophysical and drilling operations are within the hearing range of cetaceans and pinnipeds. DAHG (2014) "Guidance to Manage Risk to Marine Mammals from man-made sound sources in Irish waters" provide guidance and mitigation measures to avoid disturbance to marine mammals from the activities from the geophysical and drilling surveys. 2. A qualified Marine Mammal Observer (MMO) will be appointed to monitor for marine mammals and to log all relevant events using the relevant data forms in the DAHG (2014) guidance. 3. The MMO will be located at a suitable vantage point, providing good all-round visibility. 4. Geophysical and drilling operations will only commence in daylight hours. 5. Delays to the commencement of the site investigations will be recommend should any species be detected within the relevant monitored zone. 6. An agreed and clear on-site communication signal must be used between the MMO and the Works Superintendent as to whether the relevant activity may or may not proceed, or resume following a break. It shall only proceed on positive confirmation with the MMO. 7. The MMO shall conduct pre-start-up constant effort monitoring at least 30 minutes before the sound-producing activity is due to commence. Sound-producing activity shall not commence until at least 30 minutes have elapsed with no marine mammals detected within the Monitored Zone by the MMO. 8. Procedures for drilling operations including prescribed Pre-Start Monitoring and breaks in sound output as outlined in section 4.3.2 of the DAHG 2014 guidance shall be strictly adhered to. 9. In the case of geophysical surveys the prescribed Pre-Start Monitoring shall subsequently be followed by a Ramp-Up Procedure which should include continued monitoring by the MMO. The process laid out in Sections 4.3.4 (i) and 4.3.4 (ii) of the DAHG 2014 guidance shall be strictly adhered to. 10. Inland Fisheries Ireland (IFI) recommended in their Prescribed Bodies that soft-start and ramp-up procedures for any sound-generating surveys undertaken as outlined in the DAHG 2014 guidance but used to reduce the impact on migratory fish species. 11. An MMO report to be submitted to the Foreshore Unit Marine Advisor with 30 days of completion of any geophysical and drilling survey activity.				
	How will the measure contribute to avoiding/reducing the effects	**How will the measures be implemented and by whom**	**Demonstration of effectiveness.**	**Timescale of implementation.**	**Proposed monitoring scheme and reporting requirements.**

	on the integrity of the site				
	The mitigation measures outlined above follow best practice guidance to manage the risk to marine mammals from man-made sound sources in Irish waters. The soft-start and ramp-up procedures ensure that any fish which may be present will not be subjected to sudden noise and will be given ample time to move away from the noise source.	A qualified MMO will be on board to ensure that the DAHG 2014 guidance is strictly adhered to.	The adherence to the DAHG 2014 guidance is the current best practise to avoid disturbance to marine mammals from man-made underwater noise. The soft-start and ramp-up procedures are recommended by IFI as the current best practise to avoid disturbance to fish species from man-made underwater noise.	The DAHG 2014 guidance will be strictly adhered to during all geophysical and drilling activities. This will include all stoppages, break in sound or line changes as directed by the DAHG guidance.	A full report on the MMO operations and the mitigation measures undertake will be prepared by the MMO and will be provided to the Foreshore Marine Ecologist within 30 days of the geotechnical drilling survey and the geophysical surveys. This shall include a daily log concerning the testing and operation of all relevant sound-producing equipment/activities and a record of all marine mammal detections. Reporting will follow the DAHG guidance (2014).
Adverse Effects	**Description of measures details on Implementation, effectiveness, monitoring**				
In-Combination effects from temporal overlap with geophysical	1. The applicant must liaise with other similar operators or surveyors within a minimum distance of 60km from the boundary of the FLAA. No surveys producing man-made underwater noise likely to produce in-combination effects with the proposed survey can overlap temporally.				

and certain geotechnical surveys Harbour Seal Grey Seal Harbour Porpoise Bottlenose Dolphin Salmon Sea lamprey Freshwater Pearl mussel	2. The applicant must make a submission to the Foreshore Unit of the Department of Housing, Local Government & Heritage two weeks before engaging in surveys likely to produce in-combination effects, including geophysical, geotechnical and seismic surveys. This submission should include details of the other operators contacted and any engagement and operational procedures agreed to ensure that there is no temporal overlap and in-combination effects.				
	How will the measure contribute to avoiding/reducing the effects on the integrity of the site	**How will the measures be implemented and by whom**	**Demonstration of effectiveness.**	**Timescale of implementation.**	**Proposed monitoring scheme and reporting requirements.**
	This will ensure no temporal overlap of surveys that produce underwater noise in close proximity to one another.	The licensee must notify the relevant Regulatory Authority (MARA) two weeks before commencing geophysical or geotechnical surveys, submitting documentary evidence. This must include details of any the engagement and operational procedures agreed other maritime users.	All activities requiring a foreshore licence/lease that produces underwater noise must follow the DAHG 2014 Guidance document. This is considered the current best practise mitigation for these activities. Ensuring no temporal overlap between such surveys further protects venerable species.	The assessment of temporal overlap will occur prior to going to sea to survey.	The operators contacted and any arrangements agreed to be submitted to Foreshore Unit with the one week notice.

3.6 Appropriate Assessment conclusion

Using the precautionary principle the screening process determined that likely significant impacts as a result of disturbance from underwater noise on marine mammals, migratory fish species and birds for thirty six SACs and two SPAs could not be rule out.

Given the very low likelihood of interaction between the sound source and a diving bird due to the intervening distances, relatively short exposure time, the temporary and short-term nature of the survey work, the mobile nature of the surveys and the displacement of most diving species due to flushing disturbance, it can be determined that underwater noise would have no effect on diving seabirds in the vicinity of the survey area it can be determined that underwater noise would have no effect on diving seabirds in the vicinity of the survey area. No mitigation is necessary to ensure the proposed project, individually or in combination with other plans or projects, will not adversely affect the integrity of the SPAs, Connemara Bog Complex SPA and Inishmore SPA.

The Appropriate Assessment process determined that mitigation measures were required to ensure that no impacts would occur to Annex II species, directly or indirectly, as a result of underwater noise from the geophysical and geotechnical surveys. Mitigation included strict adherence to the DAHG guidance on underwater noise (DAHG, 2014) and liaising with other operators within a 60km of the Foreshore Licence Application Area engaged in surveys likely to produce in-combination effects.

With adherence to these measures and in view of best scientific knowledge and of the sites' conservation objectives, the proposed project, individually or in combination with other plans or projects, will not adversely affect the integrity of any European sites.

Section 4 Conservation Objectives

The site specific conservation objectives for SACs were Version 1 and the four SPA had generic objectives on NPWS's website at the time of writing. Site specific conservation objectives were not available for Cardigan Bay/ Bae Ceredigion [UK 0012712], Bristol Channel Approaches / Dynesfeydd Môr Hafren UK0030396 or any of the French sites at time of writing.

Kilkieran Bay and Islands IE002111
https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002111.pdf

Slyne Head Islands SAC IE000328
https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000328.pdf

Slyne Head Peninsula SAC IE002074
https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002074.pdf

Connemara Bog Complex SAC IE002034
https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002034.pdf

Lough Corrib SAC IE000297
https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000297.pdf

Maumturk Mountains SAC
https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002008.pdf

The Twelve Bens/Garraun Complex SAC
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