MARESCONNECT LTD.

Investigative Foreshore Licence for Site Investigations Ref:FS007635

Schedule of Survey Works

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Intertek Energy & Water Consultancy Services
Exchange House, Station Road, Liphook, Hampshire GU30 7DW, United Kingdom

DOCUMENT RELEASE FORM

MaresConnect Ltd.

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Author/s

[redacted]

Project Manager

[redacted]

Authoriser

[redacted]

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1. SURVEY SCHEDULE

The intention is to commence the proposed site investigation activities as soon as feasible following award of a Foreshore Licence, taking into consideration any proposed mitigation requirements. The survey works will preferably be undertaken in the months feasible from the summer and/or autumn months in 2023 onwards following award of the Foreshore Licence and subject to weather conditions and vessel availability. However, there is potential for programme slippage and MaresConnect Ltd (MCL) are applying for a Foreshore Licence to be valid for a five-year period to provide contingency for any delays. Figure 1-1 below outlines the indicative sampling locations

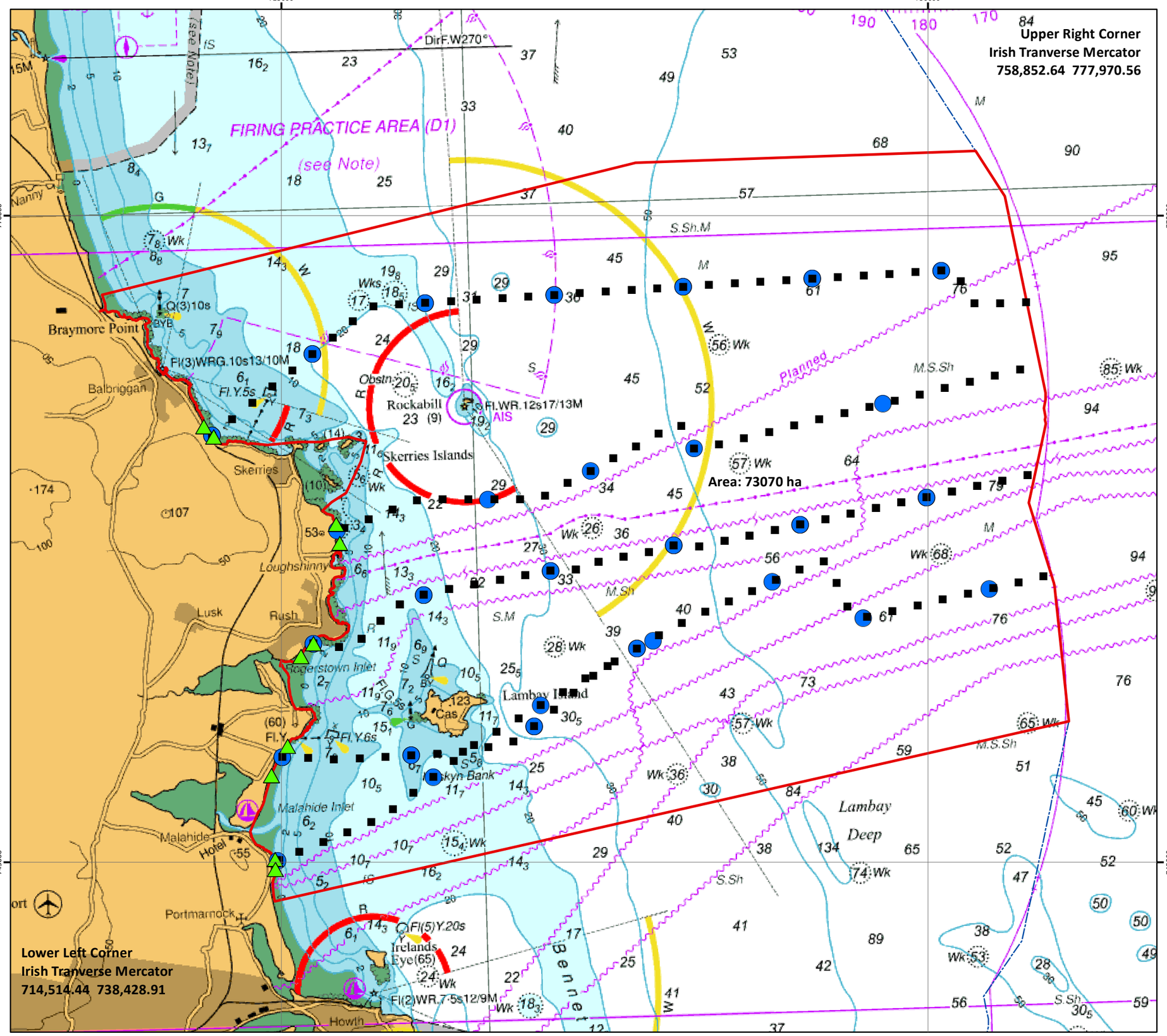
The following Licensable Activities are proposed (note that all sample numbers are indicative and include an extra 20% for a conservative estimate):

- **Geotechnical**: Up to 12 landfall boreholes (nearshore marine) two boreholes at each site (an extra two as contingency) , 155 shallow-water CPTs and 155 shallow-water vibrocores (VCs) will be acquired to evaluate the nature and mechanical properties of the seabed sediments. Up to 20 boxcores may be used to characterise shallow soils if the sediment is found to be very soft. The geotechnical survey is likely to be carried out over multiple campaigns to determine site characteristics and cable positioning. Surveys will be undertaken at any time of the year (subject to weather conditions). Campaigns are likely to be within a two to four month period at any time of the year -(subject to weather conditions).Positioning of samples will be informed by the geophysical survey. Indicative geotechnical sample stations are provided in Foreshore Licence Application Map 2 (Drawing Ref: P2587-LOC-007-B).
- **Geophysical survey:** The geophysical survey will comprise multibeam echosounder (MBES), sidescan sonar (SSS), sub-bottom profiler (SBP) and magnetometer surveys to determine seabed conditions within the FLAA. Surveys can be undertaken at any time of the year (subject to weather conditions) and are likely to be carried out over a period of up to five-months (including downtime).
- **Environmental (benthic sampling) and Intertidal**: The benthic sampling campaign is likely to be conducted alongside the geophysical survey, however if this is not possible the benthic sampling would be carried out separately. Up to 35 grab sample stations, and additional drop-down camera (DDC) and video transects, will be acquired to characterise seabed habitats and sensitive features. 35 boxcores will be taken along proposed cable route in the Foreshore licensable area. At each geotechnical and environmental sampling station a DDC will be deployed to allow for further confirmation of sampling analysis. Intertidal surveys will be undertaken separately and will take less than 1-week at each landfall selected for survey (five chosen landfall zones).
- **Archaeological survey:** A desktop study exercise will be undertaken to inform the approach to assessment of intertidal and offshore cultural heritage interests. This will be informed by an archaeological walkover of the two chosen landfall sites, including magnetometer survey to identify any features of importance. A qualified, marine archaeologist will review all geophysical survey data ahead of geotechnical sampling to evaluate sampling positions for features of underwater importance. Geotechnical sampling stations will be moved if potential features of interest are identified. The archaeological survey will take 1-2 days to complete at each site.

It should be noted that other survey activities will be taking place, but these are not licensable under the Foreshore Act

- **Topographic Landfall Surveys** - Terrestrial survey methods at the landfall (shoreline and hinterland) may include a topographic survey of the ground elevations to ensure that there are continuous height measurements between the landfall and the cable route and to delineate hard features that will present an obstacle to cable installation. Terrestrial geophysical investigations may include seismic refraction of the cable route centreline and offset lines to provide information on sub-surface sediment layers and thicknesses using a ground penetrating radar survey, or similar. One of two techniques will be selected to acquire the data; either a traditional topographic survey using levels and reference points via RTK foot or vehicle traverses, laser-scanning and/or an aerial drone survey using photogrammetry techniques.
- **Birds and Marine Mammal Surveys -** Boat based and aerial/drone surveys will be conducted offshore and from landfall vantage points to determine usage of the survey area by birds, marine mammals and other megafauna. Species type and distribution within the FLAA will be recorded. At the time of application, these surveys are not licensable activities under the Foreshore Act 1933 (as amended).

Indicative sample stations are provided in Foreshore Licence Application Map 2 (Drawing Ref: P2587-LOC-007-B).



FORESHORE LICENCE MAP 2

LOCATION OVERVIEW

MaresConnect Interconnector FLA Boundary Indicative Sampling Locations

Drawing No: P2578-LOC-007	B

Legend

- Investigative Boundary
- 12 NM Territorial Sea Limit

Sampling Location

- Borehole - Landfall
- Drop-down Camera, Grab and Box Core (5km intervals)
- Vibrocore and CPT (1km interval)

12 Nearshore Boreholes

35 Env Locaitons

155 Vibrocore and CPT Locations

Note: Coordinates listed in Irish Transverse Mercator EPSG 2157

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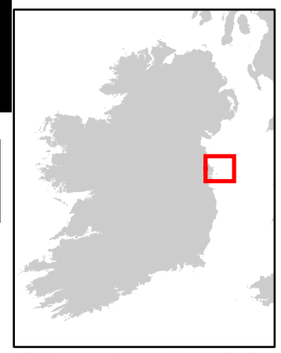
Intertek Energy and Water Exchange House
Liphook
Hampshire
GU30 7DW



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1.2 GEOPHYSICAL SURVEY

In 2022, the Department of Housing, Local Government and Heritage (DHLGH) updated their policy regarding geophysical surveys within 12 nautical miles (i.e. Foreshore Licence is no longer required for these activities as the surveys are non-invasive and do not impact the seabed). However, in December of 2022 at the time of writing this document, the main definition of the Foreshore has now changed and now includes subsoil and water column. Intertek interprets this to mean that a Foreshore Licence will be required to undertake a geophysical survey.

The geophysical acquisition methodologies will comprise MBES, SSS, magnetometry and SBP surveys.

The objectives of the proposed geophysical survey are to:

- Map the seabed and sub-surface to assist in optimising the routing of interconnector cable within the FLAA and to enable assessment of cable burial depth.
- Plan the scope and positioning of the geotechnical sampling programme in the FLAA;
- Identify marine habitat areas from which the benthic survey can be undertaken;
- Identify sensitive marine habitats which will need to be avoided during geotechnical and environmental sampling and cable and wind turbine installation; and
- Provide the geophysical data from which a marine archaeological assessment can be undertaken as part of the consenting process.

To meet these objectives, the geophysical survey will undertake the following tasks:

- Measure intertidal topography and seabed bathymetry, surface morphology and identify the nature of the seabed sediments - in particular the height, length and slopes of sand waves (topography, MBES, SSS);
- Identify the distribution and thickness of superficial sediments and rock head where possible (SBP);
- Identify the distribution of subsea geological features such as areas of exposed bedrock (MBES, SSS); and
- Identify the location, extent and nature of any impediments to wind turbine installation and laying or burial of the cables such as wrecks, debris on seafloor, rock outcrop, other cables, pipelines etc. (magnetometer, MBES, SSS).

The interpretation of the geophysical survey for cable routing forms the basis of the scope of work for geotechnical and benthic surveys.

The bathymetric, side scan and sub-bottom profiling systems proposed are characterised by a limited acoustic footprint with the directional, high-frequency, short-duration output attenuated within a few hundred metres of the survey vessel. Proposed geophysical sample stations via the Device Detection Permit will be communicated to the National Monuments Service (NMS) – Underwater Archaeology Unit (UAU) for approval ahead of works commencing.

It is Good Industry Practice for geophysical surveys in Irish waters to follow the Department of Arts, Heritage and the Gaeltacht “Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Waters” (2014). Section 4.3.4(ii) is applicable to the type of geophysical survey proposed and will be implemented by the survey contractor. This includes the following procedures:

- Sound-producing activities shall only commence during daylight hours where effective visual monitoring by the Marine Mammal Observer (MMO), is possible. 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 (see below). It shall only proceed on positive confirmation with the MMO.

- Survey activities must not commence if marine mammals are detected within a 500 m radius of the sound source.
- In waters up to 200 m deep, 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 500m radius by the MMO.
- A ramp-up procedure (i.e. soft start) will be used:
  a. Where it is possible according to the operational parameters of the equipment concerned, the device's acoustic energy output shall commence from a lower energy start-up (i.e., a peak sound pressure level not exceeding 170 dB re: 1µPa @1m) and thereafter be allowed to gradually build up to the necessary maximum output over a period of 20 minutes.
  b. This controlled build-up of acoustic energy output shall occur in consistent stages to provide a steady and gradual increase over the ramp-up period.
  c. Where the acoustic output measures outlined in steps (a) and (b) are not possible according to the operational parameters of any such equipment, the device shall be switched "on" and "off" in a consistent sequential manner over a period of 20 minutes prior to commencement of the full necessary output.
- Once the ramp-up procedure commences, there is no requirement to halt or discontinue the procedure at night-time, nor if weather or visibility conditions deteriorate nor if marine mammals occur within a 500m radial distance of the sound source.
- If there is a break in sound output for a period greater than 30 minutes (e.g., due to equipment failure, shut-down, survey line or station change) then all pre-start monitoring, and a subsequent ramp-up procedure must be undertaken.

1.2.1 Location and survey spacing

The area of search (determining location of FLA boundary) for the possible development of the interconnector cable corridors are based on desktop assessments. Following a precautionary approach and to be judicious, it has been assumed that the geophysical surveys will be conducted across the whole of the FLAA.

The swathe width for each piece of equipment will depend on the water depth encountered. It is anticipated that the width of each swathe will allow for a 50% overlap between each swathe.

1.2.2 Equipment

Specific equipment to be used during the geophysical survey have not yet been specified to date as the contractor has not been appointed. Examples of industry standard equipment for the purpose of geophysical and geotechnical survey have been used in this assessment. Frequencies and decibels used to obtain the data will be within similar ranges for all equipment used.

1.2.2.1 Landfall/Intertidal topographic survey

Terrestrial survey methods at the landfall (shoreline and hinterland) may include a topographic survey of the ground elevations using real-time kinematic (RTK) foot or vehicle traverses, laser-scanning and/or an aerial drone survey using photogrammetry techniques. Terrestrial geophysical investigations may include seismic refraction of the cable route centreline and offset lines to provide information on sub-surface sediment layers and thicknesses using a ground penetrating radar survey, or similar.

1.2.2.2 Multibeam echo sounder (MBES)

An MBES is a remote sensing acoustic device typically attached to a vessels hull. The purpose of this equipment will be to map the water depth to seabed (bathymetry) from a single transducer array that uses a fan of acoustic energy known as a swathe. MBES systems can be either hull-mounted or towed behind the vessel. MBES frequencies typically range from 12 kilohertz (kHz) to 500 kHz. The Kongsberg EM2040 is an example of a MBES device that may be used for the proposed survey works (Figure 1-2).

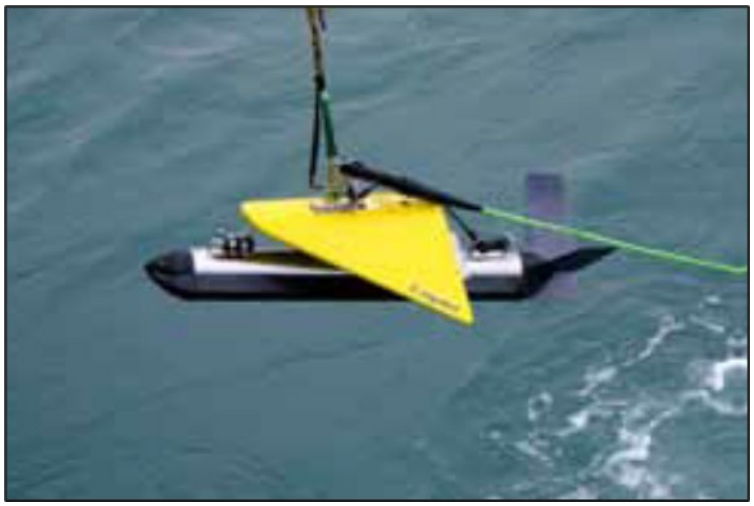
Figure 1-2 Kongsberg EM2040 MBES

1.2.2.3 Side scan sonar (SSS)

SSS is a method of underwater imaging that uses acoustic energy to detect objects (e.g. pipelines and shipwrecks) and enable classification of surficial marine geology (e.g. sediment type, rock outcrop, sand ripples/waves). SSS instruments are often towed behind ships using a 'tow-fish' or mounted to a remotely operated vehicle (ROV). The instrument sends out acoustic energy in pulses perpendicular to the tow fish heading, looking sideways and down. Some of the sound sent out by the SSS reflects off the seabed and returns to the transducer with strong and weak echoes relative to the travel time. To obtain the best possible results most systems are dual frequency (dual channel high/low frequency). High-frequency systems up to 1600 kHz give excellent resolution but the acoustic energy only travels a short distance (used to identify small seabed objects). Lower frequencies such as 50 kHz or 100 kHz give lower resolution but the distance the acoustic energy travels is greatly improved (used to detect changes in seabed sediments).

The EdgeTech 4200 is an example of SSS that may be used during the proposed survey works (Figure 1 2). The SSS will be dual frequency hydrographic sonar with a minimum operating frequency of not less than 100 kHz. Due to consent conditions in Irish waters, the higher frequency of the side scan sonar must be between 410 kHz and 500 kHz.

Figure 1-3 EdgeTech 4200 SSS



1.2.2.4 Magnetometer

A magnetometer is a passive remote sensing device that detects ferrous objects, such as pipelines, cables, debris (wrecks) and potential unexploded ordnance (UXO), which may present an obstruction or risk to intrusive seabed works such as geotechnical surveys, and construction activities. Magnetometers are typically towed behind a survey vessel. An example of the marine magnetometer will be of is the Caesium Vapour type and capable of recording variations in magnetic field strength during survey to an accuracy of ±0.5 nanotesla (nT). The Geometrics G-882 is an example of magnetometer that may be used for the proposed survey works (Figure 1-3).

Figure 1-4 Geometrics G-882 magnetometer

1.2.2.5 Sub-bottom profiler (SBP)

SBP systems are used to image geological layers and sediment thicknesses beneath the seabed and typically have two categories. The first type is the transducer array which combine the source and receiver, as with MBES and SSS systems and is generally high frequency, identifying thin laminations of shallow geology. The second type has a separately towed source and receiver and is generally low frequency, identifying larger geological formations at lower depths. The source can be electrical or mechanical. The receiver is called a hydrophone which in most cases is physically separated from the source.

High frequency SBP's can either be either hull-mounted or towed from the survey vessel using a tow-fish or attached to a ROV. Low frequency SBP's require towed sources and receivers. The instrument

sends out a pulse of acoustic energy which when recorded is known as a seismic profile. The acoustic penetration and resolution of a SBP system mainly depends on the shape and frequency of the acoustic pulse. High penetration of the seabed is only possible with low frequencies. High resolution data can be obtained with higher frequencies. SBP systems use frequencies of approximately 1 kHz up to 200 kHz. High frequency systems (e.g. chirp, a parametric echo sounder) can image approximately 5 m to 30 m below the seabed, with lower frequency systems (e.g. single channel sparker/boomer) imaging approximately 80 m to 100 m below the seabed. Examples of high frequency SBP systems include the Innomar SES 2000 and Edgetech 3100. Examples of low frequency SBP include Ultra High Resolution Seismic (UHRS) (sparker/boomer).

It is likely that two different systems will be used; a high-resolution profiler that will emphasise the top three to five m of sediment with a resolution of 0.25 m or better in a variety of geological conditions; and a system that provides increased penetration of up to 20 metres. Three systems (pinger, boomer and chirp) will be made available so that the most appropriate system can be chosen dependent on the seabed conditions.

The EdgeTech 3200 is an example of a sub-bottom profiler that may be used for the proposed survey works (Figure 1-4).

Figure 1-5 EdgeTech 3200 SBP

1.3 GEOTECHNICAL SURVEY

The purpose of the proposed geotechnical survey is to evaluate the nature and mechanical properties of the superficial seabed sediments and intertidal sediments in the FLAA. The data will be used to inform future design studies e.g. to determine cable burial depth and methods.

The geotechnical survey techniques that may be used during the proposed marine survey include grab sampling, seabed CPTs, VCs, and boreholes. Boreholes will be used to determine deeper soil conditions at the export cable landfall. VC and CPTs will be used across the entire application area. VCs and CPTs will be acquired at the same or separate locations as determined by review and interpretation of SBP data.

1.3.1 Location and survey spacing

At this time the area of search for the possible development of the MaresConnect Interconnector cable corridors are based on desktop assessments. To be judicious it has been assumed that the geotechnical surveys will be conducted across the whole of the FLAA. The below indicative sample numbers will be refined, following analysis of the geophysical data and by experienced contractor after contract award.

The exact location, quantity, type, penetration and spacing of the geotechnical samples will be determined following interpretation of geophysical data. The geotechnical sampling will be undertaken within the boundary of the of site and the potential cable routes. . Proposed geotechnical sample stations will be communicated to the National Monuments Service (NMS) – Underwater Archaeology Unit (UAU) for approval ahead of works commencing. Proposed locations will be accompanied by an assessment of the geophysical data by a qualified and experienced marine archaeologist. Following review of geophysical data only one export cable corridor and one landfall will be selected for geotechnical sampling.

The positioning of stations needs to take into consideration environmental constraints such as the position of sensitive habitats. The Dalkey to Rockabil SAC, designated for Annex I Reefs and Harbour porpoise *Phocoena phocoena* within the FLAA boundary. The geophysical data will be used to confirm the presence and positions of potential reef prior to locating geotechnical and environmental sampling stations. Sampling stations will be positioned to avoid reef habitat. If geophysical interpretation is not conclusive, DDC will be used to visualise the seabed prior to intrusive sampling to ensure reef features are avoided.

Geophysical data will be reviewed by a qualified and experienced archaeologist and, if necessary, archaeology exclusion zones will be identified and communicated to the survey contractor for the geotechnical sampling. The archaeologist will also carry out a walk-over survey of the intertidal area at the selected landfall. The archaeologist will review the geotechnical station positions and, if necessary, propose adjustments to ensure known and potential archaeological features are avoided.

The appropriate permits will be acquired from NMS ahead of the use of detection devices (e.g. geophysical equipment) and intrusive seabed works (geotechnical testing) and relevant notifications of works will be made in a timely manner.

In order to avoid interaction with the existing pipelines in the area, geotechnical and environmental sampling stations will be positioned a minimum of 250 m from the assets marked positions. The asset-owners will be contacted prior to the survey to determine if a proximity agreement is required.

During survey activities the deployment of equipment on the seabed will be kept to a minimum in order to minimise seabed disturbance.

1.3.2 Equipment

1.3.2.1 Vibrocore (VC)

A VC will be used to retrieve a soil sample by the lowering of a sample tube that is vibrated into the seabed. The VC will be launched from a vessel crane or A-frame. Samples will be taken at representative locations along the export cable routes and nominally will be every 1 km of survey.

- Shallow water VCs (up to 6m): Approximately 60, inclusive of an extra 20% contingency to provide conservative estimate. VCs may penetrate up to 6 m into the seabed and have a diameter of 150 mm. Therefore, sample volumes will be up to 0.11 m3. For 60 collected samples, the approximate volume of sediment removed will be 6.6 m3. Indicative equipment to be used is a high-performance corer (HPC) or a modular vibrocorer.
- Deep water VC (up to 60 m): Approximately 40, inclusive of an extra 20% contingency to provide conservative estimate. VC samples will be taken at representative locations along the export cable routes and nominally will be every 5 km of survey. Deep-water VCs may penetrate up to 60 m into the seabed and have a diameter of 150 mm. Therefore, sample volumes will be up to 1.1 m3. For 40 collected samples, the approximate volume of sediment removed will be 286 m3 Indicative equipment to be used is a HPC or a modular vibrocorer.

1.3.2.2 Cone Penetrometer Test (CPT)

A CPT will be used to test the characteristics of the soil by pushing an instrumented cone into the ground at a constant speed, with continuous measurement of the cone end resistance, the friction along the sleeve of the cone, and the pore water pressure.

- Shallow water CPT: Approximately 270 60 samples will be taken, including extra 20% contingency to provide conservative estimate. Samples will be taken at representative locations along the export cable routes and nominally will be every 1 km of survey. Shallow water CPTs are likely to achieve penetrations of up to 6 m. No sediment will be removed from the seabed. Indicative equipment to be used is a SEACALF seabed CPT system or similar and a deck mounted CPT.
- Deep water CPT: Approximately 270 40 samples will be taken, including extra 20% contingency to provide conservative estimate. Samples will be taken at representative locations along the export cable routes and nominally will be every 1 km of survey. Deep water CPTs can achieve penetrations of up to 40 m. No sediment will be removed from the seabed. Indicative equipment to be used is a SEACALF seabed CPT system or similar and a deck mounted CPT.

The Fugro Seascalf is an example of a seabed CPT system that may be used for the proposed survey works Figure 1-5.

Figure 1-6 Furgo Seacalf CPT system

1.3.2.3 Borehole

A borehole is a method of drilling into the seabed to recover samples and enable downhole geotechnical testing to be completed. A drilling head is lowered to the seabed via a drill string and stabilised using a seabed frame. The drill string is then rotated to commence boring. Tools are lowered into the drill string to recover samples or conduct in-situ soil testing. The drilling flush and drill cuttings are largely returned to the vessel and re-used, however some loss of flush and cutting should be expected. All drilling fluids will be in compliance with environmental requirements. It is important to note that borehole drilling is used to analyse and understand sediment stability and is not considered deep drilling, which would be subject to full Environmental Impact Assessment (EIA), under Annex II, Section 2a of the EIA Directive.

The landfall boreholes will be drilled using a percussion and a rotary corer, and will likely be drilled from a jack-up barge (JUB). Alternative methods of drilling a borehole may also be considered such as ROV drill and Fugro seafloor drill (Figure 1-7 and 1-8) or Fugro C25 Marine Drill (Figure 1 6), depending on water depth.

The number of legs used by the JUB is dependent on seabed conditions, current strength and wave action. For the FLAA, four legs are the most likely scenario. Each leg has a seabed footprint of approximately 2.54 m^2.

Figure 1-7 Fugro c25 Marine Drill

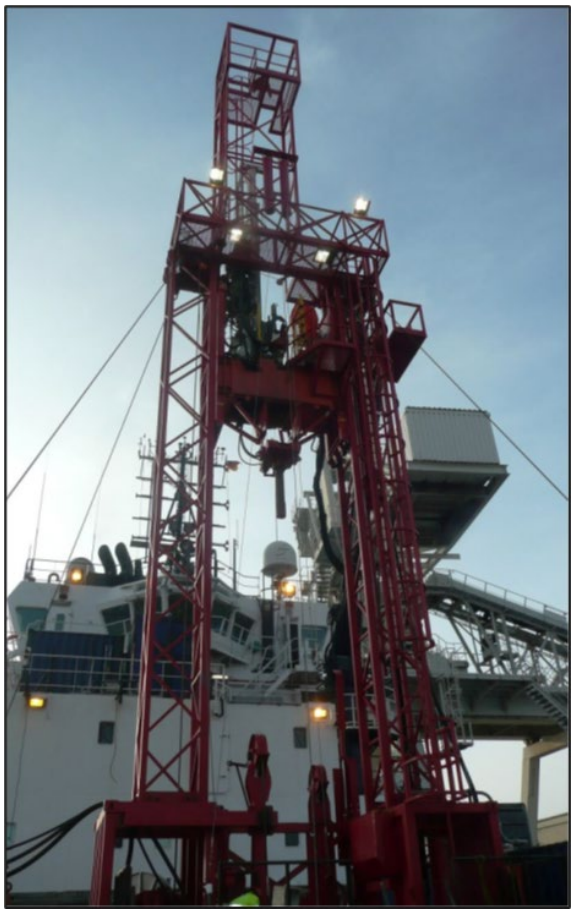


Figure 1-8 ROV drill

Figure 1-9 Fugro seafloor drill

1.3.2.4 Technical specification

Depending upon the requirement identified from interpretation of the geophysical data, to inform the design of any potential horizontal directional drilling, there is potential for two boreholes to be drilled at each landfall either in the intertidal or nearshore area. For completeness details of all boreholes have been provided in this section.

(a) Cable Route - Landfall boreholes

The landfall boreholes will likely be drilled from a Jack-up Barge (JUB). For the application area, four legs are the most likely scenario. Each leg has a seabed footprint of approximately 2.54 m^2. Each borehole will have a seabed footprint of approximately 0.02 m^2. Assuming a borehole depth of 25 m, the core sample removed will be approximately 0.25 m^3. Risings dispersed around the drill site will have a volume of approximately 0.15 m3. Assuming cuttings will form a simple cone with an 18° slope angle around the drill head it has been estimated that they will cover an area of 1.82 m2. The borehole will be left to collapse naturally following completion of drilling where the cuttings are likely to fall back down the hole.

1.4 LANDFALL TOPOGRAPHIC SURVEY

Terrestrial survey methods at the landfall (shoreline and hinterland) may include a topographic survey of the ground elevations to ensure that there are continuous height measurements between the landfall and the cable route and to delineate hard features that will present an obstacle to cable installation. Terrestrial geophysical investigations may include seismic refraction of the cable route centreline and offset lines to provide information on sub-surface sediment layers and thicknesses using a ground penetrating radar survey, or similar. One of two techniques will be selected to acquire the data; either a traditional topographic survey using levels and reference points via RTK foot or vehicle traverses, laser-scanning and/or an aerial drone survey using photogrammetry techniques.

1.5 ENVIRONMENTAL SURVEY

The aim of the proposed environmental survey is to map the distribution and extent of marine benthic habitats, presence and distribution of bats, presence of otters and otter holts, intertidal birds nesting and foraging locations along the selected export cable corridor and across the prospect area . This will comprise a benthic sampling programme (using grab sampling) and video or still photographs. The sampling locations will be determined based upon interpretation of the geophysical data and selected to sample different habitats.

A grab sampler will be used to retrieve a soil sample of the seabed by the lowering of a mechanical grab. Each grab samples a volume of approximately 0.1 m3. Grabs are required to obtain a sample greater than 5 cm in depth, to try and achieve this, samples will be repeated for up to three attempts. It is likely that three grab samples will be taken at each station; two for faunal analysis and one for sediment and chemical analysis. Up to 50 sampling stations (this number includes an extra 20% as a conservative estimate) at representative locations along the preferred cable route. Exact locations are subject to results of the geophysical and archaeological survey and are dependent on geology but nomically will be every 5 km or where there is a change in habitat type. Indicative equipment to be used is a grab sampler e.g. Day or Hamond. The grab will be launched from a vessel crane or A-frame.

Boxcores may be used to characterise shallow soils if the sediment is found to be very soft. Up to 35 boxcores will be taken per export cable routes. Each boxcore will be taken at representative locations along the cable route (these numbers include an extra 20% as a conservative estimate).

DDC and video transect: At each geotechnical and environmental sampling station a DDC will be deployed to allow for further confirmation of sampling analysis. Additional photographs or video footage will be acquired along transects to characterise sensitive habitats or features. This technique involves no intrusive seabed sampling. Transect locations to be determined following review of geophysical data.

For the land / intertidal area a Phase 1 intertidal habitat walkover survey will be carried out by an experienced ecologist. The aim of the survey will be to identify and map the extent and distribution of intertidal biotopes. Intertidal floral and faunal surveys, intertidal bird and bat surveys at proposed cable landfall zones to include transects, quadrats and core sampling. The exact location/zone of the intertidal survey will not be known until the preferred export cable route and landfall has been chosen. At this time, it is assumed that it could take place at any landfall zone in the FLAA and up to two landfalls may be selected for survey.

1.6 ARCHAEOLOGY SURVEY

In addition to obtaining the environmental conditions of the seabed, the geophysical survey is intended to determine the location of any features of archaeology interest. The magnetometer data acquired during the geophysical survey is a key component of this. The results of the geophysical survey will be interpreted by a licensed marine archaeologist to inform: the positioning of the intrusive features of the geotechnical surveys e.g., VCs, CPTs, geotechnical boreholes; and future environmental impact assessments. In addition to this, a qualified, Irish registered, marine archaeologist will carry out a walkover inspection of the intertidal area using a handheld magnetometer. The marine archaeologist will review all geophysical survey data ahead of geotechnical sampling to evaluate sampling positions for features of underwater importance. Geotechnical sampling stations will be moved if potential features of interest are identified.

1.7 BIRDS & MARINE MAMMALS SURVEY

Boat based and aerial/drone surveys will be conducted offshore and from landfall vantage points to determine usage of the survey area area by birds, marine mammals and other megafauna. Species type and distribution within the FLAA will be recorded. At the time of application, these surveys are not licensable activities under the Foreshore Act 1933 (as amended).

1.8 SURVEY VESSELS

Geophysical survey vessels are typically between 15 m and 60 m in length and have an endurance of up to 28 days. These vessels are likely to use a local port for mobilisation and replenishment.

Geotechnical survey vessels are typically 55-90 m in length and have an endurance of up to 28 days. Their port of mobilisation will depend on previous work but may be Irish, UK, or another European location.

The exact vessels to be used will be confirmed following a tender process to procure the survey contractor.

All vessels shall be fit for purpose, certified, and capable of safely undertaking all required survey work.

The survey contractor and vessels will comply with international and national statute as appropriate.

A non-exhaustive list of examples includes:

- S.I. No. 507/2012 - Merchant Shipping (Collision Regulations) (Ships and Water Craft on the Water) Order 2012.
- Sea Pollution Act 1991 which transposes into Irish statute the requirements of the International Convention for the Prevention of Marine Pollution from Ships (MARPOL 73/78)
- Sea Pollution (Amendment) Act, 1999 - which gives effect to the International Convention on Oil Pollution Preparedness, Response and Co-operation, 1990 (OPRC).
- 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
- Sea Pollution (Miscellaneous Provisions) Act 2006 – which gives effect to the International Convention on Ballast Water Management 2004 (amongst others)

Notices to Mariners will be issued by the survey contractor ensuring that as well as the Maritime Safety Directorate, in particular local fishing organisations, Dublin Port Company and Drogheda Port Company, Malahide and Howth harbour masters or any other relevant harbour masters are included in the distribution list.

During the works other vessels will be requested to maintain a safe distance from the survey vessels due to the restricted manoeuvrability of the vessels.

1.9 GENERAL REQUIREMENTS

The exact environmental protocols to be followed during the survey will not be known until award of the survey contract. Notwithstanding, the international and national statute listed in Section 1.8 above will be complied with, and the following standard environmental procedures/protocols will be followed during the survey campaigns:

- All vessels will comply with the latest International Maritime Organization (IMO) and Safety of Life at Sea (SOLAS) and environmental requirements for their classification and with any national requirement of the territorial or offshore waters to be operated in.
- The contractor will maintain a suitably certified environmental management system.
- The contractor will take particular care when handling or storing hazardous materials, radiation sources and chemicals.
- Liquid or non-liquid pollutants or waste material will not be dumped, thrown or otherwise disposed of into the sea.
- All refuse and materials shall be kept onboard the vessel and safely disposed of onshore according to the MARPOL convention.
- All substances handled and/or used whilst undertaking the works will be handled, used, stored and documented in accordance with assessments and recommendations of the Control of Substances Hazardous to Health (COSHH) Regulations 1994.
- Where Fuels, Oils and Lubes are required to bestowed on boats, suitable containers will be used and stowed to allow ventilation and safe dissipation of any accidental leaked gas and retention of any leaked liquid.
- No liquid will be discharged into the water at any stage of the work on site. No smoking will be permitted in the vicinity of fuel in storage or when in use.

1.9.1 Access/egress arrangements on the Foreshore

Access/egress arrangements to and from the foreshore for the duration of the works will not be determined until:

a. the geophysical survey is complete, and a preferred landfall is selected; and
b. the survey contractor is procured.

1.9.2 Health and Safety procedures

Health, safety and environmental protection shall be given foremost consideration in the execution of the work and shall be promoted in a proactive and highly visible manner throughout the survey campaign.

Established safety procedures will be followed by both survey personnel and the vessels crew.

Notices to Mariners will be issued by the survey contractor ensuring that as well as the Maritime Safety Directorate, in particular local fishing organisations, Dublin Port Company and Drogheda Port Company, Malahide and Howth harbour masters or any other relevant harbour masters are included in the distribution list. During, the works other vessels will be requested to maintain a safe distance from the survey vessels due to the restricted manoeuvrability of the vessel