

# Celtic Sea Floating Wind Pre Consent Survey Programme

Geophysics Survey Scope of Work

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█	Approver	█

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# 1. Abbreviations and Definitions

## 1.1 Abbreviations

<b>Abbreviation</b>	<b>Definition</b>
<b>2D</b>	Two Dimension(al)
<b>2D UHRS</b>	2D Ultra High Resolution Seismic
<b>ArcGIS</b>	mapping and analysis solution, geographic information system software (Esri)
<b>ERP</b>	Emergency Response Plan
<b>HIRA</b>	Hazard Identification and Risk Assessment
<b>HSE</b>	Health, Safety and Environment
<b>HSEW</b>	Health, Safety, Environment and Welfare
<b>HSSE</b>	Health, Safety, Security and Environment
<b>ISO</b>	International Organization for Standardization
<b>JNCC</b>	Joint Nature Conservation Committee
<b>MAG</b>	Magnetometer
<b>MBES</b>	Multibeam Echosounder
<b>MEDIN</b>	Marine Environmental Data and Information Network
<b>MMO</b>	Marine Mammal Observer
<b>PDA</b>	Project Development Area
<b>PDF</b>	Portable Document Forma
<b>PEP</b>	Project Execution Plan
<b>Q</b>	Quarter
<b>SBP</b>	Sub-Bottom Profiler
<b>SSS</b>	Side-Scan Sonar
<b>TCE</b>	The Crown Estate

Abbreviation	Definition
UTC	Coordinated Universal Time

## 1.2 Definitions

Term	Definition
<b>COMPANY</b>	The Crown Estate.
<b>COMPANY REPRESENTATIVE</b>	Individual appointed to represent the COMPANY during the WORK.
<b>CONTRACTOR</b>	Company selected to perform the WORK.
<b>DEMOBILISATION</b>	Activities required upon completion of the WORK including all transits from the PDAs to the port defined by the CONTRACTOR and the removal of temporary installed equipment.
<b>MOBILISATION</b>	Activities required in preparation for performing the WORK including all transits from port to the PDAs and any calibrations required at sea, along with all associated reports.
<b>SCOPE</b>	The Geophysical Survey Scope of Work.
<b>SPECIFICATION</b>	The Geophysical Survey Technical Specification.
<b>WORK</b>	The survey activities as defined in this document.

## 2. Introduction

### 2.1 Project description and overview

The COMPANY will be undertaking leasing activity in the Celtic Sea. To support this activity, the COMPANY will commission a geophysical site investigation campaign ahead of the leasing round. The premise is to make the measured data available to developers earlier in the development cycle to reduce the uncertainty, and hence risk, for developers, and to expedite the Final Investment Decision and Commercial Operations Date of the awarded wind farms. The Project Development Areas (PDAs) are presented in Figure 1.

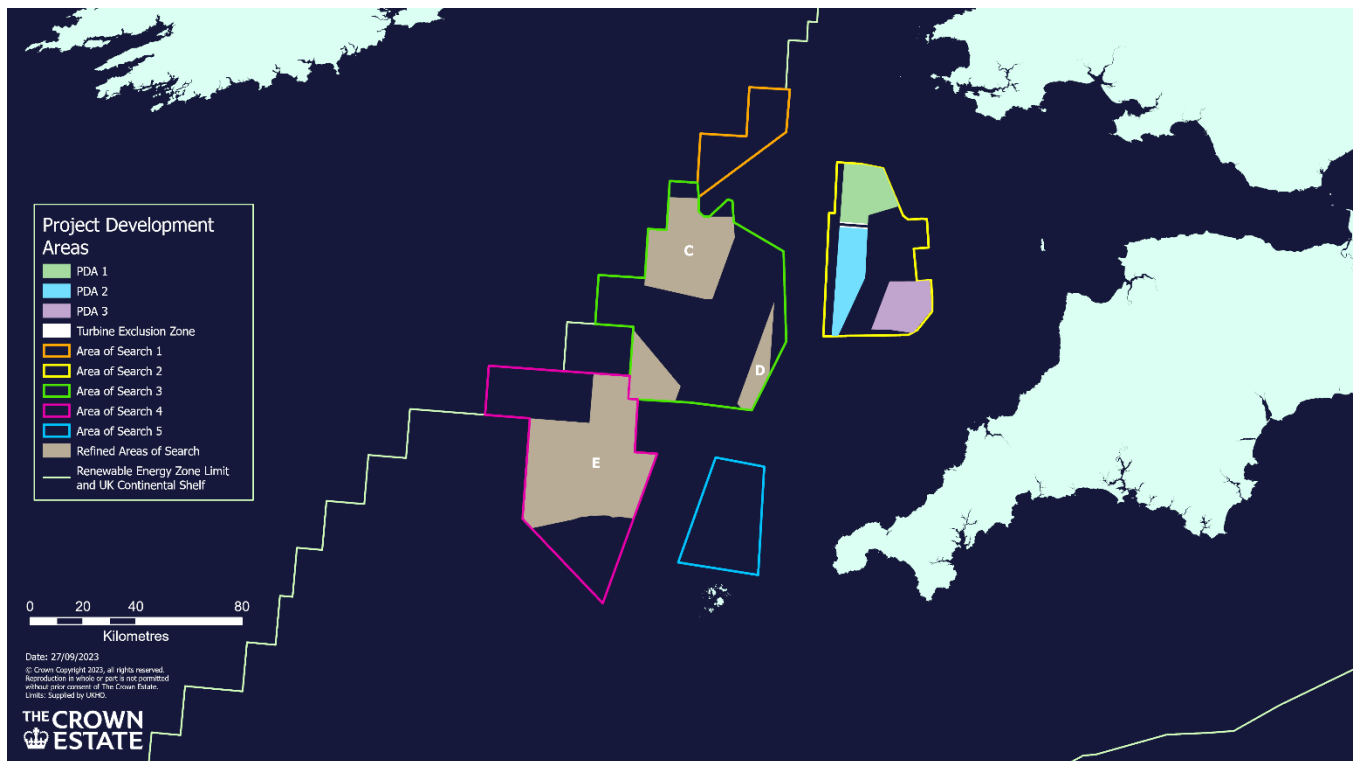


Figure 1: Project Development Areas

It should be noted that the SCOPE herein makes reference to four PDAs as the WORK was initiated prior to COMPANY updates to the PDAs, announced to the market on 2 October 2024.

### 2.2 Objective

The objective of the project is to carry out geophysical surveys in the Celtic Sea within the COMPANY PDAs.

The aims are to supply the COMPANY with the following information through survey operations:

1. Full coverage high-resolution bathymetric data
2. Side-scan sonar imagery of the seabed and identification of anthropogenic and natural items above and below seabed

3. Sub-seabed seismic information down to at least 50 m below seafloor; identification of geo-hazards, geological information on geological structures to 50 m, and geological conditions in the upper 10 m
4. Magnetometer survey data

Grab samples may also be taken subject to confirmation on the requirements for ground truthing.

The resulting data will be made available to developers to support all development activities including the following:

1. Bathymetric assessment
2. Seabed terrain assessment and hazard identification
3. Ground model development
4. Preliminary design of mooring / anchoring systems and seabed cables
5. Determination of sub-bottom ground conditions and hazards

## 2.3 Purpose

The purpose of this SCOPE is to give an overall description of the WORK to be performed by the CONTRACTOR. A separate supporting document addresses the SPECIFICATION regarding equipment and quality for this geophysical survey. The SCOPE takes precedence over SPECIFICATION if variations are made to the SCOPE at a later date.

**It should be noted that the SPECIFICATION covers additional survey methods not currently listed in the SCOPE to allow for any potential variations. Variations may be made on-site under certain circumstances, subject to the direction of the COMPANY.**

## 2.4 Location

The survey data will be collected across the full extent of the PDAs and therefore are defined by the PDA boundaries in Figure 1. Further definition of spatial coverage for each instrument is defined in Section 3.1.

## 2.5 Timeline

The target date for deployment is nominally Q3 2023. It is expected that survey acquisition shall be completed during summer 2023, with final reporting delivery by end of Q4 2023. In the event it is not possible to complete survey acquisition during summer 2023, a second campaign shall be completed during spring and summer 2024, with final reporting delivery by end of Q4 2024.

## 2.6 Planning

The CONTRACTOR shall develop comprehensive plans (Ref: TCE Marine HSEW Minimum Standards) to execute the WORK, supported by thorough method statements. The plans will include mobilisation and demobilisation of the survey equipment and personnel, and provisions for service visits during the survey operations to provide for the safe and accurate performance of the WORK in a logical, meaningful, and timely manner. The COMPANY shall approve the plans prior to CONTRACTOR mobilisation.

The plans shall make meaningful provision for managing all interfaces between the WORK and any of the COMPANY'S other contractors deployed on other activities on board the survey vessels or at the port of mobilisation. The CONTRACTOR'S safe and timely management of such interfaces will be a continuous requirement throughout the course of the WORK.

The CONTRACTOR shall demonstrate that it operates a HSSE system that meets or exceeds the requirements contained in RenewableUK's Offshore Wind and Marine Energy Health and Safety Guidelines<sup>1</sup>. In particular, the CONTRACTOR shall provide a high-level view of their approach to:

1. Training and competence of staff to be utilised on the project.
2. Project Execution Plan (PEP)
3. Project Safety Plan
4. Bridging documentation for interfacing with subcontractors
5. Method Statements
6. Hazard Identification and Risk Assessment (HIRA)
7. Emergency Response Plan (ERP)

At least SIX (6) weeks prior to mobilisation, the CONTRACTOR shall host a kick-off project management meeting with the COMPANY to agree the schedule, plans and review method statements.

At least THREE (3) weeks prior to mobilisation, the CONTRACTOR shall prepare and issue the above documents (items 2-7) for the COMPANY'S approval.

At least TWO (2) weeks prior to mobilisation, the CONTRACTOR shall host a HIRA meeting with the COMPANY to produce a works specific HIRA.

During the vessel mobilisation, the CONTRACTOR shall host a project kick-off meeting with all of the offshore team and this will include HIRA stage two meeting.

## 2.7 Licensing

The COMPANY shall be responsible for obtaining licences and consents to undertake the proposed survey work subject to requirements:

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<sup>1</sup> RenewableUK's Offshore Wind and Marine Energy Health and Safety Guidelines. 2014.

Table 1: Licensing Responsibility

Licence	Responsible party
<b>Marine Management Organisation marine licence (English waters)</b>	The Crown Estate
<b>Natural Resources Wales marine licence exemption (Welsh waters)</b>	The Crown Estate
<b>Marine Management Organisation European Protected Species licence (English waters)</b>	The Crown Estate
<b>Natural Resources Wales European Protected Species licence (Welsh waters)</b>	The Crown Estate
<b>TCE Seabed licence</b>	The Crown Estate

Where a European Protected Species licence is provided on condition of Marine Mammal Observer (MMO) mitigation during the survey, the COMPANY shall make the necessary provisions to the survey to meet the requirements, in accordance with the Joint Nature Conservation Committee (JNCC) guidance<sup>2</sup>. CONTRACTOR shall ensure survey operations proceed only where the requirements of the licence are met, as guided by the MMO survey personnel onboard the vessel.

### 3. General Description of Activities

#### 3.1 Objectives and description of work

The aim of the geophysical survey campaign is to collect data that will inform the site selection process, allow planning of a geotechnical investigation campaign, and assist preliminary foundation design. The main geophysical survey line spacing shall be 250 m with crosslines at 1000 m intervals. The main survey line orientation shall be selected by the COMPANY to best image the sub-surface geology within the seismic data. The following will be acquired:

1. Multibeam Echosounder (MBES) – Collect MBES across the survey area with a target 25% overlap between adjacent swathes to ensure 100% coverage of the seabed and to provide comparative data for quality control purposes. Backscatter data shall also be collected. Speed of sound measurements will be taken at least every 24 hours, and frequency of measurements may be increased if required.
2. Sub-bottom Profiler (SBP) – Collect SBP data to image the underlying geology of the survey area to identify variations in sub-surface layers down to 15 m below seabed.
3. 2D Ultra High Resolution Seismic (2D UHRS) – Collect 2D UHR multichannel seismic data to image the underlying geology of the survey area to identify variations in sub-surface layers down to 50 m below seabed.

<sup>2</sup> JNCC (2017). JNCC guidelines for minimising the risk of injury to marine mammals from geophysical surveys (seismic survey guidelines)

4. Side-Scan Sonar (SSS) - Collect high resolution (100/500 kHz) SSS data (simultaneously recording both frequencies) over the survey area to ensure 100% coverage of the seabed to locate and identify any debris, wrecks, sand waves, bedrock outcrops and subsurface geology. This will be used to classify the seabed types identified within the survey area. The line spacing of the offshore survey is expected to be 250 m with a side scan sonar range of 150 m.
5. Magnetometer (MAG) – Collect MAG data simultaneously with the SSS data. Hence, where weather conditions are suitable for bathymetry and seismic to be performed, but not sufficient for SSS or MAG acquisition, the COMPANY may request that the work continues without these items in order to prevent delays.

Grab samples may also be taken subject to confirmation on the requirements for ground truthing. The decision will be made on-board the vessels between the COMPANY REPRESENTATIVE and the CONTRACTOR.

## 3.2 Phases of work and deliverables

This summary listing is provided to ensure that there is a full understanding of the extent of the WORK.

All deliverables shall meet the requirements for delivering data to the COMPANY's Marine Data Exchange. Data shall have Marine Environmental Data and Information Network (MEDIN) Discovery standard Series metadata, all raw and processed datasets shall be provided and meet relevant MEDIN Data Guidelines. Reports content shall also provide any additional project information required by the MEDIN Data Guidelines.

The COMPANY shall look to share hydrographic data with the United Kingdom Hydrographic Office for the purpose of updating admiralty charts.

The WORK is divided into three phases and shall include but not be limited to:

### 3.2.1 Planning phase

1. Production of management reports
2. Development of a PEP
3. Obtaining all necessary permits and licences to undertake the WORK
4. Finalise agreed work scope and equipment to be mobilised
5. Audits and preparation of vessels

Refer to Section 5 for relevant planning phase timeframes.

### 3.2.2 Execution phase

1. Mobilisation/demobilisation of the vessels, equipment, and personnel – to include ONE (1) day for the COMPANY HSEW onboard introduction, drills, and training
2. The COMPANY HSEW meeting
3. Perform hydrographic and geophysical survey operations
4. Offshore data processing, interpretation, and reporting
5. Direct technical and HSEW supervision of offshore operations
6. Provision of daily reports

### 3.2.3 Onshore phase

1. Onshore data processing and interpretation
2. Delivery of Factual Results Report including positioning information and a separate Operational Report
3. Delivery of digital deliverables

Refer to Section 7 for relevant timeframes.

## 4. Survey Requirements

### 4.1 General

Hydrographic and geophysical surveys are required to be performed over the four PDAs. Survey requirements, equipment and methodologies are to be in line with the SPECIFICATION.

The CONTRACTOR is to optimise survey operations to ensure best use is made of vessel time and to minimise the effects of wind and wave.

The survey area may not be cleared of static fishing gear and the CONTRACTOR must expect some coordination with the local fishing organisations during the survey which includes, where required, the COMPANY's scouting vessel.

Should deployed fishing gear limit survey operations then alternative plans can be made through discussion with the COMPANY and the COMPANY REPRESENTATIVE.

Data shall be acquired across the four PDAs in line with the requirements set out in Section 3.1.

## 5. Planning Phase

### 5.1 Project execution plan

The CONTRACTOR shall provide a PEP (which includes content on the Scope of Work and Quality); HSE Plan; the COMPANY/CONTRACTOR Interface Document and ERP. All activities are to be addressed which includes the vessels, any support vessels, hydrographic, geophysical, seabed sampling and seabed video equipment and positioning equipment. The content as described in ISO 19901-8:2014, APPENDIX A, Section A.2. shall be utilised in the preparation of the PEP. The PEP shall be delivered in three revisions:

1. Revision 01: Contents page and generic material. Issued within ONE (1) week of CONTRACT award.

2. Revision 02: Complete contents Issued at least FOUR (4) weeks prior to commencement of vessel mobilisation.
3. Revision 03: Final. Issued at least TWO (2) weeks prior to commencement of vessel mobilisation.

## 5.2 Permits

The CONTRACTOR is responsible for obtaining all the necessary permits from the relevant authorities to conduct the WORK stated in this document.

The CONTRACTOR is also responsible for complying with all the requirements stated in the obtained permits and the COMPANY obtained licences and shall keep the COMPANY informed at all stages. Copies of all the permits and associated documents required to comply with the permits shall be provided by the CONTRACTOR to the COMPANY.

## 5.3 Audits and preparation of vessels

The CONTRACTOR shall supply details of most recent vessel audit and provide access for the COMPANY to carry out all audits of the vessels at least SIX (6) weeks prior to mobilisation.

The CONTRACTOR shall undertake remedial action to correct adverse inspection findings notified to it by the COMPANY from any such audit prior to the COMPANY final inspection and acceptance of the vessels and/or back-deck equipment.

## 5.4 Kick-off meeting

Prior to mobilisation, the COMPANY and the CONTRACTOR will hold a pre-mobilisation kick-off meeting. The CONTRACTOR will ensure that their Project Manager and Party Chief(s) attend the meeting. The CONTRACTOR will take minutes of the meeting and issue to all present. As a minimum, the agenda of the meeting will address the items listed below.

1. Emphasise requirement for all crew to follow HSEW procedures
2. Scope of work
3. Survey line plans
4. Lines of communications
5. Contact details
6. Programme of work
7. Schedules
8. Calibrations
9. Survey crew numbers
10. Deadlines
11. Weather (reports)

12. The status of all permits
13. Establish times for daily meetings to be held between the COMPANY REPRESENTATIVE and the CONTRACTOR'S Party Chief

## 5.5 Confirmation of offshore team

The final composition of the CONTRACTOR's offshore team shall be provided to the COMPANY for approval no later than TWO (2) weeks prior to commencement of MOBILISATION or any subsequent planned crew changeouts, detailing roles and responsibilities of all personnel.

The offshore team should include experienced online (data collection) and offline (data processing and interpretation) personnel, and a dedicated Party Chief.

# 6. Execution Phase

## 6.1 Survey programme

Survey requirements, equipment and methodologies are to be in line with the SPECIFICATION.

## 6.2 Mobilisation and data acceptance

The CONTRACTOR shall ensure that all equipment is tested and calibrated as part of the mobilisation of works. Acceptance tests are to be presented to COMPANY for acceptance prior to the commencement of operational data acquisition phase.

Example data deliverables shall be described in detail to enable the CONTRACTOR to evidence to the COMPANY that all systems are tested, operational, interface, and fully operational.

The CONTRACTOR shall submit the mobilisation report within FIVE (5) days of mobilisation completion.

## 6.3 Reporting during fieldwork

General requirements are set out in the SPECIFICATION.

Table 2: Execution Phase Report Schedule

Report Type	Due Date
<b>Mobilisation Report</b>	Following completion of mobilisation operations
<b>Daily Progress Report covering midnight to midnight (UTC) during field operations</b>	By 0900 UTC
<b>Interim preliminary datasets and interpretations (e.g. MBES, backscatter mosaics and seismic horizons)</b>	As available

## 7. Onshore Phase

### 7.1 Onshore phase deliverables schedule

The CONTRACTOR shall deliver to the COMPANY all of the deliverables listed in the table below in accordance with the SPECIFICATION.

All reports shall be in electronic format.

Table 3: Onshore Phase Reports

Report or Activity	Due Date
<b>Operational Report</b>	THREE (3) weeks from completion of survey works
<b>Geophysical Results Report (PDA 1)</b>	FOURTEEN (14) weeks from completion of first survey area works
<b>Geophysical Results Report (PDA 2)</b>	SEVENTEEN (17) weeks from completion of first survey area works
<b>Geophysical Results Report (PDA 3)</b>	EIGHTEEN (18) weeks from completion of first survey area works
<b>Geophysical Results Report (PDA 4)</b>	TWENTY-ONE (21) weeks from completion of first survey area works
<b>ArcGIS Data Deliverables (PDA 1)</b>	FOURTEEN (14) weeks from completion of first survey area works
<b>ArcGIS Data Deliverables (PDA 2)</b>	SEVENTEEN (17) weeks from completion of first survey area works
<b>ArcGIS Data Deliverables (PDA 3)</b>	EIGHTEEN (18) weeks from completion of first survey area works
<b>ArcGIS Data Deliverables (PDA 4)</b>	TWENTY-ONE (21) weeks from completion of first survey area works

Report or Activity	Due Date
<b>PDF Chart Deliverables (PDA 1)</b>	FOURTEEN (14) weeks from completion of first survey area works
<b>PDF Chart Deliverables (PDA 2)</b>	SEVENTEEN (17) weeks from completion of first survey area works
<b>PDF Chart Deliverables (PDA 3)</b>	EIGHTEEN (18) weeks from completion of first survey area works
<b>PDF Chart Deliverables (PDA 4)</b>	TWENTY-ONE (21) weeks from completion of first survey area works

The Crown Estate

1 St James's Market

London

SW1Y 4AH

020 7851 5000

[www.thecrownestate.co.uk](http://www.thecrownestate.co.uk)