

13th November 2020

Dear Sir/Madam,

Invitation to Tender for the Review of current and planned monitoring of seabird behaviour across operational wind farms project for the Carbon Trust's Offshore Renewables Joint Industry Programme (ORJIP) for Offshore Wind

You are invited to submit a tender for the Review of current and planned monitoring of seabird behaviour across operational wind farms project (the "SBMon project" or "Project") which is part of the Offshore Renewables Joint Industry Programme (ORJIP) for Offshore Wind. The key objective of the Project is to review completed, operational and planned monitoring studies and (if appropriate) emerging monitoring technologies to assess the capacity of their (actual, planned or likely) outputs to: a) inform empirical collision estimates; and b) quantify reactive (and other relevant) behaviours for seabirds within offshore wind farms.

The Invitation to Tender (ITT) consists of the following documents:

- Description of Tender (this document);
- ORJIP Offshore Wind Stage II Contractors' Conditions;
- Tender Certificate (Word template);
- Bid Price Calculation Sheet (Excel template);

Unless informed to the contrary, tenders and communications shall be sent by e-mail to the following e-mail address: liam.leahy@carbontrust.com

Tenders must be submitted before 18th December 2020. Any tenders received after this date and time will be deemed non-compliant.

Your tender must consist of the following, the contents of which are described further below:

- Main Bid Document (pdf) – template not provided;
- Signed Tender Certificate (pdf) – template provided; and
- Bid Price Calculation Sheet (xls) – template provided.

The timeline of this procurement process is as follows:

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| Deadline for clarification questions | 27th November 2020 |
| Clarification Document published ¹ | 11th December 2020 |
| Submission of full tender | 18th December 2020 |
| Bidder interviews | w/c 19th January 2021 |
| Successful Contractor announcement | 27th January 2021 |
| Envisaged Contract award date | 2nd February 2021 |

Please e-mail any clarification questions, including questions about the timing of this ITT, to liam.leahy@carbontrust.com any time before 27th November 2020. The complete set of clarification questions and all answers to clarification questions will be published in the Clarification Document on our website by 11th December 2020 and will hence be visible to all potential Bidders: <https://www.carbontrust.com/news-and-events/tenders>

For information about ORJIP Offshore Wind, please see the Carbon Trust's web site: <https://www.carbontrust.com/our-projects/offshore-renewables-joint-industry-programme-orjip-for-offshore-wind>

We look forward to receiving Your tender.



Yours sincerely,

.....
Liam Leahy
For and on behalf of **THE CARBON TRUST**



Offshore Renewables Joint Industry Programme for Offshore Wind

Invitation to Tender for the “Review of current and planned monitoring of seabird behaviour across operational wind farms” Project

Description of Tender

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IMPORTANT INFORMATION FOR BIDDERS

Publishing

Neither this document, nor any part of it nor any other information supplied in connection with it may, except with the prior written consent of the Carbon Trust, be republished, reproduced, copied, distributed or disclosed to any person for any purpose other than consideration by the recipient of whether or not to submit a tender.

Bid evaluation

The received bids will be evaluated by the Carbon Trust and the ORJIP Offshore Wind Partners against the criteria provided in section 8. A shortlist of Bidders will be created and invited for interview. Carbon Trust will do a vetting of the shortlisted bidders. Carbon Trust may request shortlisted bidders to fill-in a Due Diligence Questionnaire to supply additional information prior to being invited for an interview.

Contracting

Bidders should note that the Scope of Work contained in section 5 of this document does not constitute an offer to contract with the Carbon Trust. It only represents a definition of specific requirements and an invitation to submit a tender addressing these requirements.

Issuance of this Invitation to Tender and the subsequent receipt and evaluation of the tenders by the Carbon Trust does not commit the Carbon Trust to enter into a Contract with any Bidder.

Should Your tender be successful, a Final Scope of Work that builds upon the Scope of Work contained in section 5 of this document and Your Approach to Work will be mutually agreed between You and the Carbon Trust. Once the Final Scope of Work is agreed, Your offer will be formally accepted by the Carbon Trust issuing an Award Letter, the Final Scope of Work, the ORJIP Offshore Wind Stage II Contractors' Conditions, and any clarifications agreed in writing. The Award Letter, the Final Scope of Work, the ORJIP Offshore Wind Stage II Contractors' Conditions, and any clarifications agreed in writing will establish the Contract for the Review of current and planned monitoring of seabird behaviour across operational wind farms project (the "**Contract**") between You and the Carbon Trust. With the exception of any minor amendments to the ORJIP Offshore Wind Stage II Contractors' Conditions which may be requested by the Bidder, the submission of a tender shall constitute unqualified acceptance of the ORJIP Offshore Wind Stage II Contractors' Conditions. In the event that minor amendments to the ORJIP Offshore Wind Stage II Contractors' Conditions are requested, such amendments must be clearly stated and the exact alternative wording must be provided in Annex A of the Tender Certificate. Please note that it is at the sole discretion of the Carbon Trust to accept any of the proposed amendments and that the Carbon Trust reserves the right to require the provision of further information in relation to any such request. No minor changes other than those contained in Annex A of the Tender Certificate at the time of submitting the tender will be considered. No material changes will be considered at any time.

Mechanics of the tender process

Bidders should note that:

- it is at the discretion of the Carbon Trust whether to accept any non-compliant tender or whether to reject any non-compliant tenders without progressing such tenders through the evaluation phase;

- the Carbon Trust reserves the right not to accept the lowest priced tender or any tender whatsoever;
- the Carbon Trust reserves the right to accept more than one tender;
- unless a Bidder makes a formal statement to the contrary, the Carbon Trust reserves the right to accept any part of a Bidder's tender without accepting the remainder;
- formal notification that a tender has been successful will be communicated in writing by the Carbon Trust;
- the costs of tendering are the full responsibility of the Bidder; and
- the pricing set by Bidders shall be valid for a minimum of 90 days.

Bids may be submitted by individuals, companies, organisations or consortia.

Bidders should be aware that dates referred to in this Invitation to Tender may be subject to change where this is necessary in the interests of the Project (such changes will be notified in advance).

The Tender Certificate, Main Bid Document and any correspondence must be written in English. This Invitation to Tender, the Contract, its formation, interpretation and performance is subject to and in accordance with the law of England and Wales.

Conflicts of interest

Bidders should be free of any commercial interests, partnership arrangements or contracts underway or other matters which may present a conflict or potential conflict of interest in respect of the provision of these services. As set out in section 4, if a Bidder thinks that it may have any conflict or potential conflict of interest, the Bidder shall describe the details of this conflict and provide details of whether and how it would propose to manage such a conflict in a satisfactory and robust manner in Annex B of the Tender Certificate. The Carbon Trust reserves the right to require the provision of further information in relation to any conflict or potential conflict of interest.

Disclaimer

The information contained in this Description of Tender document and in any documents or information it refers to or incorporates (the "**Disclosed Information**") has been prepared to assist interested parties in deciding whether to make a bid. The Disclosed Information is not a recommendation by the Carbon Trust. It does not purport to be all inclusive or include all the information that a Bidder may require.

Neither the Carbon Trust nor any of its directors, employees, agents or advisers makes any representation or warranty (express or implied) as to the accuracy, reasonableness or completeness of the Disclosed Information. All such persons or entities expressly disclaim any and all liability (other than in respect of fraudulent misrepresentation) based on or relating to the Disclosed Information or any subsequent communication. The Bidder should conduct its own due diligence and seek its own professional, legal, financial and other advice as appropriate. The only information which will have any legal effect and/or upon which any person may rely will be such information (if any) as has been specifically and expressly represented and/or warranted in writing to the successful Bidder in any written contract that may be entered into with the Carbon Trust.

1. Introduction to the Offshore Renewables Joint Industry Programme for Offshore Wind

- 1.1. The Offshore Renewables Joint Industry Programme (“ORJIP”) for Offshore Wind is a collaborative R&D programme between The Carbon Trust, EDF Energy Renewables Limited, EDPR UK Limited, Equinor ASA, Ørsted Wind Power A/S, Red Rock Power Limited, RWE Renewables GmbH, Shell Global Solutions International B.V, SSE Renewables Developments UK Limited, Crown Estate Scotland, The Scottish Ministers and The Crown Estate Commissioners (the latter 11 collectively referred to in this document as “ORJIP Offshore Wind Partners”).
- 1.2. The objective of the Carbon Trust ORJIP Offshore Wind programme is to improve the evidence base in respect of the overall impact that offshore wind projects have on the marine environment and with regard to other uses of marine areas as well as better inform consenting authorities, offshore wind farm developers and other relevant stakeholders on the environmental risk that is associated with planned and existing offshore wind projects.
- 1.3. To achieve this objective, ORJIP Offshore Wind provides a framework to identify, develop, initiate and conduct impactful, relevant and strategic research and development projects aimed at reducing consenting risk, project maturation time, cost, and the environmental impact of offshore wind projects. Research is undertaken under areas that are chosen as priority focus areas for ORJIP Offshore Wind each year of the programme.
- 1.4. Contractors receive technical direction and data from ORJIP Offshore Wind Partners through the Carbon Trust management team and in collaboration with a Project Expert Panel (“PEP”).
- 1.5. This project will fall under the ‘Impacts on Ornithology including displacement and collision risk’ priority focus area.
- 1.6. Please note, the term “Contractor”, where used within this document, refers only to the successful Bidder or, in the event that the Contract is awarded to a consortium, the successful Bidders.

2. Background of the SBMon project

- 2.1. ORJIP Offshore Wind (OSW) launched its second stage in July 2019 with the objective of identifying, prioritising and selecting research to reduce consenting risk for offshore wind. As part of the project identification process, a ‘call for project ideas’ was issued to the ORJIP OSW Advisory Network in November 2019 with submissions being discussed at the ORJIP Forum in December 2019.
- 2.2. As part of this process, the need for further strategic monitoring of seabird behaviour within operational wind farms was identified as a key research topic. Subsequently, the ORJIP OSW Steering Group selected an initial piece of work to determine the extent of any future Discretionary Project (DP) to conduct seabird monitoring at an operational wind farm(s).
- 2.3. Uncertainty around cumulative impacts on seabirds from existing and consented offshore wind, and how to assess in-combination impacts from future proposals is recognised as a significant risk to offshore wind expansion (e.g. Black *et al.* 2019, Gibson *et al.* 2017). For several species of seabird that interact with offshore wind

farms around the UK, collision with moving turbine blades is thought to be an important impact pathway.

- 2.4. Collision levels are thought to be dependent on the precise turbine and wind farm designs, and predictive modelling is required to assess likely collision rates for different species for each proposed wind farm (both alone and in-combination with proposed or existing wind farms). In order to improve our understanding of existing levels of collision, empirical collision monitoring is required. In addition, the validation of and (if necessary) improvements to current predictive modelling approaches are also required to improve our ability to accurately assess likely collision levels from future proposals.
- 2.5. This project will seek to review completed, operational and planned monitoring studies and (if appropriate) emerging monitoring technologies to assess the capacity of their (actual, planned or likely) outputs to: a) inform empirical collision estimates; and b) quantify reactive (and other relevant) behaviours for seabirds within offshore wind farms. Power calculations will be used to quantify uncertainty in estimates of actual collision rates and behavioural parameters associated with a range of different monitoring study designs and sample sizes. The results of the work will inform the scope of a future DP in line with the Project Expert Panel's (PEP) and ORJIP Steering Groups expectations.

3. Aims and objective of the SBMon project

- 3.1. The aim of this project is to review completed, operational and any planned or emerging seabird monitoring studies to assess the ability of their outputs to inform both empirical collisions estimates and quantify reactive behaviours to support the development/improvement of collision risk models. Before or during the completion of the review, the PEP should be consulted to provide advice on specific areas that should be covered and identify any knowledge gaps that need to be addressed, which will likely include reviewing emerging monitoring technologies. In doing so, this project will inform the scope of a potentially larger DP to conduct additional monitoring at operational wind farms across the UK.
- 3.2. Monitoring of seabird behaviour within offshore wind farms has been conducted to collect and apply empirical evidence to validate Collision Risk Models (CRM), and thereby inform the Environmental Impact Assessment (EIA) and Habitats Regulations Assessment (HRA) of the potential impacts of offshore wind on seabirds. Any future monitoring campaigns will thus aim to gather further empirical evidence of seabird reactive behaviour within one or more operational offshore wind farm(s) to inform and validate CRMs.
- 3.3. In the absence of observed collision rates, CRMs use estimates of the rate at which seabirds will undertake reactive behaviour to mitigate their individual collision risk. This is otherwise predicted based on simple mechanistic models. Several monitoring systems are in deployment/development using radar, camera tracking and other technologies which aim to record collision and/or individual bird behaviour in the vicinity of turbines.
- 3.4. In the UK, the ORJIP OSW Stage 1 Bird Collision Avoidance (BCA) study at Thanet offshore wind farm¹ generated useful information. The ongoing Vattenfall study at the European Offshore Wind Deployment Centre along with other planned monitoring

¹ <https://www.carbontrust.com/resources/bird-collision-avoidance-study>

campaigns at other UK offshore wind farms will yield further data on reactive behaviour and collision rates. Data from multiple studies are needed to improve understanding and quantification of behaviours determining collision risk at operational sites across multiple species. Studies are also needed to provide sufficient data across a range of locations, operational site conditions (e.g. proximity to seabird colonies), seasons, behaviours and environmental conditions within which collisions may occur. However, detection systems are expensive and can be limited in spatial extent and coverage, and may not be feasible for all offshore wind farm locations/layouts.

- 3.5. There are various technologies available which could, in theory, allow the detection of seabird collisions with offshore wind turbines and/or collect behavioural information in the vicinity of turbines. These may provide empirical collision data and/or quantified avoidance rates. The selection of wind farm(s) and turbines for a future monitoring campaign is important and will consider a range of factors, including the presence of large densities of target species and foraging ranges of key Special Protection Area (SPA) colonies. There needs to be a step change in the level of instrumentation and monitoring which should cover a range of seasons and behaviours. A full monitoring campaign using best available technology to record reactive behaviour and collisions is deemed a high priority by the industry, as this will help to assess existing collision levels and reduce uncertainty in future collision estimates.
- 3.6. The objective of this desk-based study is to review completed, ongoing and planned offshore seabird monitoring campaigns within operational offshore wind farms, including the technologies used to gather data and approaches to data processing and analyses that are used (or will be used) in these studies. The Contractor will then, in agreement with the PEP, recommend what further monitoring is required to provide a holistic understanding of seabirds' reactive behaviours and collision risk within operational offshore wind farms across species, seasons and geographical locations. The project will then inform the scope for future monitoring to allow such a larger project to be taken forward as a DP under ORJIP OSW Stage 2. More generally, it will also help to inform monitoring studies at offshore wind farms.

4. Tender documents for submission

- 4.1. In response to this Invitation to Tender, Bidders are required to submit
 - i. A Main Bid Document (pdf) – no template provided but contractors are requested to split the document between Technical & Financial Proposal;
 - ii. The signed Tender Certificate (pdf) – template provided; and
 - iii. The filled-in Bid Price Calculation Sheet (xls) – template provided.
- 4.2. The Main Bid Document should be no more than 20 pages excluding appendices and no more than 40 pages including appendices. Font should be clearly legible, and be

at least font size 11. The Main Bid Document shall as a minimum include the following information:

- i. The Bidder's proposed detailed Approach to Work (see section 5 and criterion 1 for more details). Bidders shall provide Work Package descriptions in the format set out in Annex 2 to this document. The Approach to Work should:
 - include a Gantt chart which describes the timeline for the Project, showing when each Work Package will start and finish;
 - outline how the Bidder will deliver the Scope of Work and do so on budget and within the allocated time;
 - any Alternative Work (i.e. substitute activities to take place instead of certain activities outlined in the Scope of Work in section 5). If Alternative Work forms part of the Approach to Work, the Bidder is expected to highlight, explain and justify the intended deviation from the Scope of Work. Alternative Work will be considered as non-optional when the tender is evaluated; and
 - any Additional Work (i.e. activities to take place in addition to the activities outlined in the Scope of Work in section 5). If Additional Work forms part of the Approach to Work, the Bidder is expected to explain and justify why the Additional Work would be beneficial and to provide a separate quotation for these activities. It is at the discretion of the Carbon Trust to consider Additional Work in the evaluation of the tender.
 - ii. a pdf copy of the filled-in Bid Price Calculation Sheet;
 - iii. the offered Bid Price, including any cost assumptions deemed relevant by the Bidder – see section 7 and criterion 4 for more details;
 - iv. an explanation of experience and staff skills, and how these are relevant to the Approach to Work – see criteria 2 and 3 for more details; and
 - v. supplementary information to provide experience evidence and skills evidence (e.g. CVs) – see criteria 2 and 3 for more details. This information should be provided as appendices to the Main Bid Document.
- 4.3. The Tender Certificate must be signed by an authorised signatory. Bidders must fill in the provided template.
- 4.4. The filled-in Bid Price Calculation Sheet must be provided in Excel format in addition to the information provided in the Main Bid Document. See section 7 and criterion 4 for more details.
- 4.5. The failure by a bidder to submit either the Main Bid Document, the signed Tender Certificate or the filled-in Bid Price Calculation Sheet shall mean that such tender is a non-compliant tender.

5. Scope of Work

- 5.1. The Scope of Work is provided in this section 5.
- 5.2. The Scope of Work comprises 4 Work Packages. The Scope of Work sets out the initial ideas on the key activities that the Contractor is expected to deliver for the Project.
- 5.3. It is expected that the Contractor will report on Project Deliverables to the ORJIP Offshore Wind Steering Group and Project Expert Panel. The Carbon Trust, ORJIP Offshore Wind Steering Group and Project Expert Panel shall review and provide

feedback on each Project Deliverable. There will be at least one round of review comments to be accommodated by the Contractor for each Project Deliverable.

- 5.4. The Final Scope of Work will be agreed between the Carbon Trust and the Contractor when entering into the Contract. The Final Scope of Work may reflect any updates, changes or improvements to the Scope of Work as proposed by the Contractor in its Alternative Work or Additional Work and as agreed by the Carbon Trust.
- 5.5. Due to the breadth of skills and experience required for the Project, bidders may decide to build a consortium to successfully meet the objectives of the Project. If a bid is submitted by a consortium it is expected that, in the case that the consortium is selected as the preferred Bidder, Carbon Trust will only enter into a Contract with the Project Coordinator, and that the Project Coordinator will subcontract the other members of the consortium.
- 5.6. The Carbon Trust appreciates that it will take a small team of mixed seniority approximately 6 months to complete the Project.
- 5.7. Bidders should use the Scope of Work as set out below to create the Approach to Work. Any Alternative Work or Additional Work shall be stated in the Approach to Work at the end of the relevant Work Package description.
- 5.8. It is expected that simplifying assumptions will be required to complete the work in the given timeframe. These assumptions should, to the extent possible at the time of tender submission, be clearly stated in the Approach to Work. It is expected that during the execution of the SBMon Project, any assumptions will be discussed with the PEP & ORJIP Offshore Wind Steering Group prior to the start of each Work Package.

Work Packages

| Work Package | Description of Work |
|---|---|
| WP1 Kick Off Workshop | <p>Goal</p> <p>Organisation of a kick off workshop with the PEP and ORJIP Steering Group to discuss project aims and objectives. The intention of this workshop is to ensure the successful Contractor fully understands the intentions for this project and how it can inform understanding of seabird collision risk and reactive behaviour from current and future offshore wind farms.</p> |
| | <p>Activity</p> <ul style="list-style-type: none"> - Liaise with the PEP and ORJIP Steering Group through the Project Manager to organise a workshop to discuss the project's objectives and proposed approach, identifying key areas that need to be addressed in WP2 and WP3. - Identify with the PEP and ORJIP Steering Group the need for 3rd party invitation to the workshop and if agreed, progress invitations. |
| <p>Deliverables</p> <ul style="list-style-type: none"> • D01: A short report summarising the workshop and agreed outputs/considerations. | |
| WP2 Review | <p>Goal</p> |

Review of completed, operational and planned monitoring studies for both fixed and floating offshore wind farms or turbines, including a review of emerging technologies. Understand what information is feasible to collect, and how this information can/should be used to assess the ability of outputs to inform empirical collision estimates and quantify reactive behaviours to support the development/improvement of collision risk models.

Activity

- Identify completed, operational and planned seabird collision and/or reactive behaviour monitoring studies to inform the review. This should look globally and identify relevant projects outside of the UK, including but not limited to other areas of Europe and America. The focus is monitoring of collision and/or reactive behaviours at offshore wind farms, however the Contractor may wish to include studies from a terrestrial context if it is felt that there is sufficient confidence that the technology and/or associated analytical approaches could be applied in the marine environment. For example, IdentiFlight has been shown to be very accurate at detecting birds of prey at onshore wind facilities (McClure *et al.* 2018), but it is not clear how transferrable this might be to offshore wind farms or seabirds. Collate literature (published and grey) relating to these studies and extract information relating to the list of questions below.
- Engage with relevant experts involved in these studies to obtain information relating to the list of questions below, if it is not available in published or grey literature. Such experts might include:
 - Equipment manufacturers/providers;
 - Developers hosting, or known to have considered hosting, monitoring equipment;
 - Developer Engineers who may be able to give a better understanding on the logistics & planning and challenges of installing and maintaining offshore equipment;
 - Regulators and relevant nature conservation advisors who may have views on appropriate equipment, information and analyses of such data;
 - Data analysts and those using CRMs (e.g. consultants, statutory advisors, academics and researchers).
- The review will provide a list of monitoring systems that have or are planned to be deployed, and for each system it will provide information on the following points:

Study design

- a. The objective of the monitoring system (What was/is it aiming to monitor?);
- b. Scale of deployment (e.g. number of windfarms deployed at, number of devices deployed, timeframes);

System functioning

- c. Monitoring capacity of each device (for example does each device monitor a whole turbine, several turbines, or only part of a single turbine/rotor-swept area?).

- d. What parts of the structure are visibly monitored beyond the turbine blades/rotor-swept area (e.g. floating wind platforms)?
- e. Method of monitoring collisions (e.g. visual, acoustic, radar, GPS, combination);
- f. Species ID capabilities (including smaller seabird species) and whether it is capable of distinguishing between similar species (e.g. tern species or larger species of gull found in the UK). Should consider factors affecting ID capabilities such as distance, weather conditions, visibility, position of system relative to blades etc and any other environmental data that could inform species ID capabilities.
- g. Reliability at detecting birds in the vicinity of turbines (if not directly recording collisions); how has this been tested/validated? What is the false positive/missed detections rate?

Hosting/logistical

- h. Type and format of information recorded/stored and how that information is retrieved from the offshore environment, e.g. person collects hard drive, information downloaded and broadcast to shore-based receiving station etc.
- i. Equipment and turbine requirements for hosting, including whether this can be retro-fitted to operational turbines and any impact on wind turbine performance certificate/warranty;
- j. Logistical requirements (power, communications, maintenance, data access etc.).

Data collection

- k. Is flux or density information collected and at what scale and in what format?
- l. Is information on bird behaviour prior to collision or in the vicinity of the turbine collected and in what format?
- m. Other information collected (e.g. flight heights, flight speeds, flight path etc.).

Data processing

- n. How is data extracted and in what format?
- o. How is the extracted data processed and was all data fully processed?
- p. Is further automation of data processing feasible/realistic?

Data analyses

- q. Description of analytical approaches applied to the data;
- r. What additional analyses can be envisaged for the processed data?
- s. How has the data been (or is intended to be) used to directly estimate empirical collision rates per (surveyed) turbine? What other information was required to do this? How accurate were the estimates thought to be?
- t. How has the data been (or is intended to be) used to estimate CRM parameters (such as flight heights and flight speeds)? How accurate were these thought to be? How might this information most meaningfully be used to improve collision estimates or future predictions?
- u. How has the data been (or is intended to be) used to estimate within-wind farm avoidance rates? What do these avoidance

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| | <p>rates describe in reality, behavioural avoidance (similar to that calculated in Skov et al. (2018))², model error or a combination of these?</p> <p>v. How has the data been (or is intended to be) used to estimate macro-avoidance rates? What other information was required to do this?</p> <p>w. How has the data been (or is intended to be) used to describe and/or categorise bird behaviour immediately preceding collision/avoidance? What other information was required to do this?</p> <p>x. How has the data been (or is intended to be) used to estimate flux rates through individual turbines and/or the wind farm as a whole? How was this done and what other information was required to do this?</p> <p>Other information</p> <p>y. Indicative costs per unit (including purchase, fittings, deployment, maintenance, warranties/parts replacement, information storage and support, etc.).</p> <p>z. Any information regarding how were locations/sites selected/agreed? how were the risks of offshore work (damage to assets, HSE, downtime, etc.) allocated or shared and were there any difficulties with the Offshore wind farm owners/operators that had to be overcome?</p> <p>The review will need to consider all of the above in the context of fixed offshore wind turbines in the first instance, but for each device its applicability to floating offshore wind turbines will also need to be considered. The reviewer will need to specify where the results in relation to each review area might be different if applied to floating turbines.</p> |
| <p>Deliverables</p> <ul style="list-style-type: none"> • D02a: A clear audit of literature sources reviewed and experts contacted, with a link to the information provided by each source. • D02b: A report detailing the outcomes of the review with reference to the questions listed above. It would then provide a summary for each system reviewed indicating feasibility/suitability for large-scale deployment, types of information collected, how this can be used to reduce uncertainty in cumulative collision estimates for key species, and the risks/uncertainties associated with each system. | |
| <p>WP3. Power calculation</p> | <p>Goal</p> <p>Quantify the levels of uncertainty in key quantities of interest (including empirical collision rates and any other key biological parameters that emerge from the review in WP2) that could realistically be achieved by a monitoring study, using different monitoring technologies, wind farm characteristics (e.g. different bird densities and turbine densities) and lengths of monitoring study. The objective of doing this would be to see which technologies lead to the greatest information gain (e.g. lowest levels of uncertainty) regarding collision risk, and to identify the</p> |

² <https://www.carbontrust.com/resources/bird-collision-avoidance-study>

length and design of monitoring study that is likely to be needed to reduce the level of uncertainty to an acceptably low level.

Activity

We envisage six stages to the power analysis:

- Stage A: Identify, based on WP2, the set of quantities that the power analysis should focus on. It is initially envisaged that this would include the empirical collision rate together with key biological parameters relevant to collision risk modelling, but the final selection of quantities will be decided based upon the outcome of the review in WP2 and other relevant work (e.g. sensitivity analyses to identify key parameters within the Band model). The most appropriate definition of empirical collision rate to focus on will also be identified – e.g. a decision will be made on whether this is the rate per bird per unit of time or the rate per turbine per unit of time.
- Stage B: Identify, again based on WP2, a set of scenarios (e.g. bird densities, turbine designs, turbine parameters, turbine layout and wind farm area) and potential study designs (e.g. monitoring technologies, number of deployments, duration of each deployment) to be evaluated and compared. If feasible, based on the outcomes of WP2, these scenarios and designs will be linked to specific wind farms at which the monitoring study could occur.
- Stage C: Identify which of the technologies being considered can estimate which quantities of interest. It is anticipated that some of the technologies being considered within the scenarios may only be able to estimate some of the quantities of interest (e.g. some technologies may be able to estimate collision rate directly but not avoidance rates, or vice versa).
- Stage D: Formulate a plan illustrating how monitoring data from each technology would be analysed to deliver estimates for each of the quantities of interest. For technologies that directly observe collisions, the baseline assumption is that a whole turbine is continuously monitored by each deployment and that all collisions are correctly observed. If this is not a realistic assumption this will need to be considered within the power analysis. For technologies that provide information on collision risk modelling parameters, a decision will need to be taken on how these quantities can be derived from the data (e.g. can the raw data be summarized directly, or is any pre-processing required first?).
- Stage E: Run a simulation-based power analysis to quantify the uncertainty associated with estimating each of the quantities of interest for each of the potential scenarios and study designs. The power analysis should consider the fact that the conditions associated with data collection (e.g. season, weather conditions, primary use of area) may not be representative of the range of conditions that actually occur (e.g. data collection may be impossible in very poor visibility).

| | |
|---|--|
| | <ul style="list-style-type: none"> - Stage F: Summarize and interpret the results of the power analysis by assessing the level of uncertainty in the quantities of interest associated with each scenario and sampling design. Evaluate the study designs and sample sizes that achieve an acceptable level of uncertainty within each of these quantities, after appropriate consideration of the level of uncertainty deemed acceptable within this context. Qualitatively evaluate the defensibility of any assumptions required for the power analysis, and clearly summarize the limitations and caveats associated with the analysis. |
| Deliverables <ul style="list-style-type: none"> • D03: A short report and associated CSV files summarizing the results of the power analysis and the methodology used in a reproducible way. | |
| Go/no go decision point for WP4 | |
| WP4 Project Scoping | <p>Goal Following recommendations from WP2 and WP3, inform a scope of work for a seabird monitoring study within an operational wind farm(s) with recommendation from the PEP and ORJIP Steering Group that will support the creation of a ORJIP Offshore Wind Discretionary Project to deliver this scope.</p> <p>Activity</p> <ul style="list-style-type: none"> - Provide an outline for a scope of work for the delivery of a seabird monitoring study that is informed by the outputs for WP2 & WP3 and captures the requirements of the PEP & ORJIP Steering Group. - It is unlikely that a specific project site for the Discretionary Project will have been chosen by the time this work package is delivered. The scope of work should consider all elements of an offshore seabird monitoring campaign that need to be applied to the wind farms scenarios derived during WP3. - The scope of work should include some guidance and lessons learned from previous studies on factors / risks associated with site selection. These may include aspects such as: how a site may be identified and agreed with the site owner; and how risks (such as potential damage to offshore assets, HSE, potential downtime) may be handled / shared between the project, contractors and site owner. - To inform the progression of the ORJIP Offshore Wind DP, such scope elements as recommended technology, outline monitoring system design, potential costs, project timelines and operational risks will be important in supporting the creation of the DP. - It is not expected that the scope of work be as extensive as the final scope of work that will be finalised in advance of progressing the ORJIP Offshore Wind DP as this deliverable from this project will provide the basis on which such a DP scope can be finalised. |
| Deliverables | |

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| <ul style="list-style-type: none"> • D04: A outline Scope of Work for a Seabird Monitoring Study within an operational wind farm(s). | |
| <p>WPA Project Management</p> | <p>The Bidder should stipulate how it will manage the Project efficiently and effectively.</p> <p>In particular, the following activities should be included (and hence budgeted for)</p> <ul style="list-style-type: none"> • project management time (including sufficient time for review processes); • regular update calls with the Carbon Trust Project Manager and/or ORJIP OSW Steering Group and/or PEP as required; • the preparation of monthly flash reports (Carbon Trust template) containing key financial data and information of the delivery status of the Project; and • towards the end of the Project <ul style="list-style-type: none"> ○ the production of a 3-10 pages Executive Summary Report for the entire Project (for dissemination within ORJIP Offshore Wind); ○ the preparation of a Project Closeout Form (Carbon Trust template) which includes a short summary of areas for future research and a documentation of all Project Deliverables; ○ the preparation of a final presentation to the ORJIP Offshore Wind Steering Group and Project Expert Panel; ○ time dedicated to presenting the main results, findings and outcomes of the Project in the form of a 1-hour webinar to ORJIP Offshore Wind Partners; and ○ the provision of inputs for the ORJIP Offshore Wind Risk Model by completing the ORJIP Offshore Wind Risk Model Input Sheet (Carbon Trust template). <p>Bidders should be aware that the Carbon Trust, ORJIP Offshore Wind Steering Group and the Project Expert Panel usually require 2-3 weeks to review and provide feedback on each Project Deliverable, with at least one round of review comments to be accommodated. This should be considered when calculating Your Bid Price.</p> |
| <p>Deliverable:</p> <ul style="list-style-type: none"> • DAa: Monthly flash reports • DAb: Executive Summary Report • DAc: Final presentation • DAd: Delivery of webinar • DAe: Project Closeout Form • DAf: Input sheet for ORJIP Offshore Wind Risk Model | |
| <p>WPB Expenses</p> | <p>The Contractor should detail the capped amount of expenses it expects to incur throughout the project. Expenses will be paid as incurred and any unused balance will not be paid.</p> |

6. Intellectual Property and Knowledge

Full details of the intellectual property requirements and conditions can be found in the attached ORJIP Offshore Wind Stage II Contractors' Conditions.

7. Bid Pricing

- 7.1. To provide Bidders with greater clarity on the nature, level and type of work involved in the various Work Packages, the Total Budget for the delivery of this Project is expected to range between **£40k and £50k**.
- 7.2. The Bid Price submitted with the tender must be derived from the cost breakdown in the Bid Price Calculation Sheet, and must include all expenses. The Bid Price is the price for the activities that will address the Scope of Work (and any Alternative Work proposed by the Bidder). The Bid Price Calculation Sheet and the Bid Price shall not include the price of any Additional Work suggested by the Bidder. Instead, the price for such Additional Work Packages shall be stated separately to the Bid Price in the Main Bid Document.
- 7.3. If the Bid Price exceeds the expected range of the Total Budget as stated under section 7.1, to avoid receiving a lower score for criterion 4, in the Main Bid Document the Bidder should provide a clear and justified reason why the Bid Price exceeds the expected budget.
- 7.4. All costs and rates quoted in the Main Bid Document and Bid Price Calculation Sheet must be in GBP (£) and all staff rates quoted in the tender must represent the **Day Rate** for employment of staff members.
- 7.5. Any expenses must be separately included under Expenses.

8. Tender Evaluation Criteria

Bidders should take the following evaluation criteria into account when preparing and submitting their tenders.

Criterion 1: Approach to Work (Weighting: 30%)

| <i>Description</i> | <i>Information required from Bidders</i> |
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| Proposed Approach | <p>In the Main Bid Document, Bidders are required to provide a clear and detailed description on how they plan to deliver the work for this Project.</p> <p>The description should include an initial overview on the approach followed by a description on how each Work Package and task will be delivered.</p> <p>Also, Bidders need to justify how their proposed approach meets the objectives of the Project.</p> |
| Additional Work | <p>If there is any Additional Work proposed by the Bidder, these aspects will be evaluated separately. The suggestion of Additional Work by the Bidder will not have a negative impact on the evaluation of the tender.</p> |
| Project management | <p>Bidders are required to describe how they will manage the Project utilising appropriate resources and describe how they will work with the various stakeholders, such as the relevant ORJIP Offshore Wind PEP, to get information and manage potentially conflicting relationships.</p> |

Criterion 2: Experience (Weighting: 30%)

| <i>Description</i> | <i>Information required from Bidders</i> |
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| Experience and knowledge | <p>In the Main Bid Document, Bidders should elaborate on experience of the criteria described and explain how these past experiences are relevant for this tender. Of particular importance will be the Bidders understanding of the policy environment and the need for this project.</p> <p>In addition, Bidders should provide at least two examples (with reference to specific roles, responsibilities and activities the Bidder undertook) of previous work which illustrates the Bidder's skills, capabilities, and experience in all of these areas (Bidders may wish to make reference to submitted examples of previous work for other clients).</p> <p>Bidders are advised that experience is considered a key important criterion and partnerships with other companies to support certain areas of experience are welcomed. All experience / case studies should be attached as an appendix to the Main Bid Document.</p> <p>Bidders should provide evidence of their relevant skills and experience. It is anticipated that the successful bidder will exhibit, among others, the following range of skills and experience:</p> <ul style="list-style-type: none"> • Understanding of the requirements under EU and UK legislation; |

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| | <ul style="list-style-type: none"> • Practical understanding of the offshore wind industry, including consenting/licensing processes and operation of offshore wind farms; • Understanding of conservation science, including ornithology expertise and knowledge of offshore wind farms; • A track record of satisfactory health, safety and quality management; • Experience of undertaking authoritative studies in relevant applied science areas; • Experience of reporting and presenting the results of studies in relevant applied science areas; • Experience of applying statistical skills to the design and undertaking of relevant studies; • Experience of working collaboratively with regulatory bodies and industry, ideally including the renewables industry and Statutory Nature Conservation Bodies. |
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Criterion 3: Staff Skills (Weighting: 15%)

| <i>Description</i> | <i>Information required from Bidders</i> |
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| CVs/Resumes | Bidders are required to provide detailed CVs/Resumes for any key personnel who will be involved with this Contract together with proposed Project structure, intended position of the key personnel in the Project, and main responsibilities. CVs should include professional memberships of proposed staff working on this Project. |
| Applicable skills | Bidders should elaborate on the most relevant skills of the key personnel that will be involved in the Project. |
| Prior experience form involved staff | Please include examples of similar work performed by the proposed staff members, explaining how is relevant to the Approach to Work. |
| Expert engagement | A close working relationship with key stakeholders, such as government departments & agencies, regulatory bodies, Statutory Nature Conservation Bodies, NGOs and academia, who are seen relevant to the success of this Project. Please supply ideas of how these groups can be engaged and leveraged. |

Criterion 4: Bid Price (Weighting: 25%)

| <i>Description</i> | <i>Information required from Bidders</i> |
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| Day rates and man hours (man-h) for all staff grades | In the Bid Price Calculation Sheet, Bidders are required to provide day rates for all staff grades and to input the man-h involved in each Work Package. |
| Price for the delivery of the Project | In the Bid Price Calculation Sheet, Bidders are required to provide a cost breakdown by Work Package, including man hours and day rates of personnel completing the work as specified in section 6. |

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| | <p>Bidders are required to specify expected expenses separate from the estimated budget for each Work Package.</p> <p>The Bid Price will be assessed on the price for the Approach to Work (which includes the price of the Work Packages in the Scope of Work and any Alternative Work proposed by the Bidder).</p> <p>If there is any Additional Work proposed by the Bidder, this will be evaluated separately. The suggestion of Additional Work by the Bidder will not have a negative impact on the evaluation of the tender.</p> <p>Carbon Trust will reimburse reasonable expenses at cost and receipts may be requested. Pre-approval will be required for travel costs over £150 per return journey and combined hotels & subsistence cost exceeding £200 per day.</p> <p>Bidders will be required to confirm or comment on their ability to carry out the activities detailed in the Scope of Work within the initial term of the Contract and provide an outline plan of work.</p> |
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9. Glossary

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| Approach to Work | Has the meaning set out in section 4.1. |
| Additional Work | Any activities that are proposed by the Bidder in addition to those in the Scope of Work. It is at the discretion of the Carbon Trust to consider Additional Work in the evaluation of the tender. The suggestion of Additional Work by the Bidder will not have a negative impact on the evaluation of the tender. |
| Alternative Work | Deviations from the Scope of Work that are proposed by the Bidder, which replace work or tasks in the Scope of Work. Alternative Work will be treated as non-optional in the evaluation of the tender. |
| Award Letter | A letter, issued by Carbon Trust, informing the Contractor about the award of the Contract. The Award Letter is issued together with the Final Scope of Work and the ORJIP Offshore Wind Stage II Contractors' Conditions. |
| Bidder | An individual, a company, an organisation or a consortium submitting a bid for the Project. |
| Bid Price | The total price for the Bidder to complete the Project in line with the Approach to Work. The Bid Price shall include the price for all Work Packages described in the Scope of Work and any Alternative work proposed by the Bidder. The Bid Price shall not include the price of any Additional Work suggested by the Bidder. |
| Bid Price Calculation Sheet | An Excel template provided by the Carbon Trust that is to be provided by the Bidder in addition to the Main Bid Document. |
| Carbon Trust Project Manager | The Carbon Trust employee who serves as first point of contact in relation to this ITT and the Project. |
| Clarification Document | A document containing all received clarification questions and Carbon Trust's responses to these questions. |
| Contract | A document consisting of the Award Letter, the Final Scope of Work, the ORJIP Offshore Wind Stage II Contractors' Conditions, and any clarifications agreed in writing. |
| Contractor | The Bidder (or in the case of a consortium, Bidders) selected for the delivery of the Project. |
| Description of Tender | This document. |
| Due Diligence Questionnaire | A questionnaire that is to be completed by shortlisted Bidders should Carbon Trust's bidders vetting process give reason to conduct a due diligence. In case of a consortium, the Due Diligence Questionnaire is to be filled-in by the designated Project Coordinator. |

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| Executive Summary Report | A 3-10 pages report containing a high-level description of the Work Programme and a summary of the relevant results, findings and conclusions of the Project. |
| Final Scope of Work | The agreed Work Programme for the Project, based on the Scope of Work and the Approach to Work, which is mutually agreed between the Carbon Trust and the Contractor. |
| Flash Report | A template provided by the Carbon Trust at Project start. |
| Invitation to Tender (ITT) | The following group of documents: Description of Tender (this document); ORJIP Offshore Wind Stage II Contractors' Conditions; Tender Certificate template; Bid Price Calculation Sheet template; and Clarification Document (if applicable ³). |
| Main Bid Document | Has the meaning given in section 4.1. No template is provided. |
| Project | The Review of current and planned monitoring of seabird behaviour across operational wind farms or SBMon project. |
| Project Closeout Form | A template provided by the Carbon Trust towards the end of the Project. |
| Project Deliverables | The individual deliverables including, but not limited to, any reports, technical notes, documents, drawings, models, data, webinars to be produced by the Contractor according to the Scope of Work (see section 5) or as otherwise agreed in the Final Scope of Work. |
| ORJIP Offshore Wind | Offshore Renewables Joint Industry Programme for Offshore Wind |
| ORJIP Offshore Wind Partners | A group of leading offshore wind farm developers and public sector non-developers supporting ORJIP Offshore Wind. |
| ORJIP Offshore Wind Risk Model | The Contractor is not expected to produce a risk model of its own, but rather provide an estimate, with appropriate explanation, for potential risk reduction implications of the research undertaken within the frame of the delivered project. The Carbon Trust will provide a template to assist the Contractor in this process. |
| ORJIP Offshore Wind Risk Model Input Sheet | A form (to be provided by Carbon Trust) which the Contractor should complete in WPA to provide input into the ORJIP Offshore Wind Risk Model. |
| Project Expert Panel | A group consisting of technical experts from the ORJIP Offshore Wind Advisory Network and ORJIP Offshore Wind |

³ A Clarification Document will not be published if no clarification questions are received in relation to this ITT.

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| | Partners appointed by the ORJIP Offshore Wind Partners. The PEP will supervise the Project and where necessary make recommendation to the ORJIP Offshore Wind Steering Group. |
| Scope of Work | The (preliminary) Work Programme for the Project as defined in section 4 of this document. At Contract award, the Scope of Work will be replaced by the Final Scope of Work. |
| Tender Certificate | A declaration that is to be provided by the Bidder (in case of a consortium: by the designated Project Coordinator) in addition to the Main Bid Document. |
| Total Budget | The expected amount of money available that will be made available from ORJIP Offshore Wind to the Contractor for the delivery the Project. |
| Work Package | A group of related tasks to be delivered under the Project. |
| Work Programme | The entirety of all Work Packages. |