

20 August 2021

Dear Sir/Madam,

Invitation to Tender for Work Package 8 of the OWA High Voltage Array Systems (Phase 1) project for the Carbon Trust's OWA Programme

You are invited to submit a tender for Work Package 8 of the OWA High Voltage Array Systems (Phase 1) project (the "OWA Hi-VAS (Phase 1) project" or "Project") which is part of the Offshore Wind Accelerator (OWA) programme. The key objective of the overall Project is to develop industry-wide consensus on the optimal future array voltage level and how the change in voltage can best be made. The key objective for Work Package 8 is to understand the design changes and cost differential for higher voltage array cables.

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

- Description of Tender (this document);
- OWA Hi-VAS (Phase 1) Contractors' Conditions – Cable Manufacturers (these are the conditions intended for use if we choose to contract cable manufacturers or the like);
- OWA Hi-VAS (Phase 1) Contractors' Conditions – Not Cable Manufacturers (these are the conditions intended for use if we choose to contract Bidders other than cable manufacturers (consultancies, research institutes, or the like));
- Tender Certificate (Word template);
- Bid Price Calculation Sheet (Excel template); and
- Clarification Document (if applicable¹).

Unless informed to the contrary, tenders and communications shall be sent by e-mail to the following e-mail address: robert.keast@carbontrust.com and owa@carbontrust.co.uk

Tenders must be submitted before 1200 BST Friday 17 September 2021. 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:

Deadline for clarification questions	3 September 2021
Clarification Document published ¹	10 September 2021
Submission of full tender	17 September 2021
Bidder interviews	w/c 4 October 2021
Successful Contractor announcement	w/c 4 October 2021
Envisaged Contract award date	w/c 11 October 2021

Please e-mail any clarification questions, including questions about the timing of this ITT, to robert.keast@carbontrust.com and owa@carbontrust.co.uk any time before 3 September 2021. The complete set of clarification questions and all answers to clarification questions will be published in the Clarification Document on our website by 10 September

¹ A Clarification Document will not be published if no clarification questions are received in relation to this ITT.



2021 and will hence be visible to all potential Bidders: <https://www.carbontrust.com/news-and-events/tenders>

For information about the OWA programme, please see the Carbon Trust's web site: <https://www.carbontrust.com/our-projects/offshore-wind-accelerator-owa>

We look forward to receiving Your tender.

Yours sincerely,

Robert Keast
For and on behalf of **THE CARBON TRUST**

The Carbon Trust Offshore Wind Accelerator

Invitation to Tender for Work Package 8 of the “OWA High Voltage Array Systems (Phase 1)” 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 OWA Hi-VAS (Phase 1) Project Participants against the criteria provided in section 7. 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 4 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, an Agreed Scope of Work that builds upon the Scope of Work contained in section 4 of this document and Your Approach to Work will be mutually agreed between You and the Carbon Trust. Once the Agreed Scope of Work is agreed, Your offer will be formally accepted by the Carbon Trust issuing an Award Letter, the Agreed Scope of Work, the OWA Hi-VAS (Phase 1) Contractors' Conditions, and any clarifications agreed in writing. The Award Letter, the Agreed Scope of Work, the OWA Hi-VAS (Phase 1) Contractors' Conditions, and any clarifications agreed in writing will establish the Contract for the OWA High Voltage Array Systems (Phase 1) project (the "**Contract**") between You and the Carbon Trust.

Carbon Trust may make amendments to the OWA Hi-VAS (Phase 1) Contractors' Conditions between the issuance of this Invitation to Tender and the issuance of the Contract. These amendments will be mutually agreed with the Contractor prior to the issuance of the Contract.

With the exception of any minor amendments to the OWA Hi-VAS (Phase 1) Contractors' Conditions which may be requested by the Bidder and any amendments to the OWA Hi-VAS (Phase 1) Contractors' Conditions made by Carbon Trust, the submission of a tender shall constitute unqualified acceptance of the OWA Hi-VAS (Phase 1) Contractors' Conditions. In the event that minor amendments to the OWA Hi-VAS (Phase 1) 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.

There are two sets of OWA Hi-VAS (Phase 1) Contractors' Conditions for this Tender. One is intended for cable manufacturers or the like. The other is intended for non-cable manufacturers, such as consultancies, research institutes, or the like. The difference between the two is in the IP ownership.

The Carbon Trust may contract more than one successful Bidder to perform the work separately and in parallel. The purpose of this would be so that the Project receives more than one opinion on cable design and cost aspects.

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 3, 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 Wind Accelerator

- 1.1. The Offshore Wind Accelerator (“**OWA**”) is an industry-driven collaborative research, development and demonstration programme which was initially launched by the Carbon Trust in 2008 in collaboration with five offshore wind developers. The programme has since expanded during OWA Stages I, II, III and IV to include currently eight offshore wind developers from various countries within the European Economic Area (the “**OWA Partners**”). At the time of issue of this Invitation to Tender the OWA Partners are: SSE Renewables Developments (UK) Limited, Ørsted Wind Power A/S, RWE Renewables GmbH, ScottishPower Renewables (UK) Limited, Equinor ASA, Vattenfall Vindkraft A/S, EnBW Energie Baden-Württemberg AG, Shell Global Solutions International B.V., and TotalEnergies E&P UK Limited.
- 1.2. OWA Stage IV aims to continue the cost reduction of offshore wind to make it cost competitive with other sources of energy generation, overcome market barriers, develop industry best practice, trigger the development of new industry standards and support the international expansion of offshore wind.
- 1.3. OWA Hi-VAS (Phase 1) is a joint industry project set up under OWA Stage IV. It is funded separately to the core OWA Stage IV programme by a subset of OWA Partners (the OWA Hi-VAS (Phase 1) Project Participants). OWA Hi-VAS (Phase 1) is governed by a Project Steering Committee and a Project Technical Committee, consisting of representatives from each of the OWA Hi-VAS (Phase 1) Project Participants and the Carbon Trust. These parties supervise the Project, will provide technical direction and guidance to the Contractor (where needed), and will review the Deliverables, findings, and other outcomes.
- 1.4. 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 and objective of WP8 of the OWA Hi-VAS (Phase 1) project

- 2.1. In 2010, the Carbon Trust commissioned an Offshore Wind Accelerator study which undertook a holistic review of the benefits and challenges of moving to a higher array cable voltage for Offshore Wind Farms (OWFs). This initial work was followed by a detailed engineering design study which evaluated the benefits and technical challenges at a range of different voltage levels, with 66kV providing the most cost-effective solution. However, to achieve the optimal solution, more cost-effective 66kV cables had to be developed.
- 2.2. Consequently, the OWA decided to launch a 66kV array cable competition in 2013. The competition supported the design, manufacture and qualification of four new designs for 66kV array cables. Four cable designs from three international cable manufacturers were type tested and became market available in 2015/2016. This

provided a critical new technology for OWFs consisting of 7MW+ WTGs and has played a very important role in the continued growth of the offshore wind industry.

- 2.3. The East Anglia One (7MW WTGs), Borssele I&II (8MW WTGs) and the EOWDC (8MW+ WTGs) OWFs were amongst the first adopters of 66kV array cables. Since then, 66kV has been established as the standard inter-array voltage worldwide.
- 2.4. As the rated capacity of WTGs is now developing beyond 14MW, a further step up in the array cable voltage could enable a more efficient and cost-effective method of power collection from larger turbines and ultimately lead to further reduction in LCOE for OWFs.
- 2.5. The OWA Hi-VAS (Phase 1) project commenced in November 2020 and is expected to run until March 2022.
- 2.6. The OWA Hi-VAS (Phase 1)) project is investigating the optimal array voltage for the next generation of turbines (>14MW). The aim of the Project is to define the next global standard array voltage for bottom fixed turbines and to understand the commercial benefits and technology risks of raising the voltage.
- 2.7. To achieve this, in the first half of 2021, the Project has conducted detailed stakeholder engagement with the array system supply chain. Building on this, the Project has conducted preliminary design, CBA and risk analysis looking at differences between existing 66kV and higher voltage array systems (110, 132 and 150kV). This work was carried out by Carbon Trust, TNEI and Petrofac.
- 2.8. In this preliminary design, CBA and risk analysis work, the Project has found uncertainty around higher voltage array cables. Of most relevance to the Project is the cost delta between 66kV and higher voltages. From the stakeholder engagement, the Project has received varying estimates of the cost delta between 66kV and higher voltages, presumably driven by differing opinions in the design of higher voltage array cables. This has led to uncertainties in the overall preliminary CBA and risk analysis for higher voltage array systems.
- 2.9. In the second half of 2021, in WP5 the Project will look at the design of higher voltage array systems in much more detail. It will do so by investigating the design of every piece of equipment in the array system of an offshore wind farm scenario with 14MW, 17MW and 20MW turbines. This will include TP / foundation design, cable terminations, cables, switchgear, transformers, testing equipment, installation methods, OSS design, etc. By understanding the detailed design of each component and method and how these will change when raising the voltage, the Project aims to de-risk high voltage array systems and to identify where additional development work is needed. This work will be led by TNEI and Petrofac.
- 2.10. In WP6, the detailed equipment specification of WP5 will be fed into a detailed CBA and risk analysis. The aim of this will be to provide evidence for the business case for higher voltage array systems. Building on the risk analysis, the Project will then produce a roadmap for the next standard array voltage, which will be disseminated amongst the supply chain. This work will be led by TNEI and Petrofac.
- 2.11. To achieve the necessary technical and commercial confidence in higher voltage array systems, one of the key challenges for the Project will be to reduce the

uncertainties in design and costs for higher voltage array cables. In this ITT, the Project is seeking one or more additional Contractors to deliver this in WP8.

2.12. Aims of WP8:

- I. The fundamental aim of WP8 is to reduce the uncertainty in the cost delta (%) of higher voltage array cables vs 66kV cables.
- II. Another aim of WP8 is to provide rationale for the cost deltas through analysis of the cable cost drivers, with a particular focus on the necessary changes in cable design and what risks these changes come with.

2.13. The outputs of WP8 will feed into the WP6 overall CBA, risk analysis and industry roadmap for high voltage array systems mentioned above, which will be led by TNEI and Petrofac.

3. Tender documents for submission

3.1. In response to this Invitation to Tender, Bidders are required to submit

- i. A Main Bid Document (pdf) – no template provided;
- ii. The signed Tender Certificate (pdf) – template provided; and
- iii. The filled-in Bid Price Calculation Sheet (xls) – template provided.

3.2. 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 4 and criterion 1 for more details). No template is provided for the Approach to Work. However, the Approach to Work should:
 - include a Gantt chart which describes the timeline for the Project, showing when each task 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 4). 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 4). 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 6 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.
- 3.3. The Tender Certificate must be signed by an authorised signatory. Bidders must fill in the provided template.
- 3.4. 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 6 and criterion 4 for more details.
- 3.5. 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.

4. Scope of Work

- 4.1. The Scope of Work is provided in this section 4.
- 4.2. The Scope of Work comprises one Work Package, Work Package 8 (Work Packages 0 and 1 are being conducted by the Carbon Trust, and Work Packages 2 to 7 are being conducted by TNEI and Petrofac, and do not form part of this ITT). The Scope of Work sets out the initial ideas on the key activities that the Contractor is expected to deliver for the Project.
- 4.3. It is expected that the Contractor will report on Deliverables to the Project Technical Committee. The Project Technical Committee shall review and provide feedback on each Deliverable. There will be at least one round of review comments to be accommodated by the Contractor for each Deliverable.
- 4.4. The Agreed Scope of Work will be agreed between the Carbon Trust and the Contractor when entering into the Contract. The Agreed 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.
- 4.5. 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.

- 4.6. The Carbon Trust appreciates that it will take a small team of mixed seniority approximately 6-8 weeks to complete Work Package 8.
- 4.7. 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.
- 4.8. 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 Work Package 8, any assumptions will be discussed with the Project Technical Committee prior to the start of the Work Package.

Work Package 8

N.B WP1 will have been completed by Carbon Trust and WP2-3 will have been completed by TNEI and Petrofac prior to the Contractor commencing work on WP8. WP8 will run in parallel with WP5 and WP6, which will be delivered by TNEI and Petrofac.

Task 1 – Voltage selection

- The voltages to be examined in WP8 – one or more of 110, 132 and 150kV – need to be selected. This selection will ultimately be made by the Project Participants at the end of WP5(a), but the Contractor should provide their view and input.
- In particular, it may be beneficial if the Contractor can provide initial estimates of cable costs at 110, 132 and 150kV to be fed into the Project’s existing preliminary CBA model, which will help the Project Participants to decide which voltage(s) to focus on. The Contractor may also guide the Project Participants as to how many voltages can / should be examined in detail in WP8.
- At the current time, the Project’s focus is on 132 and 150kV. However, if there is expected to be a step change in cable cost, design or risk between 110 and 132kV, then 110kV could be reconsidered as a strong candidate voltage for the array system.

Task 2 – Analysis of design options

- Once the voltage(s) have been selected, the design options for higher voltage(s) array cables should be examined. The number of options will be agreed between the Contractor and the Project Participants. However, there could be three options for each voltage level examined, e.g. low cost (high risk), medium cost (medium risk), high cost (low risk). Alternatively, there could be two options considered for each voltage level, e.g. wet design and dry design. Another possibility would be to just focus on one design at the higher voltage.
- In their bid, the Bidder should state whether they will investigate at wet and/or dry design options.
- The focus should be on changes to design vs 66kV, so that these changes can be used to find the cost drivers and hence the cost delta (see task 3 below). Design options should only consider lead-free cables.
- The approach to examining the cable design options is to be suggested by the Bidder in their Main Bid Document. Two exemplary approaches may be: a bottom-up approach, or a top-down approach.
 - In the top-down approach, one or more possible high voltage cable design options (e.g. various options at 132 or 150kV) could be developed directly and investigated for their costs, risks and implications on other aspects of arrays (cable lengths, installation methods, etc.) vs various 66kV options.
 - In the bottom-up approach, one or more existing 66kV cable design options can be pushed to higher voltages until a limit is reached (e.g. in layers, materials, construction methods, etc.). Each time a limit is reached, design options could be suggested, and the implications of those changes could be examined. Such implications could include costs, risks and implications on other aspects of array design (such as cable lengths, installation methods, etc.). This process could be carried out in the range 66-150kV. The bottom-up approach would give the Project insights of the step-changes required in design, and hence the step-changes in cost and risks, associated with increasing the voltage.
- For the design options, we would expect to receive insights on: water barrier materials (none / lead-free / Cu / Al / etc), conductor materials (Cu / Al), insulation

materials, construction (insulation system / water barrier / armour / wet-type / dry-type / layer thickness / etc).

- For the design options, we would expect to receive cross section diagrams highlighting the differences between different design options and voltages.
- For the design options, we would expect to receive design data, electrical data, mechanical data (weight, stiffness, minimum bending radius).
- For the design options, we would expect insights on the impacts on cable terminations, protection systems, factory joints, repair joints, fire protection, optical fibre protection.

Task 3 – Cost analysis

- For each design option, the cost should be examined and a cost delta vs 66kV should be derived. The cost deltas can be expressed as a %, but absolute cost figures should be included in the calculation of the %. It should be noted that the Project is not seeking specific price information for higher voltage cables; rather, it is seeking analysis of design changes and cost differences between 66kV and higher voltage array cables.
- It is expected the cost drivers will include: raw materials, manufacturing, handling, type testing, R&D costs. There may also be additional cost drivers in installation and operating costs too, which should be considered.
- Uncertainty in the cost delta and the cost drivers should also be examined. Sources of uncertainty may include material price fluctuations, interest / discount rate fluctuations, R&D costs, etc.
- The cost information will feed into the WP6 overall array system CBA, which will be led by TNEI and Petrofac.

Task 4 – Risk analysis

- For each design option, the risks should be examined. Risks could include technical barriers, material limitations, manufacturing changes, reliability of the various cable designs and how these changes with voltage, etc.
- Insights as to how these challenges would be overcome and the timescales for doing so should be provided. A key insight would be the timescale required for the various design options to be commercially produced, taking into account the capability of the supply chain and any supply chain constraints.
- The risk information will feed into the WP6 overall high voltage array system risk analysis, which will be led by TNEI and Petrofac.
- The mitigation information will feed into the WP6 overall high voltage array system industry roadmap, which will be led by TNEI and Petrofac.

Task 5 – Cable qualification and testing requirements

- For each design option, cable qualification and testing requirements should be recommended. This should include the qualification programme, age testing (Cu / Al), accelerated water ageing, etc.
- This should also include recommendations for post-installation tests for 66kV and higher voltage cables considering the limitations of test equipment and the offshore environment.
- A view as to how long it would take Cigré / IEC to develop the new higher voltage design and testing standards should be given. The Project has so far received mixed views on this, with some stakeholders saying it could take 3-5 years, but with other

feedback saying it would be shorter than that, based on the learnings from the 66kV transition.

- The cable qualification and testing requirements will feed into WP7 qualification procedures report which will be led by TNEI and Petrofac.

Task 6 – Management and co-ordination with other work packages

- The Bidder should stipulate how it will manage WP8 efficiently and effectively. In parallel with WP8, TNEI and Petrofac will be working on WP5 (detailed engineering design for high voltage array system) and WP6 (detailed CBA, risk analysis and roadmap). It is expected the Contractor will cooperate with TNEI and Petrofac on a regular basis. Carbon Trust will facilitate this cooperation and information exchange.
- In particular, the following activities should be included (and hence budgeted for):
 - Project management time (including sufficient time for review processes);
 - Regular update calls with the Carbon Trust Project Manager, TNEI and Petrofac (at least bi-weekly);
 - At least three meetings with the Project Participants (at the start, middle and end of WP8);
 - The preparation of a final presentation to the Project Participants;
 - Assisting TNEI and Petrofac in presenting the main results, findings and outcomes of the Project in the form of a 1-hour webinar to Project Participants.
- Bidders should be aware that the Project Participants require 2 weeks to review and provide feedback on each Deliverable, with at least one round of review comments to be accommodated. This should be considered when calculating the Bid Price.

Deliverables

D8.1: High Voltage Array Cable Design, Cost and Risk Report

- A report that contains the findings of the voltage selection, design options analysis, cost analysis, risk analysis.

D8.2: High Voltage Array Cable Qualification and Testing Requirements

- A report that contains the findings of the recommended cable qualification and testing requirements.

Presentation to the PTC

- Preparation of a final presentation to the PTC summarising the findings from WP8

5. Intellectual Property and Knowledge

Full details of the intellectual property requirements and conditions can be found in the attached OWA Hi-VAS (Phase 1) Contractors' Conditions.

Should you intend to provide any Background Intellectual Property, please indicate this with a high-level description in Annex C of the Tender Certificate. However, there is no expectation or requirement for Contractors to provide Background Intellectual Property to the Project in carrying out Work Package 8.

6. **Bid Pricing**

- 6.1. To provide Bidders with greater clarity on the nature, level and type of work involved in the various Work Packages, the Total Budget available for the delivery of WP8 is around £25,000.
- 6.2. 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 shall be stated separately to the Bid Price in the Main Bid Document.
- 6.3. If the Bid Price exceeds the expected Total Budget as stated under section 6.1, 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.
- 6.4. 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.
- 6.5. Any expenses must be separately included under Expenses.

7. 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>
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 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, including the Project Technical Committee, to get information and manage potentially conflicting relationships.</p>

Criterion 2: Experience (Weighting: 30%)

<i>Description</i>	<i>Information required from Bidders</i>
Experience in design of array cables for offshore wind- 10%	<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.</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>
Experience in cost drivers for array cables – 10%	
Experience of risk analysis for array cables – 10%	

Criterion 3: Staff Skills (Weighting: 20%)

<i>Description</i>	<i>Information required from Bidders</i>
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 in the array system and array cable supply chains, such as cable manufacturers, cable termination manufacturers, cable installers, testing equipment suppliers, WTG OEMs, TP/foundation suppliers, switchgear suppliers, wind turbine transformer suppliers, and any other relevant auxiliary equipment suppliers, 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: 20%)

<i>Description</i>	<i>Information required from Bidders</i>
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 task.
Price for the delivery of the Project	<p>In the Bid Price Calculation Sheet, Bidders are required to provide a cost breakdown by task, including man hours and day rates of personnel completing the work as specified in section 6.</p> <p>Bidders are required to specify expected expenses separate from the estimated budget.</p> <p>The Bid Price will be assessed on the price for the Approach to Work (which includes the price of the Work Package 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>

8. Glossary

Agreed Scope of Work	The agreed work for Work Package 8, based on the Scope of Work and the Approach to Work, which is mutually agreed between the Carbon Trust and the Contractor.
Approach to Work	Has the meaning set out in section 3.1.
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 Agreed Scope of Work and the OWA Hi-VAS (Phase 1) 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 tasks 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 Agreed Scope of Work, the OWA Hi-VAS (Phase 1) 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.
Deliverables	All data, documentation, reports, minutes and other deliverables produced by the Contractor according to the

	Scope of Work (see section 4) or as otherwise agreed in the Agreed Scope of Work
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.
Invitation to Tender (ITT)	The following group of documents: Description of Tender (this document); OWA Hi-VAS (Phase 1) Contractors' Conditions; Tender Certificate template; Bid Price Calculation Sheet template; and Clarification Document (if applicable ¹).
Main Bid Document	Has the meaning given in section 3.1. No template is provided.
Project	The OWA High Voltage Array Systems (Phase 1) or OWA Hi-VAS (Phase 1) project.
Project Steering Committee	A group consisting of representatives from each of the OWA Hi-VAS (Phase 1) Project Participants and the Carbon Trust, which govern the Project.
Project Technical Committee	A group consisting of technical experts from each of the OWA Hi-VAS (Phase 1) Project Participants and the Carbon Trust, which will supervise the Project.
OWA	Offshore Wind Accelerator
OWA Hi-VAS (Phase 1) Project Participants	A group of leading offshore wind farm developers participating in the Project.
Scope of Work	The (preliminary) scope for Work Package 8 as defined in section 4 of this document. At Contract award, the Scope of Work will be replaced by the Agreed 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 the Project to the Contractor for the delivery of Work Package 8.
Work Package	A group of related tasks to be delivered under the Project.

¹ A Clarification Document will not be published if no clarification questions are received in relation to this ITT.