Floating Offshore Wind in the Celtic Sea
Marine and Market Stakeholder Webinars, 7 July 2022
Q&A Summary

Meeting	Floating Offshore Wind in the Celtic Sea – Marine and Market Stakeholder Webinars
Date/time	Thursday 7 July 2022 - 10am (Marine) / 1pm (Market)
Q&A Chair	Olivia Thomas, Head of Marine Planning (Chair, Marine) Nicki Clay, Head of New Ventures (Chair, Market)
Panellists	Tim Stiven - Senior Development Manager, Marine Michelle Moore - Senior Marine Spatial Planning Manager Joe Smithyman - Marine Resources Manager Sion Roberts - Marine Consents Manager

On 5th July 2022, The Crown Estate announced the initial Areas of Search for the development of floating wind in the Celtic Sea.

These areas have been identified following technical analysis and extensive engagement with market, marine and statutory stakeholders.

Engagement is at the core of The Crown Estate's approach to floating offshore wind and further feedback will be sought as we refine the Areas of Search into smaller Project Development Areas capable of containing a gigawatt scale project.

To support this announcement and explain how stakeholders can continue to contribute to the refinement process, The Crown Estate hosted two webinars on Thursday 7th July 2022 for its market and marine stakeholders, respectively.

The webinars provided an overview of:

- Our approach to floating offshore wind in the Celtic Sea
- How we have engaged with stakeholders and how this has shaped our work
- Our approach to and progress on the spatial design of floating wind in the Celtic Sea
- Initial Areas of Search and how The Crown Estate will be taking these forwards and further refining them into smaller Project Development Areas
- Next steps and how stakeholders have been asked to give feedback

You can access the presentations and video recordings from the webinars in the Celtic Sea Floating Wind July 2022 section of our website.

This Q&A provides answers to an amalgamated summary of the questions asked during the two stakeholder webinars. It reflects The Crown Estate's thinking at a moment in time (July 2022). All information provided is therefore subject to change.

Q1. When and why was the Celtic Sea identified as the preferred area?

A. The Celtic Sea has several advantages, including good quality wind resource, suitable seabed, and proximity to centres of demand for both power and future hydrogen.

The estimated expanded potential for floating wind capacity in the Celtic Sea is hugely positive for the UK's net zero goals. The benefits to consumers and businesses of clean, "home grown" energy will be considerable. There is also an economic benefit from the development of a new supply chain associated with this market. The Crown Estate is committed to working with and alongside relevant stakeholders to ensure that benefit is felt by the communities neighbouring the Celtic Sea and the wider UK.

The initial basis of our spatial analysis came from our Broad Horizons 2020 report, which identified technically viable areas for offshore wind. We then built in constraints arising from other uses of the seabed and reviewed these against Levelised Cost of Energy (LCOE) outputs created for this leasing process to ensure we identified locations that minimised future cost where possible.

While this sort of technical data is at an early stage, The Crown Estate has benefited from the highest quality technical and commercial advice from a range of partners and stakeholders to inform our approach.

The Crown Estate is fully committed to working with market, marine and statutory stakeholders. Ahead of publishing the Areas of Search, we held several extensive engagements to help shape the intentions set out in the November 2021 Position Paper. This engagement period involved over 100 different organisations from across the offshore wind industry and marine stakeholders.

This pre-publication engagement helped The Crown Estate gather crucial data and information, which we used to shape our spatial modelling approach and subsequently identify the initial Areas of Search.

As we further refine the Areas of Search, further assessments and modelling of engineering risks will be undertaken to define the Project Development Areas (PDAs).

Q2. How is the floating offshore wind from the last Crown Estate Scotland leasing round going to impact Celtic Sea?

A. The Crown Estate is interested in success for offshore renewables around the whole of the UK. If the UK is going to get to net zero, we are going to need a full contribution from fixed foundation and floating wind in every region around the UK, particularly if we are going to be sensitive to community and environmental impacts. Equally, we need to stimulate investment in our supply chains across the whole UK to deliver on the ambition, and both provide strong market signals to do so. In that way, Scotwind and our Celtic Sea leasing are complimentary.

The Celtic Sea will interact with ScotWind projects when they get through their development cycles and to the government's revenue competition – this is the

vehicle by which the government seeks to achieve best value for money for energy consumers. In that regard, the Celtic Sea has several advantages, which is why we along with others think it's a suitable area to develop the market.

Q3. Is 1GW the maximum individual project size cap? What is driving the decision to focus only on areas >1GW rather than smaller sites for early development?

A. The Crown Estate currently envisions individual projects will be 1GW capacity maximum. We expect to bring forward 1GW-scale projects and enable developers to build those out in phases at their own discretion. A developer in that position would be entering The Crown Estate leasing round based on securing 1GW of capacity.

The push to GW scale is driven by a need to ensure that the Celtic Sea projects can be fully competitive at Contracts for Difference auctions against projects elsewhere in the UK.

This approach is also guided by an understanding of the current state of ports and enabling infrastructure around them. Larger projects, such as gigawatt projects, provide stronger incentives for investment but also need existing infrastructure to deliver. The counterbalance is that built infrastructure in the supply chain needs to start up gently. Therefore, we still endorse the stepping stone approach, which we consider to be important. Our approach is to give the stepping stone more headroom to grow.

Q4. What is The Crown Estate's ambition on further development in the Celtic Sea past 4GW, and how is it factored into spatial planning today?

A. This is a strategic approach. The Crown Estate is committed to using the lessons from this leasing round to support and enable future growth of the sector, as the supply chain and infrastructure develops.

We recently concluded a study that suggested the Celtic Sea market opportunity for floating wind could be up to 20GW by 2045. In selecting sites for the first 4GW, we will seek to balance project economics with impacts; noting that the sector is not yet mature and its economics are sensitive.

We will look to make efficient use of the seabed, and be mindful of future opportunity when the sector has matured and costs have fallen. We will also continue to support co-ordinated grid solutions.

Q5. What area of seabed is broadly required to reach 4GW of capacity?

A. The Crown Estate has conducted research with our independent consultants, who have assessed estimated project densities and footprints. Based on a conservative approach of 3MW per square kilometre, and taking into account comparative ScotWind leasing documents, the work concluded that an area of around 333 km^2 would be required for a 1GW project. By extension, for 4GW that would be less than 1500 km^2.

Q6. What are the intentions for the planned survey campaigns to feed into the site refinement process?

A. The planned survey work will not be feeding directly into the site refinement process but will instead support developers in informing their understanding of the PDAs identified and gaining relevant statutory consents, subject to award of rights by The Crown Estate.

Q7. Where can we find the engineering and LCOE methodology to provide feedback?

A. Sections 2.3.2 and 4.2 of the Draft Site Selection Methodology.

Q8. Will specific PDAs be identified within the areas of search for tender and, if so, when?

A. Yes, following engagement to support refinement, PDAs will be identified within the Areas of Search over the coming months.

Q9. What will the bidding process to secure leases look like?

A. The Crown Estate will provide an update in late 2022.

Q10. What is The Crown Estate's approach to determining the technology design envelope and how will stakeholder-proposed refinements be weighted and considered in the final definition?

A. To undertake a robust assessment, we take a technology design envelope approach in terms of identifying the worst-case scenarios associated with different technologies.

Our technical advisors have supported us in developing a draft envelope, which we are seeking to validate through our market questionnaire.

The technology design envelope we identify will be used within the HRA. Following the outcome of any assessment, we will only apply modifications to the technology design envelope if required as mitigation.

Q11. Is The Crown Estate planning to undertake HRA-evidence projects before the HRA commences given this new area of uncertainty for windfarms?

A. The Crown Estate is taking a revised approach to HRA within this process. We are undertaking the assessment upfront alongside the spatial design. We are taking lessons from the design of Round 4 and recent project level examinations into the HRA and will continue to use the best available evidence to underpin our HRA.

Within this revised approach we will not be specifically commissioning scientific studies to inform the HRA (as was the case for Round 4); however, we are progressing a significant number of evidence projects via our Offshore Wind Evidence and Change Programme (OWEC) and have invested in supporting the Offshore Renewable Energy (ORE) Catapult environmental interactions roadmap.

This roadmap is trying to understand how projects can feed into a better understanding of environmental impacts.

Q12. How are construction, port infrastructure, wet storage areas being factored into environmental assessment for areas of search?

A. The evolution of a new market for floating wind will have implications for UK supply chains and physical infrastructure, particularly around ports. The implications remain highly uncertain, both in location and scale, and therefore such issues are more appropriately assessed at a project level.

What is achieved in the Celtic Sea will also depend to a great extent on the successful delivery of timely investments into grid and port infrastructure. It will also depend on how well all stakeholders work together to ensure that floating wind development is progressed sustainably. This will take place alongside the protection of the natural environment and the interests of other users of the sea.

Q13. How will you ensure adverse effects on Designated Landscapes will be avoided, given the increasing height of wind turbines?

Balancing the needs of the environment, other users of the sea, and the communities onshore is a key objective of The Crown Estate's Celtic Sea floating offshore wind leasing programme. As such, we are continuing our ongoing engagement with relevant stakeholders to ensure these factors are considered when refining the Areas of Search into the final Project Development Areas that will be taken into leasing.

Our spatial modelling included the creation and weighting of a *Visibility from Sensitive Receptors* data layer to identify areas of sea surface that are highly visible from terrestrial receptors, i.e., Areas of Outstanding Natural Beauty (AONBs), National Parks, Heritage Coasts and World Heritage sites.

Q14. Does The Crown Estate have an estimate for the amount of fishing that will be displaced by the planned developments and what engagement have you undertaken with the industry?

A. At the heart of any offshore wind development is the need to balance renewable energy requirements with the interests of other users of the sea and industries, such as fishing or subsea cable developers, communities who may experience impacts from construction, as well as the need to preserve marine habitats and biodiversity.

Every Area of Search is unique and there are a variety of direct and indirect factors that will be considered as we refine and scale down the proposed areas of search. The Crown Estate is working closely with stakeholders within the fishing industry throughout the process, carrying out detailed analysis of the interaction with this industry in the proposed areas.

We are directly engaging with the fishing communities around the Celtic Sea to provide an opportunity for those working productive grounds within the Areas of Search to contribute their knowledge in supporting site selection.

We recognise the importance of the fishing industry in this region and the need for all users of the marine environment to work together. We have been holding a series of events across South West England and Wales with the intention of creating a platform for constructive and open discussion. We have had discussions with the National Federation of Fishermen's Organisations and the Welsh Fishermen's Association.

We will continue to engage with the fishing sector and we have set up specific meetings to understand the degree of fishing that is undertaken within our Areas of Search and will allow us to dig down to a level of detail that will inform our site selection through refinement.

Whilst we cannot say that there will be no impact to fishing because of the choice of Project Development Areas, we are taking feedback on-board to enable us to find the balance between the environment, the ability to develop the floating offshore wind industry, and other uses of the sea.

Whilst we are responsible for the identification of the Project Development Areas, there remains flexibility within these for potential developers. Until fisheries data collection is undertaken at a site level, alongside identification of project design and array layout, the degree of disturbance to any fishing vessels will remain uncertain and must therefore be managed during project level discourse.

Q15. How were the scores for shipping navigation assessed?

A. The Crown Estate held several bilateral engagements with multiple navigation stakeholders. We went through the early outputs of the model and the initial Areas of Search to ascertain feedback.

Shipping intensity was weighted the joint highest alongside environmental designations and fishing intensity and has one of the highest influences within the model output.

We will be engaging with stakeholders in navigation through a bilateral meeting held over the summer to further inform spatial refinement.

Q16. Would a significant increase in the minimum water depth (e.g. 40m) in the Areas of Search have resulted in an expanded search area?

A. There would have been an increase in area because of a minimum water depth of 40m. The minimum water depth used was 50m, which was identified through the Broad Horizons Key Resource Area analysis.

Q17. Did The Crown Estate consider areas to the southwest of the identified Areas of Search?

A. One of the early assumptions The Crown Estate made in the spatial planning analysis was that this leasing round was focussed on projects that could deliver within a 2035 timeframe. Considering the risk profile around floating foundations, dynamic power export cable connections, the fact that we are at the early stages of the Offshore Transmission Network Review, and that we are lacking clarity on the

future regulatory picture, we decided to constrain the design to within 200 kilometres of grid connection.

The area to the southwest of the identified Areas of Search looks more suitable to being unlocked once we can confidently see a new regulatory regime for coordinated grid, HVDC technology, and floating substations.

Hence, the area to the southwest of the identified Areas of Search location is absolutely an area of lower constraint and opportunity. However, we think is more suited to a future leasing round in the region.

Q18. What is the "*lower constraint - addition*" within Area of Search 2?

A. Following targeted engagement with National Air Traffic Services (NATS), a dataset originally used for modelling was removed due to opportunities cited around mitigation techniques. As a result, this area has been included, pending further engagement during the refinement process.

Q19. Area 5 (especially the hatched southern area) seems challenging - both technically, and in terms of consents. Are there specific reasons for including this area?

A. All Areas of Search have been assessed as feasible through our spatial analysis, but it is important to note that stakeholder engagement is critical throughout this process to truly understand the consenting risks of project development. The Areas of Search will be subject to further refinement to reflect that engagement that is planned for the next few months.

The Crown Estate is aware of the potential consenting risks of the southern part of Area 5 and its proximity to the Isles of Scilly. Therefore, the area within 12 nautical miles of the Isles of Scilly has been hatched and that is where we will target further engagement to understand the degree of constraint. This understanding will then feed into our spatial refinement. Further, we are also aware of fishing activity in the area, which also drives the hatching of constraint.

Q20. Which projected coordinate system was spatial analysis conducted in?

A. It was conducted in British National Grid.

Q21. Which technologies are behind your analysis?

A. The Crown Estate conducted a technology horizon scan out to 2040, which informed our approach. We also undertook a comprehensive analysis of the floating wind technology types.

We concluded that we would base our spatial design around semi-submersibles, barges, and tension-leg platforms. Our conclusions were later confirmed through market engagement in December 2020 and December 2021.

We are aware of other concepts such as articulated water columns. We feel that the Celtic Sea is less suitable region for spar buoy technology.

Q22. When considering the relative LCOE between connecting in Cornwall and Pembrokeshire, did you consider the difference in TNUOS charges between the two areas?

A. TNUOS charges are levied annually on wind farm operators to cover the costs of building and operating the transmission system. The Crown Estate's modelling so far operates on the assumption that the TNUOS will not be different between Wales and England, in order not to anticipate the outcome of an ongoing review of TNUOS charging.

We are working in collaboration with National Grid ESO to better understand the true cost of grid reinforcement, along with environmental and other impacts for connecting into specific grid connection locations.

LCOE modelling will be refined as we move towards defining Project Development Areas.

Q23. Which grid connections were used for the 200 km radius limit?

A. Indian Queens, Alverdiscott and Pembroke onshore substations were used as the points from which a 200km radius was identified.

Q24. What is The Crown Estate's view on the integration of the leasing round with the Holistic Network Design (HND) process to develop a strategic approach to onshore grid connection, and how do you plan to manage it?

A. The Crown Estate is committed to supporting a more coordinated approach into the National Grid and are sensitive to the impacts on communities and habitats that come from grid connection. Our view is that having an integrated approach is a positive step and we will continue to work with National Grid ESO (NG ESO) on the practicalities of delivering this vision, including supporting future iterations of the HND.

We have a formal collaboration with NG ESO and the planning assumptions for connection in the Celtic Sea their recently published HND. This was a significant milestone in showing what the offshore and onshore wind network will need to look like to deliver the government's ambitions of 50GW of offshore wind by 2030.

It is too early to be specific about what the opportunities there are because there is a lot of technical and regulatory work that needs to be done, not least confirming the PDAs. Collectively the sector, regulators and The Crown Estate are working hard on the strategic approach.

NG ESO has made clear that it expects to revisit its analysis of the Celtic Sea and undertake further design work when the specific projects are confirmed. Nevertheless, this iteration of the HND it is a valuable foundation to build upon.

The aim of the coordinated grid ambition is to ensure that the transmission connections for offshore wind generation are delivered in the most appropriate way considering the increased ambition for offshore wind to achieve net zero. This will be done with a view to finding the appropriate balance between environmental, social, and economic costs.

We have very clearly in our mind the need to allow for both radial connections and coordinated solutions, so we will keep seeking to develop arrangements that are flexible and adaptable for both.

To support our decision making in agreeing to cable routes we maintain our cable routing and leasing guidelines, which set out clear guidance for developers on how to approach their cable route design. These guidelines clearly set out what we consider best practice when engaging with statutory authorities in relation to environmental impacts and other factors. Consistency with those guidelines is an important part of us agreeing to add a cable route to a lease for a generating site.

Q25. Given that much of the North Devon and North Cornwall coast is designated Area of Natural Beauty (AONB) we wish to avoid many electricity cables coming ashore at separate locations along the coast. We would seek assurances that developers are made to share cabling and not make separate connections.

A. We have a formal letter of intent between ourselves and NG ESO. The focus of that collaboration is bringing better and more coordinated solutions into the National Grid. We worked hard with NG ESO to get our initial planning assumptions for the Celtic Sea up to 2030 into the HND.

NG ESO will bring forward its second iteration of the HND by the end of the year. We expect this second iteration will include full consideration of our 4GW and the regulatory considerations that will support a coordinated grid, including whether it will be developer led or led by another entity. We will seek to provide more information later in the year about coordinated approaches to National Grid connections.

Q26. Which environmental NGOs have been involved in stakeholder engagement to date?

A. The Crown Estate has spoken directly to the RSPB and The Wildlife Trusts – both nationally and regionally – to get their thoughts and feedback on the Areas of Search, and they will also be feeding into our refinement process.

Q27. Has The Crown Estate consulted the NSTA on possibility of CCUS in the region?

A. The Crown Estate has started to discuss the potential of CCUS in the region with the NSTA. These discussions are ongoing.

Q28. Given the size of ports and the activity either side of the Irish Sea border, is it possible that zones might be able to cross into Republic of Ireland waters and could there be collaboration with the Irish on supply chain development rather than competing to replicate opportunities?

A. The Republic of Ireland does not fall within The Crown Estate's remit. By identifying these Areas of Search, we have been mindful of proximity to national boundaries and exclusive economic zones. We have engaged with the Government of Ireland to ensure any sensitivities are taken into consideration.

Our purpose is *"to create lasting and shared prosperity for the UK,"* and our Enabling & Investment programme for the Celtic Sea will embody this. As a commercial business with customers from across the world, we recognise that the renewable energy market is global. Contractual agreements are often forged with players in neighbouring countries, just as UK companies deliver goods and services to renewables markets around the world.

We also recognise, as with the North and Irish seas, that the Celtic Sea will be developed by multiple countries, including Ireland and France, and a dynamic supply chain is expected to grow that competes to serve a broad market.

Q29. How can local councils ensure that landfall and cable route construction does not cause landscape, habitat, heritage, and community impacts for years to come?

A. The Crown Estate does not have a direct role in decisions taken by local councils or in the specifics of onshore infrastructure construction. We do actively engage with local councils and we welcome discussions on these topics. At this point in the development process the specific landfall and onshore cable routes are not known, and these important receptors will need to be considered during project development and the project consenting process.

For example, we have developed a good understanding of the views of local authorities, representing their residents, through our regular discussions with the All-Party Parliamentary Group (APPG) for the Celtic Sea, which is chaired by the MP for North Devon, Selaine Saxby. The APPG is a great counterparty for understanding local issues. We will be doing more as we go forward to really understand these local relationships.

Q30. How can businesses, local authorities and Local Enterprise Partnerships (LEPs) help The Crown Estate facilitate local supply chain success?

A. The Crown Estate is fully committed to working with our stakeholders to understand how we can most effectively maximise investment in the local supply chain. This will help create lasting economic value for local communities and regions, which is one our key objectives for the project.

The Crown Estate has two avenues to supporting the local supply chain; the projects being advanced through our leasing framework and our Enabling & Investment programme (E&I programme).

Within the E&I programme, we are looking at the regional needs for enabling infrastructure in the region and the regional opportunities for the supply chain. We are undertaking exploration works to understand this in more detail. Once we have concluded this work in the second half of this year (2022), we will arrange a series of engagement activities that will focus on the supply chain and opportunities for regional companies. This will be focussed on understanding how we can support your participation in the market.

We are mindful that local supply chain capacity will take time to develop. The phased or 'stepping stone' delivery of the projects in the current leasing round is a pragmatic approach intended to support the development of the supply chain and necessary infrastructure over the next few years.

The Crown Estate is committed to working with the market and regional stakeholders, including the Celtic Sea Cluster, to support this development further and will be looking at specific approaches to doing this over the coming months. We recognise that it is vital this new market is built to last and can deliver sustainable benefits to the sector and local community for decades to come.

Q31. Is the focus on the lesser black backed gull in the Draft Site Selection Methodology due to a genuine concern for other species, or is this because this is the only species that has been assessed in detail at this stage?

A. The Crown Estate has undertaken an initial analysis about the potential risk to the features of environmental designations from Floating Offshore Wind Development. The lesser black backed gull was identified as a species that would require further consideration. Therefore, we are undertaking further consideration and will include the outcomes of this into our spatial refinement.

Q32. Given the recent bird flu outbreak and its impact on sea bird colonies, does The Crown Estate think the background for impact assessments might change from assumptions made to date?

A. The Crown Estate is aware of the outbreak; however, it is unclear what the longer-term consequences of this will be on specific colonies that are subject to some degree of natural variability. There is the potential that within the timescales of developing projects under this leasing round that the assumptions used to underpin assessment may change, and this will be managed through the project level consenting process.