

A large background image showing the silhouettes of three offshore wind turbines against a dark sky. The turbines are positioned in a row, with the one on the right being the most prominent. The sea is visible at the bottom, with a small boat or structure in the distance. The overall tone is dark and professional.

Offshore Wind Leasing Round 4: Summary Stakeholder Feedback Report

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The Crown Estate has undertaken the analysis in this report using evidence available to it, internal expertise and support from external advisers where appropriate. The analysis does not obviate any potential need for any Habitats Regulations Assessment or any project level consideration of the potential impact of development. The analysis does not supersede any statutory policies or marine plans. The analysis, including the data and information contained in it, may be updated and revised subsequently.

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Summary Stakeholder Feedback Report

1. Introduction

1.1. Overview

- Engagement has a key role play in the planning and development process. It recognises the valuable contribution stakeholders can make in helping influence emerging proposals.
- This *Summary Stakeholder Feedback Report* sets out how The Crown Estate has engaged with statutory and non-statutory stakeholders in the development of Offshore Wind Leasing Round 4 ('Round 4'). It provides details of the engagement activities carried out, the themes of comments received, and how we have looked to address and take on board feedback from various stakeholder groups. An infographic showing an overview of the engagement journey is provided in Appendix 1.
- Central to our approach in developing Round 4 is the concept of 'balance'. It is critical to find a balance between the strong market appetite for new seabed rights, the interests of other seabed users, as well as potential environmental impacts from further offshore wind development. This is why we have set the capacity to be achieved from Round 4 at around 7GW – a meaningful amount of new capacity, but more modest in scale than Round 3 and, as we gather evidence and learn from the process, designed at a repeatable scale thereby laying the groundwork for further leasing activity in the future.
- It's also important to balance our role with that of the market. There are benefits to be realised through developers identifying and proposing their own sites, since – in the setting of a mature market – they are best placed to balance the relative consenting, technical and commercial risks in the context of their own business model. We are supporting this process by sharing data, analysis, and feedback from stakeholders in the process.

1.2. Background

- In November 2017, The Crown Estate announced that it would be considering a process for awarding new seabed rights in the waters off England, Wales and Northern Ireland. This announcement followed the Government's backing for offshore wind in the Clean Growth Strategy and recognised the industry's ongoing development of an ambitious Sector Deal for offshore wind. It also followed the 2017 'Contracts for Difference' (CfD) auction that demonstrated significant cost reduction in the sector.
- In February 2018 we provided an update on potential new leasing, which (among other things) set out our view that when considering plans for a potential leasing round, there is benefit in engaging early with statutory and wider stakeholders regarding spatial constraints. It also set out our view that sharing knowledge and data can improve developers' selection of proposed sites.
- In response to this, we have carried out extensive spatial analysis of technical resource and constraints to the development of offshore wind, such as other sea users and environmental sensitivities, through a combination of Geographic Information System (GIS) and qualitative analysis. This work has informed the identification of the areas of seabed which have been made available as part of Leasing Round 4.
- This analysis has been shared with statutory, non-statutory and market stakeholders through engagement events and on our Marine Data Exchange (MDE). It is now made available as part of a spatial evidence base that is being provided to inform potential Offshore Wind New Leasing Round 4 Bidders.

1.3. Policy context for undertaking new leasing

- Feedback received from statutory stakeholder organisations highlighted that we should emphasise the policy context associated with our reasoning for considering any potential new offshore wind leasing.
- The waters off the UK hold some of the best opportunities in the world for offshore wind and the UK benefits from a strong project pipeline of offshore wind projects representing over 30 GW of generation capacity. With that in mind, and following the release of the Clean Growth Strategy, we started to look at what additional seabed rights may be needed to deliver projects in the latter half of the 2020s.
- The Clean Growth Strategy,¹ published by the Department for Business, Energy and Industrial Strategy (BEIS) in October 2017, highlighted the potential for at least 20GW of offshore wind to be deployed by 2030 with the opportunity for additional deployment to be built in the 2020s, if this is cost effective.
- Following this announcement, we signalled in November 2017 that we intended to engage the market and stakeholders on the potential for further leasing. Working together with BEIS, other UK Government departments and Devolved Governments, we worked to keep our stakeholders updated and fully involved with this process.
- In addition, in March 2018 the Offshore Wind Industry Council identified an ambition of 30GW of UK offshore wind by 2030. This was in support of the anticipated Sector Deal for the offshore wind industry being discussed between the sector and Government.
- In March 2019, Government unveiled the Offshore Wind Sector Deal² in partnership with industry, committing to:
 - i. Industry investing £250 million, including new Offshore Wind Growth Partnership, to develop the UK supply chain as global exports are set to increase fivefold to £2.6 billion by 2030
 - ii. A third of British electricity set to be produced by offshore wind power by 2030
 - iii. An ambition to make the UK a global leader in renewables with more investment potential than any other country in the world, as part of the modern Industrial Strategy
- In support of this commitment and our own leasing activity, we have undertaken to fund a programme of strategic enabling actions. This will help to advance the evidence base and inform the future deployment of offshore wind.

¹ <https://www.gov.uk/government/publications/clean-growth-strategy>

² <https://www.gov.uk/government/publications/offshore-wind-sector-deal>

- The offshore wind extensions applications process was open from February 2017 through to 31 May 2018³. This resulted in us confirming in August 2019 that seven projects totalling 2.85 GW would progress to the award of rights following the completion of a plan-level Habitats Regulations Assessment (HRA).

1.4. Objectives

- Putting in place a robust engagement programme focused on engaging with statutory, non-statutory and market stakeholders was recognised as vital by The Crown Estate. This engagement enabled opportunities for various stakeholders to provide feedback as part of multiple engagement methods. The views stakeholders shared with us throughout this process has been instrumental in how our plans for Offshore Wind Leasing Round 4 evolved.
- An accessible, attractive leasing process, Round 4 offers the potential to unlock at least 7 GW of new seabed rights, up to a maximum of 8.5 GW, enough to meet the electricity needs of over six million homes.
- A fair, objective and transparent process, Round 4 incorporates a three-stage tender process, evaluating Bidders' capability and their proposed projects, before using option fees to determine award – a fair, objective and transparent process which reflects the maturing market.
- Open to a broad pool of potential Bidders, Round 4 offers the opportunity to participate individually or within a Consortium, making the process accessible to a broad mix of potential Bidders and supporting a competitive market.
- Promoting responsible site selection, refining the seabed to promote best resource. Working with stakeholders, we have undertaken detailed analysis of the seabed to identify and promote areas offering favourable development resource.
- Round 4 offers competent Bidders the freedom to identify their own project sites within available areas, supported by the analysis we are making available. This approach harnesses the expertise of developers and helps to ensure the strongest projects are awarded in the most suitable areas.
- Encouraging geographic diversity, and bring forward a pipeline of Round 4 projects across at least three bidding areas, with a maximum of 3.5 GW within any one area.

³ <https://www.thecrownestate.co.uk/en-gb/what-we-do/on-the-seabed/energy/offshore-wind-extension-projects-2017/>

2. Approach to engagement

- Working in partnership to develop and validate Offshore Wind Leasing Round 4 through extensive engagement.
- Working together with our stakeholders, we are supporting the responsible and coordinated expansion of offshore wind, playing our part to unlock the sector's extraordinary potential to deliver clean, affordable, home-grown energy.
- The approach to, and design of, Round 4 has been established and delivered in partnership with Government and in collaboration with the Devolved Governments, regulators, statutory bodies, developers, operators, and non-governmental organisations.
- As part of our preparations, we have undertaken extensive spatial analysis and seabed characterisation work, working in collaboration with a broad range of stakeholders to identify areas of seabed that offer the most favourable development resource. This evidence base has informed our refinement of the seabed being made available to the market, at this time. Prospective developers will have the opportunity to identify and propose their own project sites within these Bidding Areas, supported and informed by the extensive characterisation data and analysis we are making available.

3. Engagement undertaken

3.1. Stage One – early engagement

- In early Summer 2018, we engaged with UK and Devolved Governments, statutory marine planners and regulators to share our early work and outline thinking on a potential new offshore wind leasing round.
- There are a number of regulatory bodies and authorities that develop statutory Marine Plans around UK waters including: The Marine Management Organisation (MMO); Welsh Government; Natural Resources Wales; and in Northern Ireland, the Department of Environment, Agriculture and Rural Affairs (DEARA).
- We regularly engage with the regulators and the marine planning authorities. We seek to align future leasing opportunity with offshore wind policy within current and future Marine Plans.
- The MMO has continued engagement on the drafting of marine plan policies for the North East, North West, South East and South West plan areas and there were opportunities for stakeholders to directly participate in that process through the MMOs Iteration 3 engagement exercise. We are working with the MMO to provide spatial data to help inform the development of marine plan policies for offshore wind. This work has utilised the Marine Resource System (MaRS), The Crown Estate's spatial analysis tool. The MMO has used this tool to help the definition of spatial plan policies which may be taken forward in the plan-making process.

3.2. Stage One engagement events

- In July 2018 we held a statutory stakeholder engagement workshop in London over two days to introduce our early work on potential new offshore wind leasing. We welcomed the opportunity to set out our early thinking, and invite views on our initial spatial analysis and mapping.
- Around 30 statutory stakeholders from 15 organisations attended this event. 95 per cent of attendees who completed an event evaluation form expressed their satisfaction that the event met or fully met its stated aims to:
 - Explain the policy and portfolio context within which we are considering potential new offshore wind leasing;
 - Share our work to date on the potential tender design and scale of a new leasing round;
 - Share our analysis to help stakeholders understand the resource characterisation process;
 - Seek initial responses from stakeholders and enable stakeholders to provide informed written feedback on the leasing concept and potential regions of interest; and,
 - Clarify on how any feedback received will be used in decision making.
- A separate industry engagement event was held in July 2018 to help ascertain the level of market demand for new rights. The presentations given on the day, along with a summary of the question and answer sessions that took place are available online⁴. Approximately 100 delegates attended this event, and 97 per cent of attendees completing an event evaluation form expressed satisfaction that the event met or fully met its stated aims to:
 - Explain the policy and portfolio context within which we are considering a potential new offshore wind leasing round;
 - Share our work to date on the potential design and scale of a new leasing round;
 - Provide an introduction to the resource characterisation process;
 - Enable organisations who might be interested in participating in a potential new leasing process to feedback on the leasing concept and the scale, location and nature of any new rights; and,
 - Clarify how feedback will be used in our decision-making process.

- The feedback we received from statutory stakeholders and the market was considered and, where appropriate, fed into the documents being produced to support the ongoing process of engagement and design of Round 4 and was made available for further feedback in November 2018. These documents have evolved to incorporate feedback we received during a second stage of engagement, with final documents being published at the launch of Offshore Wind Leasing Round 4.

3.3. Stage Two engagement events

- In November 2018, we held a further event for statutory stakeholders and the market respectively and invited further feedback on the work we had undertaken to date.
- A range of statutory and non-statutory stakeholders attended this event at which we provided a summary of feedback received to date from stakeholders and the market, along with an overview of how it has informed the development of our plans, including on issues such as, for example, capacity and water depths.
- We also shared our proposed refinement of the seabed regions that would be made available of as part of Round 4, within which developers would have the opportunity to identify and propose project sites. This work, underpinned by a detailed assessment of spatial constraints and developed in collaboration with statutory stakeholders identified:
 - Five regions that we proposed to include in plans for Round 4, on the basis that they are technically feasible, include sufficiently large areas of available seabed for offshore wind development and have lower levels of development constraint.
 - Four regions that we proposed to take forward for further consideration, on the basis that additional work was required to build the evidence base and engage with technical stakeholders about these areas to better understand the seabed resource and constraints and confirm their inclusion.
 - Nine regions that would not be taken forward as part of Round 4, on the basis that they were impacted by significant development constraints that would be challenging to mitigate, namely: defence ranges and exercise areas; visual sensitivity (i.e. where development would predominately or entirely be within 13km of shore) and overlap with shipping routes that contained traffic of more than 1,000 ships per year.

⁴ <https://www.thecrownestate.co.uk/en-gb/what-we-do/on-the-seabed/energy/offshore-wind-potential-new-leasing/>

- We also made the following documents available on the MDE, which provided an overview of the data and analysis work underpinning the region refinement work we carried out:
 - *Resource and Constraints Assessment for Offshore Wind*
 - *Methodology Report*
 - *Characterisation Area Reports*
 - Characterisation Area Shapefiles
 - Model Output
 - *Interim Summary Stakeholder Feedback Report*
 - *Interim Regions Refinement Report* and Refined Regions Shapefiles
 - *National Grid: Offshore Wind Constraints Study*

- A parallel market engagement event also took place in November 2018, at which we shared further information about the proposed tender design, with presentations and Q&A summaries from both events being subsequently published on The Crown Estate website⁵.

- A market feedback webinar was held in April 2019, where we presented an update on our plans for Round 4, summarising the feedback we had received to date and how it was being taken forward in our updated tender design work.

- A stakeholder webinar was also held May 2019 to provide stakeholders with an update on our proposals, clarifying our objectives for new offshore wind leasing activity and sharing an overview of common feedback themes received in relation to our proposals presented in November 2018.

- A further market engagement event was held in July 2019, where we presented an overview of the final tender design, including an updated tender process, bidding rules and commercial assessment mechanism.

- The feedback received from stakeholders and the market was considered and, where appropriate, informed to further refinement of our proposals for Round 4 and the documents which have been produced to support the process.

⁵ <https://www.thecrownestate.co.uk/en-gb/what-we-do/on-the-seabed/energy/offshore-wind-potential-new-leasing/>

4. Addressing comments through the engagement process

4.1. Addressing statutory and non-statutory stakeholders comments

- Through our engagement with statutory stakeholders, we received over 500 written points of feedback from over 20 organisations including:
 - Defence Infrastructure Organisation (DIO);
 - Department for Agriculture, Environment and Rural Affairs (DAERA) Northern Ireland;
 - Department for Environment, Food and Rural Affairs (Defra)
 - Historic England;
 - Inshore Fisheries Conservation Agencies (IFCAs) (Eastern IFCA and North West IFCA);
 - Joint Nature Conservation Committee (JNCC);
 - Maritime and Coastguard Agency (MCA);
 - National Federation of Fishermen’s Organisation (NFFO);
 - Natural England;
 - Natural Resources Wales (NRW);
 - Royal Society for the Protection of Birds (RSPB);
 - Suffolk County Council;
 - Suffolk Coastal and Waveney District Council;
 - The Wildlife Trusts; and
 - Trinity House.

- To summarise the range of feedback we have received we have grouped the comments into themes from each stage of engagement. These include:
 - Leasing design / methodology / reports (including consideration of cumulative impacts);
 - Cables and Grid;
 - Cultural heritage;
 - Environmental;
 - Fishing;
 - Habitats Regulations Assessment (HRA);
 - Other economic (Oil and Gas, Ministry of Defence etc);
 - Ornithology;
 - Shipping; and
 - Visibility.

- At a high level, our approach to addressing the feedback received in the following ways:
 - i. **Updates to documents:** most of the feedback related specifically to the spatial documents/reports. Where possible we updated the documents to reflect the feedback received. Where high level issues or clarifications that apply to all characterisation areas or the process e.g. assessment of

cumulative effects, were raised these have been addressed through updates to the methodology report and this summary document.

- ii. **Signposting:** there were several pieces of feedback related to sharing information with applicants. We recognise we can play an important role in gathering the latest available information and evidence (signposting information that others provide) and share this spatial evidence base with applicants as part of the Round 4 process.
- iii. **Additional projects:** consistent feedback on some strategic issues enabled us to identify separate projects that were undertaken to feed into the Round 4 spatial evidence base.

4.2. Addressing industry comments

- Through our engagement with industry and feedback subsequently received on the initial proposals we set out in July 2018⁶, we established that:
 - i. There is appetite for at least six gigawatt (GW) of new seabed rights;
 - ii. There is support for The Crown Estate's proposed leasing model, whereby developers identify their proposed sites within broad regions of seabed; and,
 - iii. There is support for The Crown Estate's intention to share detailed analysis of resource and constraints for available regions (including GIS analysis, characterisation documents and summarised stakeholder feedback) with developers to help inform their selection of proposed sites.
- Potential applicants also provided detailed and constructive feedback on a range of other subjects including: the proposed leasing model, scale and frequency of potential new leasing; spatial considerations; size and type of projects; and, timeline to tender.
- In light of strong market appetite, we increased the capacity on offer to at least 7 GW, and extended remaining regions out to 60 m water depth.
- Through our Stage Two engagement with industry a number of further changes were made, including more detail drafting of pre-qualification questionnaire (PQQ) criteria, reduction in the number of project milestones, changes to the required power density scale and an increase to project separation distance between Round 4 projects and existing offshore wind projects. Other changes include confirmation of an extension of lease terms to 60 years and the introduction of locational and price transparency into the tender process.

⁶ <https://www.thecrownestate.co.uk/en-gb/what-we-do/on-the-seabed/energy/offshore-wind-potential-new-leasing/offshore-wind-potential-new-leasing-july-2018-update/>

5. Themes of Comments

This section provides more detail on each of the themes of comments that we received from stakeholders and includes details of how we addressed the comments.

Leasing Design

5.1. Characterisation Areas and Regions

- A recurring theme in feedback received was a request for clarity on how the 'characterisation areas' and wider 'regions' will inform where proposals may be sited through the tender. The regions are based on the favourable technical resource area which includes seabed out to 50 metre water depth and accessibility due to wave climate being under 2.5 metre 80 per cent of the time.
- The characterisation areas are a product of spatial modelling of constraints within this technical resource area which provides a view on the relatively less constrained 50 per cent of the technical resource area. The characterisation areas have then been subject to a detailed qualitative description of the constraint present across each area presented in the characterisation documents. Both the regions and the characterisation areas have been subdivided into 18 geographical areas which follow statutory marine plan area boundaries with some additional subdivision. This resulted in 18 regions with each containing a characterisation area with an enhanced assessment of constraints.
- The GIS modelling that forms the characterisation areas relies on a subjective assessment of the relative constraint of different activities, with changes in the input parameters potentially resulting in significant changes to the output and resultant characterisation area boundaries. We are therefore cautious about restricting development to these areas and, on consideration of industry feedback, want to afford a level of flexibility for applicants to identify their own projects within the region, while ensuring they have considered the information and stakeholder feedback contained in the characterisation documents.
- While we are not restricting applications to characterisation areas, we believe the information will be valuable to applicants, help inform their site selection and signpost the most recent evidence associated with the area at a strategic scale. It will be important for applicants to understand that development outside of the characterisation areas may come with significant risks that have not been identified explicitly through this process.
- Please see the *Regions Refinement Report*⁷ for further information.

⁷ The *Regions Refinement Report* is available at:
<http://marinedataexchange.co.uk/announcements/2018/updated-proposals-for-round-4.aspx>

5.2. Capacity and Scale

- Questions were asked of how much capacity (proposals accepted) will be considered as part of the tender and whether availability of grid connection and cable routes will be considered as part of this.
- The potential capacity to be offered through the proposed leasing round has been considered looking at sector ambitions, government policy and the current available portfolio of offshore wind projects across the UK. We have assessed resource and constraints to facilitate this potential capacity being developed in a sustainable way.
- Round 4 has been developed and refined through 18 months of engagement with the market and stakeholders, helping to balance the range of interests in the marine environment. Round 4 offers at the potential to unlock at least 7 GW of new seabed rights, up to a maximum of 8.5 GW.
- It has been designed to be at a repeatable scale, laying the groundwork for future activity, in line with market and government appetite.

5.3. Methodology

- There were several points of feedback requesting clarification on different aspects of the methodology. Where possible these have been directly addressed through updating the *Resource and Constraints Assessment: Methodology Report*⁸.

5.4. Cumulative Impacts

- Comments were received asking if the cumulative effects of any potential combination of existing projects, extensions projects and proposals brought forward through Round 4 had been considered through the characterisation documents. This was not factored into the characterisation documents due to the complexities of assessment required to draw informative conclusions and the scale of possible scenarios (when the location of potential Round 4 projects are not yet known) that could come forward through the Round 4 leasing process being too large to accurately assess.
- We recognise that this is a key limitation of the characterisation documents, however a consistent and evidenced approach to the assessment was deemed to be most useful in characterising the constraints in each area. This conclusion also applies to assessing possible cumulative or in-combination impacts / interactions across characterisation areas.

⁸ The *Resource and Constraints Assessment: Methodology Report* is available at: <http://marinedataexchange.co.uk/announcements/2018/updated-proposals-for-round-4.aspx>

- It should be acknowledged that there are likely to be characterisation areas in proximity (or even, adjacent) that will increase the potential risk to consent for a development due to cumulative or in-combination interactions. Likewise, there may be in-combination impacts on receptors between areas that have not been considered in the characterisation area reports but will need to be considered by any potential Bidder seeking to develop a new offshore wind project.
- While it is recognised that not considering cumulative and in-combination effects with characterisation area reports highlights a limitation, it should be noted that cumulative and in-combination environmental effects will be assessed through project level Environmental Impact Assessment (EIA) and HRA.
- As part of our learning from previous leasing rounds, in parallel with the 2017 Offshore Wind Extensions process, we commissioned specific projects as ‘enabling’ work packages to address areas of uncertainty related to environmental risk associated with a planned new leasing process and associated Plan-Level HRA process. This has been done in collaboration with consultees of the Plan-Level HRA and includes the following projects:
 - **Cable protection and mitigation** – a review of cable burial, protection and mitigation techniques and how benthic and intertidal habitats have been affected/ recovered;
 - **Foraging range review** – an extensive literature review to systematically compile all available information on seabird foraging ranges available since Thaxter et al. (2012);
 - **Seabird density project** – review of data needs and report to identify and quantify likely risk to key species that are qualifying SPA features within a region
 - **Cumulative Impact Assessment tool** – a project to develop a common consensus on a cumulative effects’ framework tool; and
 - **Underwater noise** – desk-based study of methodologies to reduce noise at source and mitigation types.
- These projects are currently ongoing and, with stakeholders providing input through project specific steering groups, are expected to be completed by the end of 2019. Relevant outputs will be made available on the MDE. For further information on any of these projects please contact us at round4@thecrownestate.co.uk.

5.5. Cables and Grid

- Some responses raised the issue of export cables having not been assessed as part of the resource and constraints analysis. The challenge we have experienced is that export cable routes are defined by the array location and grid connection locations that are otherwise unknown at this strategic assessment stage.
- Feedback received notes the scale of the issue in some areas and the request to consider available grid connection and possible cable routes when designing the amount of capacity that will be allowed in any region.
- To date, onshore grid connection locations have largely dictated offshore cable routes, with developers often seeking the shortest viable route from the offshore substation to shore. Some stakeholders perceive that this has resulted in significant impacts to Marine Protected Areas (MPAs) which could potentially be avoided through early and strategic planning.
- To consider this further, we have worked with the relevant statutory bodies to identify those habitats and MPAs that would be particularly sensitive to pressure caused by cable construction and operation. This has been undertaken in parallel to the resource and constraints assessment and will provide developers with an evidence base to help them understand potential consent risk and to consider cabling issues when selecting potential offshore array locations. These reports, *'Natural England and JNCC advice on key sensitivities of habitats and Marine Protected Areas in English Waters to offshore wind farm cabling within Proposed Round 4 leasing areas'* and *'Sensitivity of marine ecology receptors to cabling activities in Wales'* by Natural Resources Wales (NRW) will be published on the MDE following launch of Round 4.
- Feedback also raised the question on whether proposed capacities could be accommodated at current landfall locations or within current transmission routes, particularly in the Southern North Sea, or if new transmission infrastructure would need to be built to support further capacity.
- Specific concerns were raised in relation to the ability of grid connections to be made in the Suffolk area, particularly in light of the current and planned number of energy infrastructure projects in the area. It was stated that collaboration between developers in East Suffolk will be essential to address cumulative impacts to host communities whether beneficial or detrimental.
- There is an important interplay with the regulatory arrangements for the offshore transmission infrastructure – the “OFTO regime”⁹ – which to date has incentivised developers to develop radial offshore grid infrastructure (i.e. infrastructure that only connects the associated offshore windfarm on a point-to-point basis).
- Further, this radial infrastructure is typically optimised to the capacity of the connected windfarm therefore there is limited scope to connect future offshore generation. The ability to utilise this existing infrastructure or cable routes for future offshore wind projects would therefore require negotiation with the existing parties.

- To better understand the potential impacts of further offshore wind, in early 2018 we commissioned National Grid Electricity System Operator (ESO) to carry out a desktop connection feasibility study. This study assessed different connection locations around the coast of England and Wales in terms of the potential congestion cost impacts caused by connecting new offshore wind generation.
- The study considered these impacts under a range of National Grid's Future Energy Scenarios (FES¹⁰) over the period 2025-2040. The cost implications differ for a multitude of reasons including the capacity of existing infrastructure, and the proximity of the new generation to load centres. A headline finding was that there are no "no go" areas from a grid perspective, although higher and lower congestion costs areas are identified.
- It is important to note that we have not explicitly taken the findings of this study into account in the selection of seabed regions to be made available, given inherent complexities and the interactive nature of the grid over time. We recognised that the outputs from this study would be of interest, and therefore published the report on the MDE in November 2018.
- Through the Plan-Level HRA process for 2017 Extensions we have managed the uncertainties associated with assessing the impacts of cable routes at a strategic level through the development of a Cable Route Protocol. This sets out a number of principles and requirements that developers must follow in the process of considering and defining cable route infrastructure prior to requesting a Transmission Agreement for Lease from The Crown Estate. It is envisaged that a similar mechanism may be required for Round 4.
- In March 2019 The Crown Estate and National Grid (ESO and NGET) hosted a workshop with statutory stakeholders, to help develop understanding of the grid connection process. We will continue to engage with National Grid and industry on grid connection issues and seek to facilitate further conversations between Statutory Nature Conservation Bodies (SNCBs) and National Grid to ensure concerns and restrictions are fully understood.

5.6. Cultural Heritage

- Throughout both engagement exercises we received useful information relating to the characterisation of cultural heritage within each of the areas, including references to additional sources of information for potential bidders. This information has been added to the methodology report and relevant characterisation reports as a signpost for Bidders.

⁹ In accordance with the Electricity Act 1989 (as amended), offshore transmission infrastructure is a separately licensable activity and the infrastructure is owned and managed by a different entity from the windfarm, namely an Offshore Transmission Owner (OFTO). For further information, see: www.ofgem.gov.uk/electricity/transmission-networks/offshore-transmission

¹⁰ See: <http://fes.nationalgrid.com/>

5.7. Environmental

- We received a range of comments on how environmental designations had been represented in the analysis and characterisation documents. A particular focus was on consideration of the sensitivity of MPAs to pressure caused by an offshore wind development at a strategic level.
- As part of the characterisation work, we commissioned analysis for all existing MPAs that intersected or that was within one nautical mile (NM) of each characterisation area. This work provided a consistent description of how offshore wind development pressures interact with the conservation objectives of each of the MPAs.
- To ensure this work is supported by SNCBs we commissioned a further independent peer review. We also committed to sharing this underpinning analysis with applicants as part of the Round 4 spatial evidence base.
- Further to this there were several pieces of feedback related to updating various MPA designation statuses (for example, recognising that a potential Special Protection Area is now a fully designated Special Protection Area). All designations and their receptor and area ratings have been reviewed and updated but it should be recognised that this analysis is the view of The Crown Estate at a fixed point in time and therefore the network of MPAs is subject to further updates and the views of SNCBs should be sought by Round 4 applicants.
- Round 4 applicants should therefore carry out their own analysis to ensure they have the latest available information. Based on feedback received, where possible further information and the requirement to engage early with SNCBs is signposted as part of Round 4 spatial evidence base.

5.8. Fishing

- Feedback relating to fisheries and fishing activity highlighted the limitations of the data used to date and the need to engage further with the industry to validate the constraints that have been identified. Vessel Monitoring System (VMS) data was used to reflect some fishing activity, but we acknowledge that it only represents vessels greater than 12 metres in length and therefore does not capture the smaller, inshore fishing fleet.
- Data over a longer time horizon was also highlighted as presenting a more accurate picture of fishing effort in any one area (just one year was used in the GIS model to form the characterisation areas).
- Further feedback included looking at some specific impacts such as vibration, Electro Magnetic Frequency (EMF) impacts and dispersal of sediments on fish and shellfish species. This level of analysis has not been taken forwards due to a lack of readily available evidence that adequately characterises risk across the characterisation areas. Impacts such as this should be picked up the HRA process and at project level.

- Feedback was provided on strengthening the level of risk associated with a specific characterisation areas which is being reviewed throughout the engagement process. It was consistently emphasised that it is important to engage with the National Federation of Fisherman's Organisation (NFFO), the Welsh Fishermen's Association, as well as other regional representatives, at the earliest opportunity to improve commentary and risk analysis on fishing activities. For example, it was noted that whelks are a commercially important species in the Irish Sea.
- Feedback also highlighted overarching concerns in relation to cumulative and in-combination impacts, along with MPA fisheries management measures on the fishing industry. NFFO and VisNeD feedback stated this was particularly a concern in the East Anglia region, characterisation reports have been updated where relevant in light of this feedback.

5.9. Habitats Regulations Assessment (HRA)

- In the marine environment the Habitats Directive is given effect in UK law through The Conservation of Habitats and Species Regulations 2017, The Conservation of Offshore Marine Habitats and Species Regulations 2017 and The Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995 (as amended). Within the meaning of the Habitats Regulations, Round 4 leasing is a Plan and The Crown Estate is a competent authority. We will, therefore, undertake a Plan-Level HRA of the Round 4 leasing plan before any seabed rights can be awarded.
- The characterisation analysis and associated modelling work is not intended to replicate or replace the specific and detailed assessment work that will be completed through Plan-Level HRA, where a more in-depth consideration of the potential impact of any leasing activity on European Designated (Natura 2000) sites will be provided. The constraints mapping and HRA therefore remain two entirely separate and distinct processes and should be viewed as such.
- We received feedback associated with acknowledging recent case law in defining the approach to HRA. In undertaking the Plan-Level HRA, we fully recognise the importance and relevance of recent case law. As with the 2017 Extensions HRA, all work on the HRA for new leasing will be completed in light of, and in line with, the detail of all relevant case law and judgements.

- A number of stakeholders commented that for current projects progressing through the consenting regime, they were advising that an adverse effect on the integrity of relevant European sites cannot be excluded and therefore further development through Round 4 would only exacerbate this issue. Additionally, a number of stakeholders advised that making use of the HRA derogation process would be required if the seabed regions remain as presented in November 2018. In light of this feedback, further work commissioned by The Crown Estate and learning from the 2017 Extensions HRA, the seabed regions available as part of Round 4 have been refined to exclude a number of area with significant HRA risk, further details can be found in the *Regions Refinement Report*. Additionally, in relation to the use of the HRA derogation process, it would not be appropriate to pre-judge the outcome of the Round 4 Plan-Level HRA. However, for Round 4, exceptionally, where an adverse effect on the integrity of the European/Ramsar sites concerned cannot be ruled out, we may (at our discretion, and in accordance with the relevant considerations under the Habitat Regulations) consider making use of the derogations process. Further information on our approach to HRA can be found in the *Offshore Wind Leasing Round 4 Information Memorandum*.
- Finally, we received feedback seeking to further understand how learning from other consented project developments would be incorporated (if at all) into the assessments carried out. Given the strategic nature of the assessment work (including consistent application of data) and the project-level nature of the consenting work undertaken for projects (EIA in particular), we have not incorporated project-related data. We do, however, fully expect applicants to review existing project consents to inform their site selection work.

5.10. Other economic (Oil and Gas, Ministry of Defence etc)

- Feedback highlighted the importance of continuing to engage with a wide range of other seabed users to understand interactions with other sectors, including oil and gas activity and the potential impacts that decommissioning may have on future offshore wind potential.
- This approach is embedded within the engagement strategy. There are ongoing interactions with all our other customer trade association representatives as well as the Oil & Gas Authority (OGA) on the interactions offshore wind development has with existing and planned activities.
- We are working with the OGA, BEIS, Ofgem and other stakeholders on a project¹¹ looking at potential technical and regulatory opportunities to pave the way for greater market innovation and collaboration and integration between oil and gas activity and renewable energy.

¹¹ <https://www.ogauthority.co.uk/news-publications/news/2019/oil-and-gas-authority-advancing-collaboration-with-renewables/>

- We have actively sought and received feedback on Ministry of Defence (MoD) activity through the DIO, on the interactions of offshore wind turbines at 250m and 350m turbine heights. The engagement highlighted some clarifications and corrections relating to threat radar which have been updated in individual characterisation documents accordingly.

5.11. Ornithology

- Initial feedback was received on the approach to characterising ornithological constraint, with the analysis of foraging ranges and density data associated with specific MPAs and species and how this is then reflected in the associated risk assessments being welcomed. Some feedback highlighted additional work that could be carried out to enhance the analysis and characterisation work.
- Significant concerns were raised by a number of stakeholders in relation to ornithology, particularly in relation to the Yorkshire Coast and The Wash regions. Natural England, JNCC and RSPB stated that the Yorkshire Coast region should not be available as part of Round 4 due to cumulative impacts on Kittiwake and Gannet at Flamborough and Filey Coast SPA.
- To understand this risk further we commissioned a review of current evidence and previous EIAs from developments around the two the Yorkshire Coast and The Wash regions to provide further evidence of the major risk areas. This review, combined with stakeholder feedback relating to ornithology, has led to the removal of the Yorkshire Coast region from the seabed regions being made available as part of Round 4. Additionally, The Wash region has been amended significantly based on this evidence, with a 40km buffer from the Scolt Head and Blakeney Point areas of the North Norfolk Coast SPA being applied and removed from The Wash region. A 10km buffer of the Greater Wash SPA has also been removed. Further details can be found in the Regions Refinement Report.
- A number of additional data sources were highlighted by stakeholders, where relevant characterisation area reports have been updated to reference appropriate sources of data and evidence. Additionally, a further review of the sensitivity of each receptor has been undertaken and a number of area and receptor ratings amended, further details can be found in the relevant characterisation area documents.
- The additional work that is being commissioned as part of the Plan-Level HRA (as stated in Section 5.5) should also be used to inform priorities so that, while recognising the HRA and resource and constraints analysis processes are distinct, the evidence commissioned and utilised for each is aligned.

5.12. Shipping

- Feedback emphasised the importance of considering spatial constraints on shipping and continued engagement with navigational bodies in advance the launch of Round 4 highlighting the variety of factors taken into account when considering the impact of an offshore development, feedback flagged the main concern as relating to the proximity of a site to main shipping routes.
- Further factors include; where any vessels will be restricted or constrained, where smaller vessels are forced in closer proximity to large vessels and where the frequency of encounters will increase. The additional information will be signposted to applicants, including guidance provided by the Maritime Coastguard Agency (MGN 543 and its annexes, and MGN 372) as part of the Navigation Risk Assessment.

5.13. Visibility

- We received a range of feedback about visibility associated with the methodology used. Caveats noted in the methodology report include that to fully assess the sensitivity of a landscape designation to potential development there is a requirement to consider the relevant management plans or local policies and the importance of the marine setting to these designations.
- We acknowledged the need to look at modelling the ‘visibility from landscape designations’ at potential turbine heights rather than just at sea surface level. Further spatial modelling work following the same methodology has been run to look at the visibility at 250m and 350m turbine heights. Both the specific comments received on signposting to information on sensitivity and incorporation of the outputs of extra modelling work, has been reflected in the characterisation area reports.
- Significant concerns were raised in relation to visibility and seascape in relation to the Anglesey region. NRW raised concerns in relation to the Anglesey area and provided further evidence¹² which has been considered in the development of the Round 4 seabed regions. As review of this evidence has resulted in the spatial extent of the Anglesey region being modified significantly; further information can be found in the *Region Refinement Report*.
- Significant concerns were also raised in relation to visibility and seascape in relation to the East Anglia region, particularly from the Suffolk Coast and Heaths Area of Outstanding Natural Beauty (AONB). NRW raised concerns in relation to the Anglesey area, particularly in relation to Caernarfon Bay and provided further evidence¹³. A review of this evidence has resulted in the spatial extent of the Anglesey region being modified significantly; further information can be found in the *Region Refinement Report*.

¹² <https://cdn.naturalresources.wales/media/689504/cym-evidence-report-315-seascape-and-visual-sensitivity-to-offshore-wind-farms-in-wales.pdf> and <https://cdn.naturalresources.wales/media/689506/eng-evidence-report-330-seascape-and-visual-sensitivity-to-offshore-wind-farms-in-wales-copy.pdf>

- The importance of signposting clear siting principals to inform prospective developers of the key issues that need to be considered when locating and shaping their proposed sites in relation to visual issues, was also highlighted in feedback. We will continue to engage with SNCBs to ensure the appropriate guidance is available and that the caveats to the approach we have taken are communicated.
- Concerns were also raised on the White Report that was produced for the UK Offshore Energy Strategic Environmental Assessment 3 (OESEA3) environmental report¹⁴ which identified the distance from the coast which turbines at differing rated capacities will cause significant visual impact. This reference has been maintained as the most contemporary source available to characterise visual impact issues, but caveats have been noted in the methodology report and characterisation documents.

¹³ <https://cdn.naturalresources.wales/media/689504/cym-evidence-report-315-seascape-and-visual-sensitivity-to-offshore-wind-farms-in-wales.pdf> and <https://cdn.naturalresources.wales/media/689506/eng-evidence-report-330-seascape-and-visual-sensitivity-to-offshore-wind-farms-in-wales-copy.pdf>

¹⁴ <https://www.gov.uk/government/consultations/uk-offshore-energy-strategic-environmental-assessment-3-oesea3>

6. Summary

6.1. Summary

- The Crown Estate has undertaken extensive stakeholder engagement to refine our approach Round 4; we have used this feedback to inform the regions of seabed that are available to the market as part of Offshore Wind Leasing Round 4, updating associated spatial reports (methodology and characterisation area reports) to reflect the feedback received, as well as using stakeholder feedback to identify further work that was commissioned to inform the development of Round 4.
- This journey has included engagement with over 15 government bodies and statutory organisations: in excess of 20 wider stakeholders and over 40 market participants. 397 people attending our five engagement events; and 126 attendees across three webinars.
- In summary, this collaborative work to understanding which areas are likely to offer the best resource for offshore wind development at this time will help Round 4 Bidders in their choice of sites, but will not negate the need for Bidders to undertake their own site specific analysis and assessment to determine the best location for their projects. While none are unconstrained, we believe the four areas of seabed being made available as part of Round 4 offer the strongest opportunities for new offshore wind development at this time, on the basis that they are technically feasible, contain large areas of available resource and offer lower levels of consenting constraint.
- Additionally, we recognise there remains a number of constraints to offshore wind development in England, Wales and Northern Ireland and further work is needed to fully understand these constraints and opportunities. Therefore, in support of Round 4 and beyond, we will invest in a programme of strategic enabling actions to help enhance the evidence base in the sector and facilitate future growth.
- Stakeholder feedback has been invaluable to us in the development of Round 4. Further information on the changes made can be found in our *Information Memorandum*, *Regions Refinement Report*, *Resource and Constraint Assessment: Methodology Report*, and *Characterisation Area Reports*, all of which have been published on our Round 4 website at <https://www.thecrownestate.co.uk/round4>

7. Glossary of acronyms and abbreviations

AONB	Area of Outstanding Natural Beauty
BEIS	Department for Business, Energy and Industrial Strategy
CFD	Contracts for Difference
DIO	Defence Infrastructure Organisation
DEARA	Department of Environment, Agriculture and Rural Affairs
EIA	Environmental Impact Assessment
EMF	Electro Magnetic Frequency
ESO	Electricity System Operator
FES	Future Energy Scenarios
GIS	Geographic Information System
GW	Gigawatt
HRA	Habitats Regulations Assessment
IFCA	Inshore Fisheries Conservation Agencies
JNCC	Joint Nature Conservation Committee
MaRS	Marine Resource System
MCA	Maritime and Coastguard Agency
MMO	Marine Management Organisation
MoD	Ministry of Defence
MPA	Marine Protected Areas
NFFO	National Federation of Fishermen's Organisation
nm	Nautical Mile
NRW	Natural Resources Wales
OGA	Oil and Gas Authority
SNCBs	Statutory Nature Conservation Bodies
SPAs	Special Protection Areas

Appendix 1 (overleaf) – ‘Offshore Wind Leasing Round 4: Engagement journey’ infographic

Since we announced our intention to consider making new seabed rights available for offshore wind development, we actively engaged with the market and stakeholders, keeping them informed of our thinking and seeking their feedback to help us shape our design for Leasing Round 4.

Engagement at a glance

Throughout our engagement process, we engaged with over **15 government bodies** and **statutory organisations**, including:



As well as:



40+ market participants



20+ wider stakeholders



315+

Over 315 new registrations to receive new leasing updates since beginning of engagement.

Our Offshore Wind New Leasing web pages received*:

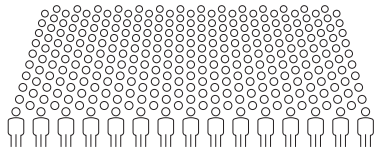


35,264 views

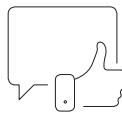


5,365 document downloads

397 attendees across our five events



126 attendees across our three webinars



95%

positive satisfaction at our engagement events

“ The Crown Estate’s approach has been well set out in the documentation and follows ups provided. ”

“ We welcome the commitment to environmental analysis and scrutiny and we are keen to see this robust environmental focus continue throughout the leasing process. ”

“ We have been encouraged with the openness and transparency of the process to date and willingness of The Crown Estate team to engage and discuss issues. ”

NOV 2017

The Crown Estate announced we would consider making new seabed rights available for offshore wind

2018

FEB – JUN 2018

Developed early proposals on the potential scale, location and nature of new leasing based on extensive data analysis:



JULY – DEC 2018

Shared our initial and updated proposals through two rounds of engagement events.



attendees across two stakeholder events



stakeholder organisations provided feedback

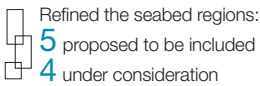


attendees across two market events

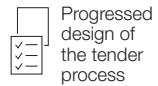
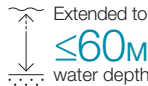


market organisations submitted feedback

From the feedback received and our own further analysis, we:



4 under consideration

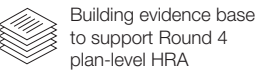
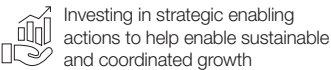
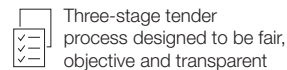


JAN – AUG 2019

Developed our final leasing design and shared with stakeholders and the market.



Updates to our proposal include:



SEPTEMBER 2019

Announced final Bidding Areas and launch of Offshore Wind Leasing Round 4

