The Crown Estate, 1 St James's Market,
London, SW1Y 4AH

National Grid ESO's Offshore Coordination Project

Response from The Crown Estate

28 October 2020

Introduction

The Crown Estate is an independent commercial business created by an Act of Parliament to manage a diverse portfolio that includes the seabed around England, Wales and Northern Ireland. In this capacity we work closely with industry and stakeholders to enable the sustainable development of the seabed, including by providing seabed rights for offshore renewable energy, as well as marine aggregates and minerals, cables and pipelines, and carbon capture and storage.

Beyond leasing, we play an active role in developing and helping to sustain the UK offshore wind sector as a whole, working together with industry, government, regulators and our many stakeholders to unlock the potential of our world-class seabed resources, while balancing the wide range of interests in the marine environment. We do this by taking a long-term view, working to identify and address common challenges, bring industry together, and encourage information sharing. All of which has helped to attract investment, bring down costs, unlock value, and support the UK's decarbonisation objectives.

Overview

National Grid ESO's consultation on offshore coordination is an important milestone in evolving the frameworks through which offshore transmission infrastructure will be delivered in the future. Offshore wind is expected to play a major role in delivering against the UK's Net Zero targets and the way electricity is delivered from this source of generation to end users needs to be changed from the current approach of individual radial links – for economic reasons as demonstrated through your work as well as broader environmental and societal reasons. We welcome the consultation, are supportive of work in this area, and look forward to working with you further to develop the analysis through this project and initiatives being taken forward by others such as BEIS and Ofgem.

We trust that you will find our comments constructive and we would be very willing to provide additional information on any of the points we have raised above and be very pleased to discuss these matters with you further.

All of this response may be put into the public domain and there is no part of it that should be treated as confidential.

Yours Sincerely,

Richard Clay,

Senior Manager, Energy Policy & Regulation

The Crown Estate, 1 St James's Market,
London, SW1Y 4AH

Cost-benefit Analysis Report

Q1. Do you agree with our assessment of the costs and benefits?

Notwithstanding our response to Q2 below, we broadly agree with the approach adopted to the cost-benefit analysis and note the findings are largely consistent with findings from similar studies over the past 10 years or so. As such, the economic case for moving toward a more coordinated offshore transmission system appears fairly clear.

In terms of your approach and assessment, given the expectation that offshore wind will play a major role in delivering against the UK's Net Zero targets, we suggest that future analysis places greater emphasis on the environmental, societal and spatial impacts from the development of offshore transmission infrastructure. We recognise that is it is difficult to monetise these impacts accurately and consistently, however we consider that the importance of these impacts will be elevated if considered in economic terms as well as on a qualitative basis.

Q2. Do you have any other evidence to support or challenge the assessment made?

Offshore wind farms are currently designed for a typical life of 25-30 years, and to date the associated offshore transmission infrastructure has been designed for a similar life, with the regulatory arrangements (i.e. OFTO revenue stream) supporting this. However, given the expected role that offshore wind will play in delivering against the UK's Net Zero targets and that it is likely that many existing and future offshore windfarms will look to re-power and/or re-plant at the same location, it is not inconceivable that the associated offshore transmission infrastructure could in the future be developed for a longer operational life than at present. We note however that you have assumed a design life of 25 years in your cost-benefit analysis. We would recommend that you re-consider this and assess cost and benefits over a much longer period – and up to 60 years which is suitable for infrastructure programmes – given the broader context above and for reasons set out below.

TCE commissioned analysis in mid-2019 looking at the economic and technical case for pursuing a strategy of longer assets lives for offshore transmission infrastructure. Specifically, the analysis considered the feasibility of designing infrastructure that would last for up to 60 years to cater for two windfarm life cycles at the same location, which would help enable any subsequent re-powering and/or re-planting of the offshore windfarm once the original windfarm has come to the end of its life.

We commissioned ITPEnergised (supported by Ramboll) to undertake technical and economic analysis and their final summary report is enclosed. CmY Consultants led the stakeholder engagement for this initiative on our behalf. In outline, this work concluded that:

- The life-cycle costs of a radial offshore transmission system designed for 60 years at the outset are up to 27% less than the cost of designing and operating two offshore transmission systems to support an initial and then subsequent windfarm in the same location. These cost savings take into account a refurbishment campaign on the offshore transmission infrastructure at the end of the initial windfarm's life at year 30.
- This life-cycle cost saving could reduce the LCoE of the connected offshore windfarm by 1%,
- Modelling of the NPV of the associated OFTO Tender Revenue Stream for longer life infrastructure demonstrated that this was lower in all scenarios considered in the analysis than the status quo, thus demonstrating direct consumer benefit.

- There are significant environmental, CO_2 reduction, waste reduction, and health and safety benefits (such as reduced offshore working time) resulting from the 60-year scenario. The analysis did not monetise these benefits however, but the report recommended further work in this area.
- Designing the structural and electrical components of offshore transmission for a longer life is largely technically feasible today, although some risks remain particularly regarding the operational life of polymeric insulated (XLPE) export cables which do not have a track record beyond 30-35 years, which suggests further research is required in this area.
- There was general stakeholder support for longer design lives for offshore transmission, but noted further work would be necessary in a range of areas. Note, our engagement on this issue was reasonably wide and we discussed with offshore wind developers, trade bodies, OFTOs, OEMs, financiers, and Government departments/agencies including Ofgem, BEIS, OGA and MMO.

Following conclusion of the study, we held a stakeholder workshop in January 2020 to present outcomes and engage on next steps - the presentations and note from that session are also enclosed. Our initial plan was to progress further work on ways to develop and deploy longer life offshore transmission infrastructure on a collaborative basis with key stakeholders. However, with the launch of the Ofgem review into coordination in February, your own work and BEIS' review commencing over summer 2020, we took the view that the issue of a longer design life infrastructure was more appropriately considered holistically as part of these wider reviews. Nevertheless, we introduced a new draft clause on design life and maintenance requirements of offshore transmission infrastructure within the Transmission Agreement for Lease (AfL) for projects emerging from the Round 4 seabed leasing process. Subject to its confirmation, this clause would help practically enable longer design life of offshore transmission infrastructure.

Our analysis was undertaken on the basis of radial links, as this was the prevailing model at the time of the work's inception, and we recognise work would be needed to develop an appropriate coordinated design counterfactual. However, arguably the conclusions would seem more relevant when considering more coordinated designs given the offshore transmission assets would be used by more than one offshore wind farm, each of which will presumably be developed in different time horizons. We would suggest the next phase of the review includes assessment of longer life infrastructure and we look forward to discussing this issue with you further.

Q3. What do you see as the potential impact on the environment of these proposals, particularly the reduction in the number of assets and landing points?

We note the positive findings in your analysis that there is a significant reduction in landfalls required as a result of the coordinated design. As managers of the seabed around England, Wales and Northern Ireland, we are in a privileged position to understand that the offshore environment is a scarce commodity, which means that in addition to supporting development across many sectors (in addition to offshore wind), there is an absolute need to protect and foster the amazing biodiversity of our seas. The sustainable development of the sea space around our country requires us to examine all these interactions in detail, and ensure that all interests are recognised as we shape plans for future development. As such, an approach which takes a more strategic approach to the development of a sector – such as a coordinated design for offshore transmission infrastructure – is something we support and we will actively seek ways to help ensure delivery.

Linked to this, as you will be aware, we are currently undertaking a study jointly with NGESO, NGET and the MMO to:

(i) develop a deeper understanding of potential terrestrial and marine constraints that future offshore wind farms connecting into the east coast of England are likely to face as and when grid connection solutions are developed under the prevailing radial connection model,
(ii) assess the risks and issues to deployment of offshore wind projects that these constraints could introduce, and
(iii) consider if adopting a more coordinated or integrated approach to offshore transmission in this region could mitigate these risks and issues.

As part of this study, our consultants AECOM are considering constraints such as cable challenges around existing infrastructure and designated areas, limitations on cable landfalls and the proximity of landfalls to the onshore transmission system. We expect the findings from this study will support your conclusions on reduced landfalls generally, with more detailed consideration of risks and issues in specific locations. Results should be available before end 2020.

Q5. Where do you see value for further work to build on and test these findings? Either from the proposed list or beyond?

See response to Q1 and Q2 - we recommend NGESO:

(i) places greater emphasis on the environmental, societal and spatial considerations of future offshore transmission infrastructure in any further analysis, and
(ii) considers the costs and benefits of designing offshore transmission infrastructure over a much longer design life, and up to 60 years.

Offshore Connections Review Report

Q1. Do you think that if the areas we are highlighting were improved, that the ability to coordinate projects would be significantly increased?

We note with interest and welcome the proposal to explore with ourselves the potential to better align the connection application process with other processes such as seabed leasing. These processes do have significant cross-dependencies and ensuring they continue to work together effectively moving forward is something we support and look forward to exploring in further detail. We suggest this activity is progressed as part of the planned workstream in BEIS' Offshore Transmission Network Review to undertake a "strategic review of seabed leasing to maximise coordination".