

EnBW and bp joint project response to Ofgem consultation on changes intended to bring about greater coordination in the development of offshore energy networks

Summary

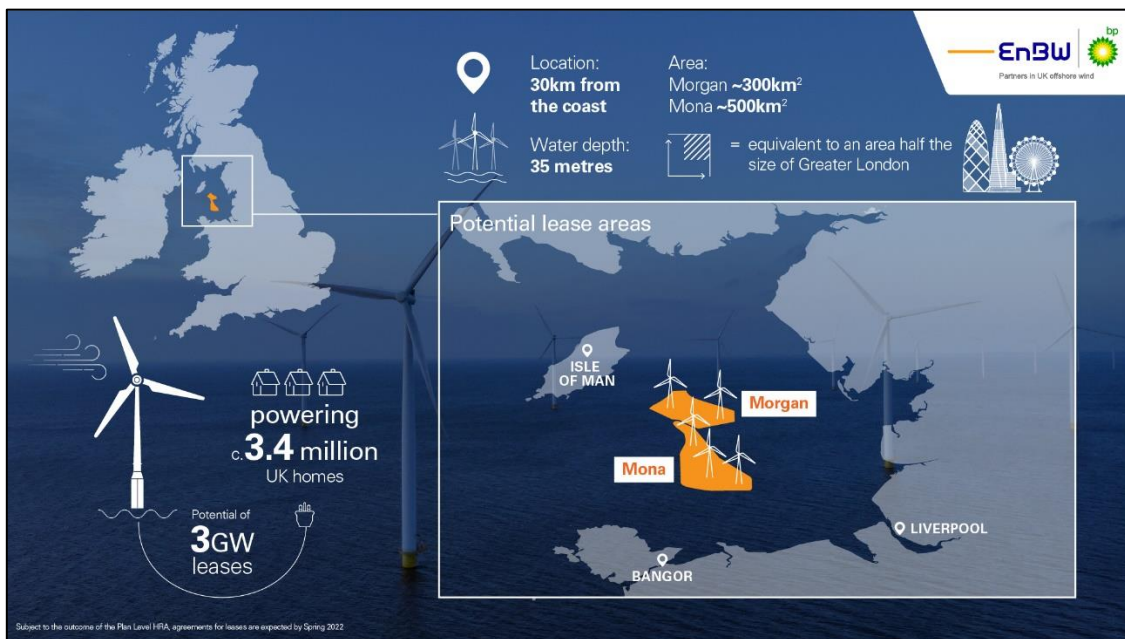
- We welcome the Early Opportunities workstream as it creates opportunity for early demonstration of successes from coordination of offshore wind development.
- The Early Opportunities workstream is especially relevant to Leasing Round 4 (LR4) developers in the East Irish Sea given the small number of players and limited remaining seabed.
- Developer-led coordination through a shared offshore transmission system¹ can deliver the benefits anticipated by the Offshore Transmission Network Review (OTNR) process in a more timely and efficient manner than the alternatives proposed².
- We believe that there should be opportunity for projects to move into different OTNR workstreams dependant on meeting the criteria as set out in the consultation document. Specifically, EnBW and bp believe our UK LR4 projects do meet that criteria and should be considered through the Early Opportunities workstream.
- There is a risk of the UK not meeting its 2030 targets by over-relying on the Pathway to 2030 workstream and not sufficiently prioritising and enabling Early Opportunity Pathfinder projects.
 - The supply chain has finite capacity, which will restrict concurrent delivery of multiple LR4 and ScotWind projects connecting in 2030.
 - Due to significant UK content criteria, the supply chain companies are likely to be predominantly UK-based. Smoothing the overall annual project delivery and associated demand therefore leads directly to greater supply chain certainty, lower risk, more sustainable jobs and ultimately a benefit to the UK economy.
 - Early connection of Irish Sea LR4 projects prior to 2030 allows phasing of grid reinforcement works, reduces pressure around logistics and infrastructure in the offshore industry, and maximises the UK supply chain participation opportunity.

¹ Ofgem OTNR consultation paragraph 2.14

² Ofgem OTNR consultation Table 4 delivery model 1

Morgan and Mona overview

- **bp** and its partner **EnBW** are preferred bidders on two projects located in the Irish Sea in UK Offshore Wind LR4 (Morgan = Yellow North, Mona = Yellow South).
- The partners intend to jointly develop and operate the offshore wind farms to contribute to the **UK's 40GW target for 2030**.
- Work has started on the first of the **two wind farms** for it to be operational in autumn 2028
- The Morgan and Mona projects have a combined potential generating **capacity of 3 GW**, sufficient to power the equivalent of approximately **3.4 million UK households with clean electricity** and making a material contribution to the UK government's ambition for 40GW of new offshore wind generation by 2030.



Project timeline (indicative)



Responses to specific consultation questions

Early Opportunities questions

Question 1: Are there any concepts we have not identified developers (as defined in this chapter) may wish to progress?

There are several options where efficiency can be realised between multiple projects including:

- a. **Connection of the OFTO export cable directly to the onshore transmission operator (TO) substation** (removing the requirement for a separate OFTO onshore substation) where the onshore TO would install any required transformers, reactive compensation and harmonic filters. The size and location of the works could then be significantly rationalised based on a system-needs rather than generation connection point. It is acknowledged that this would require a significant modification to the current Grid Code and System Operator – Transmission Owner Code (STC) or very far-reaching derogations.
- b. **Sharing OFTO onshore substation** – in this concept multiple wind farms can radially connect their cables to a single onshore substation before the final connection to the onshore transmission system. This would significantly reduce the amount of onshore electrical infrastructure, and potentially non-technical mitigation, required for each project.
- c. Common onshore cable route and preinstallation of the onshore cable ducts (or even cables) by one project for the benefit of others sharing the same TO connection. There is precedent for this approach in east coast R4 projects.
- d. Sharing the cost of site investigation for common or adjacent locations such as export cable routes onshore and offshore.
- e. Common consent activities.

We are concerned that the concepts presented in the consultation paper would be extremely difficult to realise on the technical level. This is likely to significantly extend the development and construction timeline, irrespective of the commercial issues with anticipatory investment identified in the latter sections of the paper. In order that projects currently in development are not unnecessarily delayed and/or face unquantified increases in budgeted development costs which will undermine developer and investor confidence and the ability for the Government to achieve its 2030 ambition it is important that the specifics of those projects are understood and factored into the outcome of the OTNR.

We do not believe that the concepts proposed would reduce the environmental and social impact or prove to be economic and efficient overall, particularly for the Irish Sea projects.

Whilst a coordinated approach using HVDC technology (where one cable can carry up to 1320 MW, the likely output of two or three smaller windfarms) may succeed in reducing the number of export cables and onshore infrastructure this is generally not the case in HVAC technology, where projects require (for the foreseeable future) one cable for every 500 MW of capacity. In general, HVAC is by far the more cost-efficient option and is therefore preferable where it can be used.

In those areas where short distances to the grid (<100 km) favour the use of HVAC technology, the benefit of coordination between developers to combine cable landfalls and onshore cable routes and substations far outweighs any benefit from offshore coordination. Considering the LR4 projects awarded, the Irish Sea clearly is an area which allows the application of the more cost-efficient HVAC technology and where coordination of onshore infrastructure will ensure the environmental

and social impacts of projects are minimised whilst also improving the economic efficiency of the project and the overall cost to the consumer.

Question 2: Should anticipatory investment risk be shared with consumers? If it should, what level of risk is it appropriate for consumers to bear?

As described in the consultation paper, any anticipatory investment (AI) is typically to the detriment of the project in the highly competitive context of CfD auctions. It has therefore not been common even for the projects promoted by the same developer. To make AI happen the developers would potentially have to be:

- instructed to make such investment, and/or
- completely de-risked from making such investment, and/or
- the beneficiaries of such investment.

The first two options are difficult to implement, unfair and may lead to very inefficient AI. The last option would incentivise developers to seek AIs more proactively as they would benefit from them.

It is very hard to define a generic and fair way to apportion the risks and benefits to various parties as the scope in each case could be very different. As an alternative we suggest that developers are obligated to consider and evaluate possible AIs during the project development and then:

- a. Discuss the AI with the other developer(s) and/or TO(s) which would benefit from such investments (if other developers/TOs are known at the time)
- b. If acceptable to other developer(s) and/or TO(s) costs, risks and benefits split would be agreed between the parties with the residual risk apportioned to the customer. If the proposal is not accepted by other developer(s) and/or TO(s) the developer would then modify the scope of the AI and/or increase the residual risk amount.
- c. Propose technical details of the AI along with proposed commercial agreement to the Regulator, who would then:
 - o Agree with the developer's technical and commercial proposal (possibly with some changes were negotiated and agreed with all parties), or
 - o Agree with the benefits of developer's technical proposal (or parts of) but disagree with the proposed commercial arrangement. In which case the Regulator would instruct developer to complete the AI at no risk to developer, or
 - o Disagree with the merits of the technical solution in which case the developer would be advised not to make this AI.

Question 3: For concepts that intended to provide a wider system benefit, e.g. by mitigating an onshore constraint, how should the need for investment be demonstrated by the developer?

It is only the Electricity System Operator (ESO) in conjunction with any onshore TO(s) who can (i) identify the onshore constraints and (ii) evaluate the commercial benefit of any solutions to the wider network.

Other benefits like social and environmental impact can be initially assessed by the developer but ultimately it would be for the Regulator appraise the value of any benefit and if it is sufficient to outweigh the costs.

The solution could be developed as below:

- a. Developer discusses with ESO/onshore TO(s) the key onshore constraints in the proposed areas of connection and proposes solution(s) to mitigate the onshore constraints (if such mitigations can be found and if different to mitigations already considered by the ESO/TO).
- b. ESO/TO evaluates the benefits of such solution(s) to the wider system and estimates its monetary value to the system.
- c. Developer estimates the expected cost and benefits of such solution and makes proposal for consideration by the Regulator.
- d. As per our response to Question 2 part c above, the Regulator would then accept, partially accept or reject the proposal with regard to the information provided by the ESO/TO and the developer.

Question 4: What options are available to developers in demonstrating a reasonable expectation they intend to connect to the system?

The developer's level of commitment varies significantly during the project development timeline and with external drivers like available grid connection, project consents, available route to market etc.

For recent projects, including those with Preferred Bidder status under TR4, the significant option fees for the seabed lease considerably increase the commitment to complete the project and to do it in the timely manner. Projects will only be fully committed when they reach final investment decision. We believe that participation in the AIs should be voluntary but should come with some benefits to encourage cooperation among developers.

Question 5: To what extent do you agree with our proposals to remove barriers to the Early Opportunity concepts? Please explain your answer.

Removing the commercial barriers could lead to improved design but this may not be a sufficient incentive if the actual benefit to the project is marginal. The developer must be able to benefit from the improvement either financially (in line with the developer's own required rate of return) or by other means such as improved connection date.

Should this be taken forward by the industry and ESO, there would need to be a set timetable and commitment from the ESO to engage in a proactive and open way to the identification and implementation of necessary changes to the code modifications/derogations needed.

Question 6: Do you believe a Significant Code Review is required to give effect to a potential decision to 'share' AI risk between consumers and developers?

We do not believe a Significant Code Review is required for most of the collaboration at the Early Opportunities stage. There will be instances however where a derogation may need to be granted to wind farms (e.g., some Grid Code requirements may need to be shared between multiple projects and/or point of compliance moved to a different location not currently permitted under the Grid Code). A need for such derogations would have to be identified at early stage and agreed in principle between developer, Ofgem and where appropriate with other stakeholders (ESO, TO, Elexon etc.)

A Significant Code Review is likely to be too time consuming to effectively deliver AI sharing for the Early Opportunity workstream.

Question 7: Do you agree with Ofgem's proposed approach to deliver the objectives of Early Opportunities workstream?

We welcome the Early Opportunities workstream as it creates opportunity for early demonstration of successes from coordination of offshore wind development. We also believe that the Irish Sea provides the greatest opportunity for this. Given the small number of LR4 developers in the Irish Sea and the very limited remaining seabed available, we believe that a coordinated Early Opportunity developer-led solution is most appropriate to connect LR4 offshore wind in the Irish Sea to meet the Government's 2030 ambition of 40GW offshore wind power generation.

Developer-led coordination through a shared offshore transmission system³ can deliver the benefits anticipated by the Offshore Transmission Network Review (OTNR) process in a more timely and efficient manner than the alternative delivery models⁴. This however will only be possible if all works necessary to facilitate the Early Opportunities are prioritised and start as soon as possible, including consent activities for all required onshore transmission reinforcement works.

We believe enabling early connections of Irish Sea LR4 projects prior to 2030 allows phasing of grid reinforcement works, reduces pressure on grid for simultaneous connections in 2030, reduces pressure around construction resources, logistics and infrastructure in the offshore industry and maximises the participation opportunity for the UK supply chain.

Any delays, including the time to complete and consider this consultation, will impact and possibly offset the expected benefits. In our view it is critical that development of the required onshore transmission reinforcements continues in parallel with this consultation to realise the full potential of the Early Opportunities workstream.

³ Ofgem OTNR consultation paragraph 2.14

⁴ Ofgem OTNR consultation Table 4 delivery model 1

Pathway to 2030 questions

Question 8: We consider that a holistic design will result in a more coordinated, economic and efficient network. Do you agree? Please give reasons for your answer.

The holistic design may lead to more economic and efficient design overall in the wider UK context with several important qualifications:

- a. The holistic design is likely to increase the development timescales and hence the LR4 and ScotWind projects are at significant risk of not contributing to the 2030 targets. Projects to facilitate multiple offshore wind farms and TOs with complex interfaces will by their nature take longer to design and construct compared to the simpler arrangement used to date. Also, the time required to optimise the scheme (including this consultation) and modify the required regulations will significantly add to the development timeline.
- b. In some areas of the UK a conventional radial connection (with some coordination between the projects and/or where feasible with some AI to enable future holistic design) may be the most economical solution as has been recognised in section 3.7. of the consultation paper. It is important that where that is a possible outcome of the HND the consent and development of the onshore transmission system reinforcements is progressed without any delays in parallel to this consultation and the HND.
- c. Where projects pay significant option fees for the seabed lease this cost should be adequately considered in the efficiency evaluation.
- d. The HND, including assumptions and methodology, must be transparent and frequently consulted/reviewed/challenged by all stakeholders including developers, onshore/offshore TOs, and the consumers (represented by Ofgem and its independent advisors).
- e. Delivery of the solution should include an element of competition and be completed by the party that can manage work and risk most effectively.
- f. The company responsible for delivery of the solution should also be fully responsible for commercial losses to other parties which rely on this solution in case the delivery does not meet the agreed timeline.

Questions 9 and 10: Do you agree with the planned work for a detailed network design offshore? Who do you believe is best placed to undertake the detailed design for assets that are in offshore waters?

- Given the small number of LR4 developers in the Irish Sea and the very limited remaining seabed available, we believe that a coordinated Early Opportunity developer-led solution is most appropriate to connect LR4 offshore wind in the Irish Sea to meet the government's 2030 ambition of 40GW offshore wind power generation.
- Developer-led coordination through a shared offshore transmission system⁵ in the Irish Sea can deliver the benefits anticipated by the Offshore Transmission Network Review (OTNR) process in a more timely and efficient manner than the alternatives proposed⁶.
- Introducing an unnecessary interface between the detail design and delivery will increase technical risk, delivery time and is likely to lead to a less efficient system overall.
- Detailed network design should be completed after consent and before construction with some overlap between all three activities and not as indicated on the diagram before the consent. We believe that the party responsible for delivery should also be responsible for the detailed design.
- For all radial connections, including connections with AI for further future connections, this will typically be the wind farm developer. For more integrated designs where multiple stakeholders are involved, it should typically be the party exposed to the highest risk (usually the first developer to be connected).

Question 11: Do you agree that the existing developer led model should be retained and applied where the HND indicates a radial solution should be used? Please explain your answer.

Yes – the model has been proven to provide economic and efficient design and delivery of the offshore wind projects in the UK to date and should continue to be used for all radial solutions (and possibly for other arrangements).

We would also disagree with the statement from 3.63 that the current regime reduces the “scope for early-stage innovations”. The competitive nature of the CfD regime and significant pressure on the developers to reduce cost of the projects (including cost of the offshore transmission infrastructure and hence Transmission Network Use of System Charges) has created competition and innovation in the early design.

In comparison, some of the delivery models proposed in this consultation (options 1 to 4 in Table 4 - delivery models) will reduce or eliminate the competition element and are likely to lead to inefficient design and unchallenged cost.

⁵ Ofgem OTNR consultation paragraph 2.14

⁶ Ofgem OTNR consultation Table 4 delivery model 1

Question 12: Please provide your views on each of the delivery options we have described in this document. In providing your views, please comment on the issues we have raised. Please also give your views on the implementation issues we have raised.

Option 6 is the only option presented in this section which strikes the right balance between the time pressure on the offshore generator to achieve the delivery on time and commercial pressure to deliver economic and efficient design.

In our opinion, option 6 is the only feasible option with the opportunity to deliver some of the LR4 and ScotWind projects ahead of the target date of 2030. In all other cases the projects are likely to take longer or much longer than required, mainly due to:

- a. lack of experience by TO/OFTO in development and construction of the offshore infrastructure for all options 1 to 5.
- b. significantly smaller or no commercial pressure on the TO/OFTO to deliver the project in a timely and cost-effective fashion. While this can be somehow modified by introducing penalties to the contract, it will always be the wind farm that is most exposed to the risk of becoming a stranded asset of significantly higher value than offshore transmission and therefore not being able to generate.
- c. no competition in the TO-delivered models is likely to lead to less efficient design of the transmission network offshore.
- d. significant changes required to the existing regulatory framework, whereas option 6 only requires minor changes for the developer design and build route.

For the same reason as b) and c) above we believe it would also be beneficial to allow the offshore generator to deliver some parts of the onshore infrastructure where it is critical for the wind farm connection timeline. While it is not the subject of this consultation, we would recommend this is considered.

Question 13: Please describe any feasible delivery options that we have not set out in this document.

As mentioned above, we strongly favour the 'developer design and build, OFTO operate' model. The only modification to the scheme we would consider beneficial is selected onshore reinforcements critical to the offshore transmission connection could also be wholly or partially delivered by the wind farm developer e.g., detailed design, consent and construction activities.

Appendix – EnBW and bp company overviews

EnBW

Energie Baden-Württemberg AG (EnBW) is one of the largest energy supply companies in Germany and supplies electricity, gas, water and energy solutions and energy industry services to around 5.5 million customers with a workforce of more than 23,000 employees.

EnBW aims to be a sustainable and innovative infrastructure partner for customers, citizens and local authorities. With a focus on renewable energy and smart infrastructure solutions EnBW's objective is for half of the electricity it supplies to be from renewable sources by the end of 2025. This is already having a noticeable effect on the reduction of CO₂ emissions, which EnBW aims to halve by 2030. EnBW is aiming for climate neutrality by 2035.

EnBW has been involved in the operation of hydro power plants in the Black Forest for more than 100 years, and has a large and continuously growing number of onshore wind farms and solar PV in Germany, France and Sweden.

In addition, EnBW has already developed, constructed and operates four offshore wind farms in Germany (EnBW Baltic 1, Baltic 2, Hohe See and Albatros) with a total installed capacity of 945 MW, commissioned between 2011 and 2020. A further 900 MW offshore wind farm is currently under development with commissioning planned for 2025.

bp

bp is a leading global energy company – we provide heat, light and mobility solutions for customers all over the world. Our purpose is to reimagine energy for people and the planet. bp has been based in the UK for more than 100 years and operates in over 70 countries around the world.

In 2019, bp supported an estimated £9.7 billion gross value-added contribution to the UK's gross domestic product (GDP) and 90,100 UK jobs, meaning that an estimated 0.5% of UK GDP in 2019 was in some way reliant on bp's activities. Of this total, bp's direct UK operations – such as oil and gas fields, petrochemical plants, fuels retailing facilities and major offices – created a £4.2 billion gross value-added contribution to UK GDP and employed 15,780 people across the UK.

bp spent £7.1 billion with 3,100 UK suppliers: £5.2 billion on non-capital goods and services, supporting an estimated £3.9 billion indirect contribution to GDP and around 56,000 jobs; and £1.9 billion on capital goods, supporting an estimated £1.6 billion gross value-added contribution to GDP and around 18,000 jobs. In addition, bp spent £1.2 billion on contracts with UK-registered businesses operating overseas.

bp supports a rapid transition to a lower carbon future because we believe it is in society's and bp's best interests. We agree on the need for the world to move to net zero emissions and support the climate goals of the Paris Agreement.

In 2020 we set our ambition to become a net zero company by 2050 or sooner, and to help the world get to net zero. In 2020 we also set out a new strategy to become an integrated energy company focused on delivering solutions for customers. By implementing this strategy bp expects to be a very different company by 2030.