ESO Offshore Coordination project

Autumn progress publication

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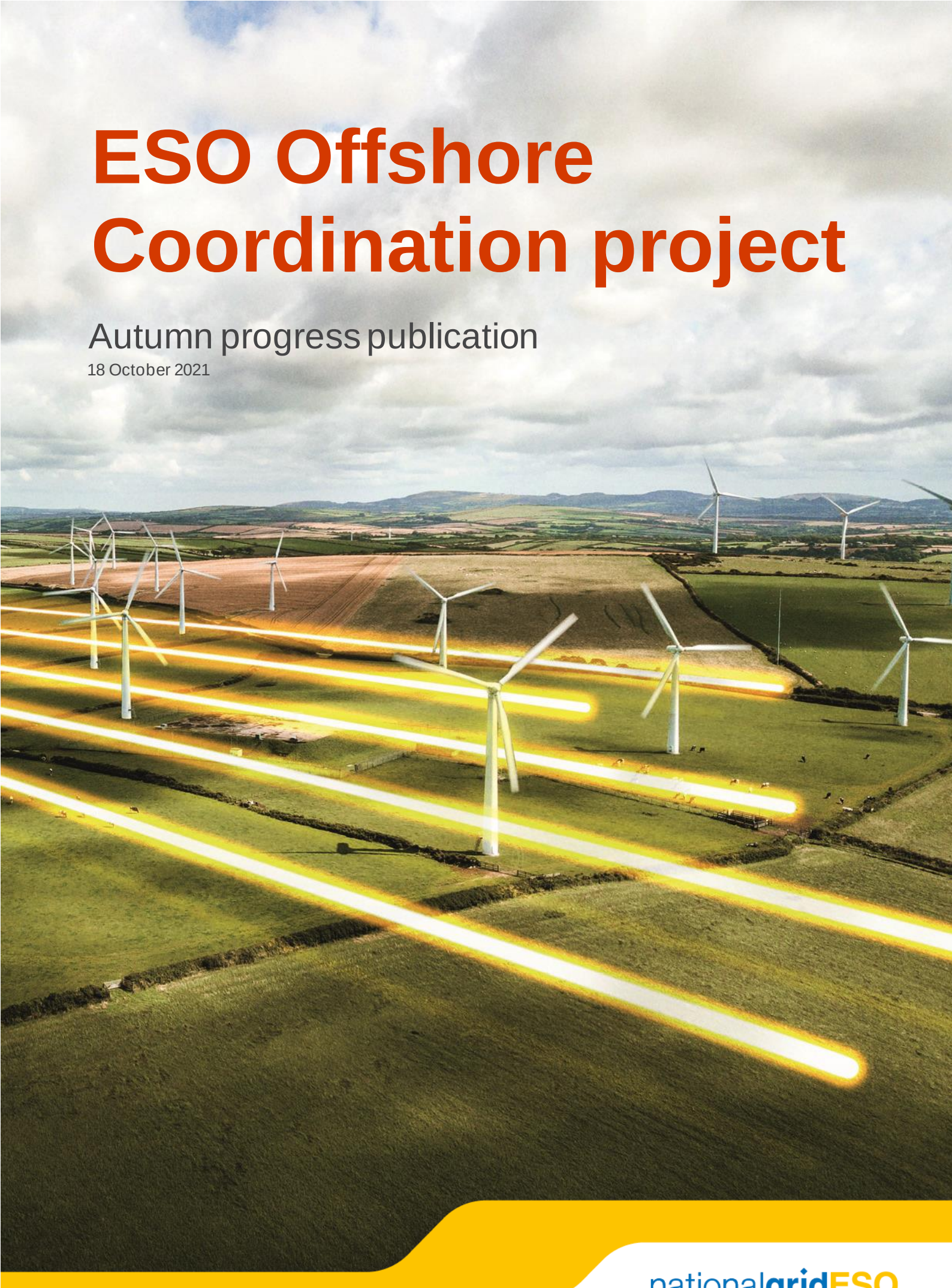

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1. Introduction

Welcome to our offshore coordination autumn progress publication. Through this document we aim to provide a consolidated view of the latest activities across the ESO offshore coordination project, explain how these activities align with the wider Offshore Transmission Network Review[1] (OTNR) led by the Department for Business, Energy and Industrial Strategy (BEIS), and signpost upcoming project milestones and opportunities to engage.

Offshore wind has been identified as a critical technology in achieving net zero greenhouse gas emissions by 2050. In order to help realise this target, a step-change in both the speed and scale of deployment of offshore wind is required. One of the challenges to delivering the ambition for offshore wind deployment in the timescales required will be ensuring that the offshore and onshore transmission network enables this growth in a way that is efficient for consumers and takes account of the impacts on coastal communities and the environment.

The ESO offshore coordination project, which contributes to the OTNR, was set up in March 2020. Phase 1 of our project progressed at pace to assess the costs and benefits of a coordinated offshore network compared to the current radial approach, the technical considerations to achieve that, and how the offshore connections regime could change to drive greater coordination.

In December 2020 we published our Phase 1 final report[2], with analysis indicating that:

- Adopting an integrated approach for all offshore projects to be delivered from 2025 has the potential to save consumers approximately £6 billion in capital and operating expenditure between now and 2050.
- There are also significant environmental and social benefits with an integrated approach, as the number of new electricity infrastructure assets, including cables and onshore landing points, could be reduced by around 50 per cent.
- However, this was a conceptual approach and did not take into account deliverability. Delivering the extent of integration required in this timescale would be extremely challenging and potentially risk missing the target of 40 GW of offshore wind by 2030.
- An integrated approach for projects to be delivered from 2030, compared to the status quo, would deliver savings to consumers of around £3 billion and could facilitate a 30 per cent reduction in the new electricity assets associated with these offshore connections.

Phase 2 commenced in January 2021, and we are working closely with other OTNR partners and wider stakeholders to realise the economic, local and environmental benefits of a coordinated approach identified in Phase 1. Our work is delivering the ESO-led activities of the OTNR across three workstreams and time horizons:

- **Early Opportunities** – working with developers of inflight projects, the onshore Transmission Owners (TOs) and other stakeholders to assess the costs, benefits and various implications of projects that have been put forward for early coordination. Also identifying and progressing required changes to industry codes and regimes.
- **Pathway to 2030 –** delivering a holistic network design for a coordinated onshore and offshore network to 2030, and assessing and making the required changes to required industry codes and standards.
- **Enduring Regime** – engaging with the Enduring Regime workstream of the OTNR, contributing to the discussion and development of relevant areas, to be further shaped by the conclusions of the BEIS consultation on the Enduring Regime and Multi-Purpose Interconnectors (link in Section 3).

We consider Multi-Purpose Interconnectors (MPIs) across each of the three workstreams outlined above.

[1] https://www.gov.uk/government/groups/offshore-transmission-network-review
[2] https://www.nationalgrideso.com/document/183031/download

There is a need for all parties to work collaboratively and at pace to enable Great Britain to achieve its offshore wind targets and net zero ambition at least cost to consumers and with least impact on communities and the environment. Our stakeholders have a vital role to play in shaping and progressing the work required for a more coordinated approach offshore, and we want to thank you for taking the time to contribute to the project thus far. We value your involvement and look forward to continuing to work together.

More broadly, Ofgem's Electricity Transmission Network Planning Review is leading a strategic review of electricity transmission network planning, to ensure that it can efficiently support the delivery of net zero at lowest cost to consumers. It is anticipated that this review will have strong alignment with the aims of the OTNR, including consideration of generation and demand scenarios and the delivery of strategic network investments to support net zero ambitions. Collaboration across the two projects is important to ensure work looking at the onshore network is aligned and consistent with that progressing under the OTNR.

2. How to navigate this document

Within this document, you will find an overview of the latest phase of work of the ESO offshore coordination project (Section 3).

In the subsequent section (Section 4), for the Early Opportunities and Pathway to 2030 workstreams, we outline the following information: the workstream objective; workstream overview; alignment to the OTNR; progress since January 2021; and next steps. Information on the Enduring Regime is covered more broadly, as the direction of this workstream will be largely shaped by the conclusions of the BEIS consultation on Enduring Regime and Multi-Purpose Interconnectors, released on 28 September 2021 (link in Section 3).

In Section 5, we present opportunities for engagement as the project processes.

3. Overview of Phase 2 of the ESO offshore coordination project

Phase 2 of the project, following the cost-benefit analysis carried out in Phase 1, was established to move Great Britain closer to an integrated offshore network, through a collection of workstreams which span technical and commercial considerations, and tactical and strategic timeframes.

The scope of the second phase of the project was informed by responses to our consultation in October 2020, in which areas for further work were identified, and has evolved through discussions with BEIS, Ofgem and other stakeholders in order to ensure alignment with the OTNR.

The illustration below outlines the structure of the project, the objective of each workstream and the offshore projects in scope for each time horizon.

Early Opportunities	Pathway to 2030	Enduring Regime
• Working with developers of inflight projects, onshore TOs, Ofgem, BEIS and other stakeholders to assess costs, benefits and various implications of all projects put forward for early coordination. • Focused on projects fairly well advanced in their development. In scope projects are post-CION (process for determining the location of the connection) and without fully approved planning permission. • Identifying gaps in current regulatory framework to assess whether code changes are needed.	• Delivering a holistic network design (HND) for a coordinated onshore and offshore network to 2030 in collaboration with the TOs, whilst engaging with other stakeholders. • Considering changes or derogations to required codes, standards and ESO processes. • Projects in scope are primarily (but not exclusively) those which secured leases in the Crown Estate leasing round 4 and those which secure them in the current Crown Estate Scotland ScotWind leasing round.	• Engaging with the Enduring Regime workstream of the OTNR, contributing to the discussion and development of this area, feeding into the BEIS consultation in September 2021. • Projects not in scope for Early Opportunities or Pathway to 2030 will be captured under the Enduring Regime. • In due course, introducing the relevant changes to ESO arrangements and processes to facilitate and deliver the enduring offshore regime.

Multi-Purpose Interconnectors (MPIs): We are considering MPIs within each of our three main workstreams.

Stakeholder engagement: All three workstreams are underpinned by stakeholder engagement. Stakeholders have a vital part to play in driving the project forwards and are key to shaping the work and proposals we are taking forward.

As referenced elsewhere within this document, BEIS and Ofgem are in a period of consultation, with the following consultations published:

- Ofgem consultation on Early Opportunities, Pathway to 2030 and MPIs[3] running from 14 July to 8 September 2021. Following this consultation, stakeholder engagement, and further analysis, Ofgem intends to signal policy options. Should they decide to proceed, they will consult on the implementation of changes to the framework and undertake an Impact Assessments as required;
- BEIS consultation on 'Planning for new energy infrastructure: review of energy National Policy Statements'[4] running from 6 September to 29 November 2021; and
- BEIS consultation on 'Offshore Transmission Network Review: Enduring Regime and Multi-Purpose Interconnectors'[5] running from 28 September to 23 November.

Part of our work over recent months has been contributing views to the OTNR in the preparation for these consultations and their conclusions will help to shape the future direction of our activities.

[3] https://www.ofgem.gov.uk/publications/consultation-changes-intended-bring-about-greater-coordination-development-offshore-energy-networks
[4] https://www.gov.uk/government/consultations/planning-for-new-energy-infrastructure-review-of-energy-national-policy-statements
[5] https://beisgovuk.citizenspace.com/energy-efficiency/enduring-regime-offshore-transmission/

4. Workstream overviews

Early Opportunities

Workstream objective

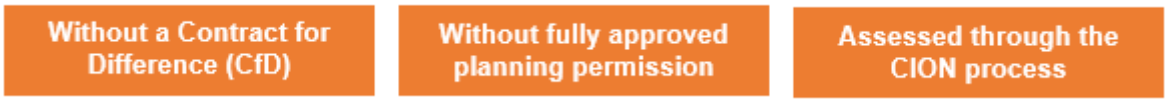
The objective of the Early Opportunities workstream is to capitalise on early opportunities for coordination through identifying inflight projects that have the potential to coordinate with changes to, or existing flexibility within, the current regulatory framework. We are leading work with developers, the onshore TOs and other stakeholders to identify and recommend the approach for coordination opportunities for inflight connections, to feed into Ofgem and BEIS decision making. We are also identifying codes, standards and relevant regime changes that may be needed to enable those coordination opportunities and progressing those changes as relevant.

This workstream is considering whether there is sufficient flexibility within the current regulatory framework to allow for coordination of the inflight projects. There is a need for a balance between maintaining the pace of delivery required to meet the government's target of 40 GW offshore wind by 2030 and capitalising on early opportunities for coordination to maximise the social, economic and environmental benefits.

We are assessing the technical and environmental impact of the projects and work with several key stakeholders to deliver projects that bring cost savings, and reduce the number of landing sites associated with offshore wind deployment and the area of land used onshore. Other factors being considered include the impact on operability (the ability to control power flows and keep the network functioning), boundary flows (power flows across important bottlenecks on the system) and constraint costs (the cost of controlling power station output to avoid problems on the network).

Workstream overview

BEIS and Ofgem have defined the scope for the projects with the opportunity for early coordination, with the view to mitigate disruption. These are projects:



1. **Without a Contract for Difference (CfD)** – a contract between the Low Carbon Contracts Company (LCCC) and a low carbon electricity generator, designed to reduce its exposure to volatile wholesale prices.

2. **Without fully approved planning permissions –** planning permission, granted by the relevant authority, to undertake a major infrastructure development such as building and connecting a wind farm.

3. **That have been assessed through the Connection and Infrastructure Options Note (CION) process** – our CION process[6] provides the rationale for the selection of the most economic and efficient connection option from the assessment of technical, commercial, regulatory, environmental, planning and deliverability aspects.

In scope projects generally fall within the connection timescale of 2025-2030. Out of scope projects are either too far advanced in their development process to coordinate or fall under the Pathway to 2030 or Enduring Regime workstreams.

Developers are encouraged to consider coordinated solutions by opting-in to coordination. The opt-in developers are those that responded to BEIS and Ofgem's open letter, "Increasing the level of coordination in

[6] https://www.nationalgrideso.com/document/45791/download

offshore electricity infrastructure"[7], that was published on 24 August 2020. These developers are either already pursuing some level of coordination or have identified an opportunity to do so.

We encourage in scope developers that could contribute to coordination to contact us (box.OffshoreCoord@nationalgridESO.com) for a discussion to find out more or explore initial thoughts. To formally opt-in to the process, please send an email outlining your project and summary of the idea to Offshore.Coordination@ofgem.gov.uk or Offshore.Coordination@beis.gov.uk.

We have developed five models based on the common themes and concepts of the projects that have opted-in. Each model has unique risks and barriers to overcome, so this grouping allows us to assess the feasibility and impact of each model. For example, assessing the impact on industry codes, connection agreements and processes. The five models are:

1. Shared offshore transmission system

   This concept involves multiple generators using a single offshore transmission system. This concept emphasises a reduction in landing points and the number of substations compared to the business as usual radial links.

2. Quasi bootstrap

   This concept involves the installation of a circuit between the respective offshore substations of two offshore generators, where the offshore substations are not connected to a single common onshore substation. This concept emphasises the potential to provide wider system benefits by reinforcing the onshore system in the form of a quasi-bootstrap. It would not reduce infrastructure or landing points, but is an example of coordination.

3. Multi-Purpose Interconnector (interconnector-led model and Offshore Transmission Owner (OFTO)-led model)

   This concept involves the connection of an offshore generator in the GB market either to i) transmission infrastructure that is classified as an interconnector or ii) transmission infrastructure comprised of distinct elements that are classified differently. One element is classified as an interconnector, and the other is classified as an offshore transmission system. This concept emphasises the reduction in landfall points required to connect a given amount of generation and interconnection to the wider system.

4. Connection to a TO owned bootstrap

   This concept involves the connection of an offshore generator to a subsea electricity link between two points in the onshore transmission system, which is owned by a TO. These onshore to onshore links are known colloquially as 'bootstraps'. This concept emphasises the reduction in landing points and infrastructure required to connect generation to shore.

5. Connection of electricity storage or a demand user to an offshore transmission system

   This concept may involve the connection of electricity storage or a demand customer, such as an electrolyser, to the onshore or offshore elements of an offshore transmission system. The principle could also allow for the electrification of oil and gas platforms. This would allow for coordination across energy vectors, not only of electricity transmission infrastructure.

The description for these models (or concepts) is extracted from Chapter 2 of the Ofgem consultation on Early Opportunities, Pathway to 2030 and MPIs (as referenced in Section 3 of this document), where you can also find the concepts described in more detail.

7 https://www.ofgem.gov.uk/sites/default/files/docs/2020/08/increasing_the_level_of_coordination_in_offshore_electricity_infrastructure.pdf

Alignment to OTNR

We fed into Ofgem's early summer consultation and Ofgem's proposed concepts align with our Early Opportunities models, which were shaped by the work with the project developers that have opted-in. We will continue to work collaboratively with Ofgem and BEIS to progress the opt-in projects and models.

Progress to date

We have been working closely with opt-in developers to clearly explain their proposals, assess their potential benefits and the challenges that need to be overcome, such as code or process changes. This detail was documented into a high-level summary, which was shared with our internal experts, the onshore TOs, The Crown Estate and Crown Estate Scotland.

We presented these high-level summary assessments of the opt-in projects, and five common models to BEIS and Ofgem in May 2021.

Next steps

Since May, we have been working on developing the models in more detail to present to Ofgem and BEIS in October. As we progress towards March 2022, we will establish in detail the changes that need to take place, plans for the implementation of these changes and, in some instances, commence these changes. We will continue to work closely with Ofgem, BEIS, developers and other stakeholders over the course of the year to inform and shape our thinking.

We will consider the technical, economic and compliance viability of the models, as well as the enabling changes that are required to connection agreements and processes. Ofgem's early summer consultation indicates that practical implementation of the concepts outlined above would likely require changes to industry codes and standards. We will identify gaps in the current regulatory framework to assess whether changes are needed.

Developers are expected to progress the operational work while working collaboratively with the TOs and ourselves to assess technical feasibility and work with BEIS, Ofgem and other stakeholders to identify and alleviate any regulatory, environmental and commercial barriers.

Pathway to 2030

Workstream objective

The objective for Pathway to 2030 is to enable achievement of 40 GW of offshore wind by 2030 by increasing central coordination and accelerating delivery of the required onshore and offshore grid infrastructure. Here we are delivering an operable strategic network design across the onshore and offshore networks, which will go on for development into detailed network designs and delivery through an agreed route. We will be responsible for delivering the integrated high-level onshore and offshore design – the Holistic Network Design (HND) – in consultation with the Central Design Group (CDG) to understand interactions with existing processes and engagement, to avoid duplication or confusion amongst stakeholders, and to utilise the TOs' relevant expertise. We will also be responsible for assessing the codes and standard changes required to deliver the HND. Ofgem is considering the options for progressing code changes – the route and party responsible are yet to be determined.

Workstream overview

Through considering the requirements for the National Electricity Transmission System (NETS) holistically, the HND should be economic and efficient, be deliverable and operable, minimise the impact on the environment, and minimise the impact on the local communities.

The delivery of the HND, due to be published in early 2022, is underpinned by a number of groups intended to ensure that stakeholders are able to provide advice and feedback:

- **Central Design Group (CDG):** The purpose of the CDG is to act as a vehicle for the ESO to consult with the onshore TOs on the HND, and to consult with stakeholder groups as the HND is developed. The group meets formally on a monthly basis. Ofgem, BEIS and members of the Devolved Administrations also attend, and other guests may be invited on a case-by-case basis to provide input on specific topics.
- **Stakeholder and communications subgroup:** The purpose of this subgroup is to enable the ESO to consult with the TOs on communication and engagement plans for the delivery of the HND, helping to ensure clarity and continuity for wider stakeholders. The subgroup will deliver a stakeholder feedback report in early 2022, which will outline how feedback has helped inform the HND.
- **Commercial subgroup:** The purpose of this subgroup is to ensure a commercial report, to be published in early 2022, comprehensively considers and provides advice on the commercial impacts of and interactions with the HND output, for example in respect of codes and connections.
- **Environmental subgroup:** This subgroup brings together key environmental stakeholders to provide advice to the CDG on environmental impacts of the technically viable options being considered in developing the HND.

Outputs from the CDG include:

- Recommended HND, including any notable HND variations;
- Proposed network design rules based on the Security and Quality of Supply Standard (SQSS), to guide the HND; and
- Recommended changes to industry technical and commercial codes, standards and licences the CDG considers are required in respect of the HND and proposals. This could include the trialling of any innovative approaches pending changes.

There are two parts of network design for both onshore and offshore. After the HND follows the Detailed Network Design (DND). The onshore TOs will undertake the onshore DND in their respective licence areas, and the onshore DND should be at a level of detail that allows them to proceed with the delivery of Network Assets, such as the pre-consenting development phase and detailed technical studies. It is yet to be decided by Ofgem which party or parties will undertake the offshore DND and subsequently build and own the offshore network.

Projects in-scope for the HND and Pathway to 2030 are primarily those which received leases in The Crown Estate Leasing Round 4[8] and those which receive them in Crown Estate Scotland's current ScotWind[9] leasing round. The workstream scope will also include offshore projects within the Celtic Sea[10] and potentially a handful of other offshore projects which are potentially spatially and/or temporally relevant to other in-scope projects for the Pathway to 2030 workstream where it is efficient to consider them as part of the scope of the HND. We will inform relevant project developers if their current or planned project is considered to be in-scope for the HND and Pathway to 2030 workstream, with additional connection contract clauses added into relevant contracts. This will only be to the extent that they are necessary to account for the potential future changes due to the HND and Pathway to 2030 workstream.

Alignment to OTNR

We have been asked by BEIS and Ofgem, as part of the OTNR, to deliver this piece of work. The Terms of Reference (ToR) for the CDG (a draft of which is available in the early summer Ofgem consultation) have been signed off by the OTNR Project Board. BEIS, Ofgem and representatives of the Devolved Administrations attend the formal CDG meetings as observers.

Once the HND is completed, with the support of the CDG members as appropriate, we will seek approval of the HND from the OTNR Project Board. This will happen after the design has been discussed by the OTNR Expert Advisory Group and the Working Group. The Project Board will state that the HND is in line with

[8] https://www.thecrownestate.co.uk/en-gb/what-we-do/on-the-seabed/offshore-wind-leasing-round-4/
[9] https://www.crownestatescotland.com/what-we-do/marine/asset/offshore-wind/section/scotwind-leasing
[10] https://www.thecrownestate.co.uk/en-gb/media-and-insights/news/the-crown-estate-to-create-new-floating-wind-leasing-opportunity-in-the-celtic-sea/

the requirements of the ToR if this is the case and it will be noted in its session minutes, to highlight that the OTNR supports the HND.

Progress to date

Throughout April to July, we collaborated closely with the TOs, BEIS and Ofgem to agree and establish the ToR and broader foundations that will be critical in underpinning the CDG and enabling us to progress with a brand new approach to holistic network design. We held the first of our formal CDG meetings on 20 July 2021 and have met monthly since then to develop the methodologies and processes we are using to develop the HND in line with the ToR, with the necessary interfaces with the existing planning processes. We have also commenced monthly meetings of the commercial subgroup, in which we have agreed and published an open letter[11] to update offshore project developers and wider industry on workstream progress and plans, and the stakeholder and the communications subgroup where we are ensuring consistent messaging and coordinated engagement across different stakeholder groups.

Preparation for the environmental subgroup has been ongoing over the summer, with the first meeting held with subgroup members on 6 October 2021.

Throughout the summer we have also engaged with offshore project developers and other interested stakeholders to keep them informed of progress. We will continue to this engagement throughout the duration of the workstream. This includes holding the first of a programme of regular webinars for in-scope project developers on 21 October 2022.

We appointed and commenced work with Imperial College London in July 2021 to support the delivery of the technical element of the HND, and RPS Consultants in September 2021 to provide expertise on offshore cable routing and environmental and community constraints.

Supported by Imperial College London and the National HVDC (High Voltage Direct Current) Centre, we have also developed a generic offshore design planning tool for the calculation of network design costs, which will feed into the HND.

Next steps

Once the HND is available, we will work with TOs and in-scope developers to update connection contracts as a result of the HND (for example, the interface site and connection date). This will also incorporate the result of any changes to the offshore delivery model, as has recently been consulted upon by Ofgem on Early Opportunities, Pathway to 2030 and MPIs.

We will also support and/or potentially develop and deliver code and standard changes as and where necessary, noting potential links to Early Opportunities code and standard changes and the outcome of any Ofgem decision on a significant code review. This will be considered through the development of the commercial report (as above) and we are currently considering how and when to engage stakeholders on some of the expected content of this commercial report in advance of its publication i.e. throughout Q4 2021, including a suite of workshops with stakeholders to focus on some of the potential code and standard impacts related to the HND. Where appropriate, we will join up engagement across the Early Opportunities and Pathway to 2030 workstreams.

In addition to progressing the work to deliver the HND and understand the implications of technically viable options, we will be further developing and implementing our engagement approach. The ToR for the CDG specifically references offshore developers, environmental and community stakeholders as groups to engage. Through both the stakeholder and communications subgroup and the environmental subgroup, we will be working closely with the TOs and other key stakeholders to ensure information is communicated clearly to those interested in, potentially impacted by, or helping to shape the HND.

Listed below is a high-level overview of the key process steps in respect of the development of the HND.

[11] https://www.nationalgrideso.com/document/211251/download

Step 1: Onshore Network Update

Update of the onshore network model to incorporate additional network reinforcement schemes to support 40 GW of offshore wind by 2030. Development of a cost-benefit analysis (CBA) methodology against which the options will be considered in relation to the HND as per the CDG ToR.

Step 2: Onshore and Offshore Network Planning and Coordination

a. 2030 counterfactual offshore design
   - Analyse the counterfactual design i.e. radial connections for in-scope projects.

b. 2030 coordinated offshore design
   - Develop the strategic medium-term coordinated offshore network design for 2030. This design will only consider in-scope offshore wind anticipated to connect up to 2030.

c. 2030 coordinated offshore design with a 2050 outlook
   - Develop a strategic outlook coordinated offshore network design for 2030. This design will consider the 2030 network in the context of the development of offshore wind across three future energy scenarios to 2050.

Step 3: Cost-Befit Analysis

The CBA will be undertaken to identify the preferred HND for projects in-scope. This will involve appropriate consideration of each of the four Network Design Objectives within the CDG ToR.

Step 4: Single HND and Final Report with Recommendations

The results and supporting information will be included within a Final Report in respect of the HND.

Step 5: HND Design Iteration

There will likely be a need to refine some of the HND once the outcome of the ScotWind leasing round is known in January 2022.

Step 6: Connection Contract Update Programme[12]

Connection contracts will be updated as and where required as a result of the HND e.g. in respect of any onshore and offshore works, the interface point, the connection date, etc.

Step 7: Detailed Network Design (Post-HND)

Once the HND stage formally concludes, subject to the above referenced Ofgem consultation, onshore TOs will (for onshore work not already within this stage) take relevant onshore transmission system works into the detailed network design stage. The relevant offshore transmission works will be taken into the detailed network design stage by the appropriate party in accordance with the Ofgem consultation.

Between ourselves and the TOs, we have considered the interactions between the HND and the Network Options Assessment (NOA), which takes the ESO Future Energy Scenarios (FES) and provides a set of investment recommendations annually that ensure the optimal level of network capacity is delivered at the right time to minimise risk and maximise benefit for the GB consumer. We are working to ensure that the outputs of the HND and the recommendations of the NOA are aligned and consistent.

Historically, the NOA has not needed to assess large scale offshore transmission infrastructure as it was previously evaluated to be uneconomic for the levels of offshore generation forecast at the time. The drive towards net zero has led to the need for a coordinated offshore network that considers the environment in coastal landing points and corridors being re-evaluated. In NOA 20/21 we included a new chapter investigating the potential benefit offshore wider works could have in resolving constraint costs.

[12] Subject to Step 5 being required and concluded and any potential interactions with the outcome of the offshore delivery model consultation. We will continue to develop Step 6 and aim to provide potentially impacted developers with a more robust and granular plan in relation to the connection contract update programme in Q4 2021.

The development of the HND is using the NOA 2020/21 recommendations as a starting point for assumptions on the existing network. Following this, different offshore network designs will be evaluated assessing their effectiveness against the generation background and the existing onshore network reinforcement profile will be refined as appropriate. Once the HND has optimised the network design for both onshore and offshore, the onshore network will be confirmed via the NOA using the latest reinforcement options from NOA 21/22. The output of this will be a series of strategic onshore reinforcement requirements to enable the optimal offshore design for 2030.

As our work in this area continues, we will provide further updates to stakeholders on the interaction between these two deliverables.

Enduring Regime

For the Enduring Regime, our objective is to support the design and implementation of the Enduring Regime. This includes any changes necessary to facilitate future offshore projects in the Enduring Regime.

As detailed within our recent open letter, for offshore projects which are not within scope of a prior workstream, there will still be implications as the Enduring Regime continues to be developed.

As such, in the short-term any new offshore applications intending to connect within the Enduring Regime timescales (i.e. subsequent to Early Opportunities and Pathway to 2030) will be progressed on a 'pre-Connection and Infrastructure Options Note (CION)' basis. Whilst this will tentatively identify the transmission works and resulting connection date etc., further work will be required to validate or amend these at a later date.

The connection offer will therefore be subject to the outcome of the development of the Enduring Regime, including the process for identifying the overall efficient, coordinated and economical solution and the available offshore delivery models. We will keep the post-acceptance position/process for projects in-scope for the Enduring Regime under review, as we expect them to be delivered through the approach developed in this workstream rather than through the traditional or adapted CION approach as being applied in respect of the earlier workstreams. This will be recognised and provided for in any connection contracts offered in future.

We will inform relevant project developers if their current/planned project is considered to be in-scope for the Enduring Regime workstream and we expect that additional connection contract clauses will be incorporated into relevant connection offers as a result of the Enduring Regime workstream.

Furthermore, in the context of the Enduring Regime workstream, The Crown Estate, Crown Estate Scotland and the ESO have committed to working closely together to support the development of a more coordinated approach to the delivery of transmission infrastructure for offshore wind projects. As key partners of the OTNR, all three organisations recognise that a coordinated approach to seabed leasing and planning, development and construction of transmission infrastructure related to offshore wind is required if the UK is to realise its clean energy potential offshore, while minimising impacts on the marine environment, and on coastal communities. As pressures on our marine environment increase, our three organisations will build on our existing close working relationships, to collaborate in a range of new ways, identifying new priorities and further opportunities for alignment, principally through the OTNR. This collaboration underpins our organisations' shared ambition to work proactively toward positive solutions for the benefit of the nation.

We have also provided input to emerging OTNR options and proposals in the lead up to the BEIS consultation on Enduring Regime and MPIs, which was released on 28 September 2021, and will continue to contribute views as appropriate. The direction and scope of future work will be shaped largely by the conclusions of the consultation and subsequent OTNR actions in relation to the development and implementation of the Enduring Regime.

5. Forward view of engagement activities

The table below presents a consolidated view of opportunities to shape the direction of project deliverables. With the intention of improving ease of reading, we have grouped these by category of stakeholders.

Topic	How we are engaging	Timescales	Activities and deliverables this engagement will inform
Transmission Owners			
Early Opportunities and Pathway to 2030	Central Design Group (CDG), CDG stakeholder and communications subgroup; CDG commercial subgroup; CDG environment subgroup; further informal engagement across Early Opportunities and Pathway to 2030.	Ongoing	Technical, commercial and stakeholder considerations of Early Opportunities models and the HND.
Developers			
Early Opportunities detailed models	We are speaking to all developers of in-scope projects. If you meet the criteria, and are not already engaging with us, please get in touch with the offshore coordination team at box.OffshoreCoord@nationalgridESO.com.	Ongoing	Engagement with Ofgem and BEIS in November 2021 on topics including the changes needed to connections, codes and charging to progress the Early Opportunities models. This will inform next steps.
Holistic Network Design (HND): • Offshore constraints • Coordination proposals • Offshore cable routing • Cost-benefit analysis • Design Options	The CDG will engage regularly and consult with developers of in-scope projects at key points throughout the HND development process via a variety of channels, including trilateral discussions (with the developer, the relevant TO and the ESO), webinars, periodic update publications, etc. Examples of engagement include: • Testing, challenging and reviewing analysis and models of cable routes by environmental consultants RPS • Feasibility ahead of input into the cost-benefit analysis being undertaken	September to early 2022	Delivery of HND report early 2022.
Environmental and social interests			
Environmental and social impacts of the HND	We have appointed environmental consultants RPS to consider and analyse the offshore cable routes proposed by the HND and report the environmental and social constraints of different cable routes up to and including landing points or areas. Through engaging with the CDG	Ongoing until early 2022	Ensuring the final HND, to be published early 2022, has taken account of environmental and social impacts.

Topic	How we are engaging	Timescales	Activities and deliverables this engagement will inform
	environmental subgroup, we will seek advice and input from environmental stakeholders. With regards to community interests, we will also be speaking with MPs and local government in regions potentially impacted by the HND and producing plain English communication for members of the public. This will be with support from the TOs to understand interactions with existing processes and engagement, and to ensure consistency for stakeholders. Whilst the HND will be high-level and we will therefore not be conducting a formal consultation at this stage, there will be the opportunity for consultation during the Detailed Network Design (DND) phase, once a greater level of detail of the network design is established. These activities will be delivered by the TOs following the delivery of the HND report.		
Wider stakeholders with code or offshore development expertise			
Technical and commercial code implications for Early Opportunities and Pathway to 2030	Industry forums and workshops to discuss code changes that may be required.	November 2021	Proposed modifications to enable Early Opportunities and Pathway to 2030 (to inform further conversations with Ofgem). Feedback from external engagement will be included within the CDG commercial subgroup report, due early 2022, identifying changes required for HND delivery.

6. Continuing the conversation

You can email us with your views on offshore coordination at box.OffshoreCoord@nationalgridESO.com and one of our team will be in touch. For further information on the project, please visit: www.nationalgrideso.com/future-energy/projects/ offshore-coordination-project

To complement this publication, we will be holding an autumn progress webinar on 21 October. We hope you can join us for this. Please see our website for details of how to register for the event.