



Department for
Energy Security
& Net Zero

Offshore Transmission Network Review: Future Framework

Government Response and
Recommendations

July 2023



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Executive Summary

Introduction

The Offshore Transmission Network Review (OTNR) was launched in 2020 to review the approach to the design and delivery of offshore transmission. The current developer-led approach was developed when offshore wind was a nascent sector and ambition for delivery by 2030 was just 10GW. A new approach is needed to support our decarbonisation and net-zero ambitions, with some projections suggesting that we could need more than 100GW of offshore wind by 2050. Delivery of transmission is currently a limiting factor in the delivery of offshore generation, and this represents a significant risk to achieving our goals.

The publication of the future framework recommendations is one of the key outcomes of the OTNR and marks the close of the 'Review' stage and move to delivery.

The OTNR was led by the Department for Business, Energy and Industrial Strategy (BEIS), now the Department for Energy Security and Net Zero (DESNZ), with support from a range of government and industry project partners including:

- The Crown Estate
- Crown Estate Scotland
- The Department for Environment, Food and Rural Affairs
- Marine Scotland
- The Marine Management Organisation
- The Department for Levelling Up, Housing and Communities
- National Grid Electricity System Operator
- Ofgem
- The Welsh Government
- The Scottish Government

The delivery of the Holistic Network Design¹ (HND) in July 2022 marked a significant shift towards a more centrally designed, coordinated network. As we look further into the future for projects that have yet to secure a seabed lease, we can build on the HND by taking a more integrated approach to the process for identifying leasing areas for offshore wind and associated transmission infrastructure, interconnectors

¹ National Grid ESO (2022) *Holistic Network Design*: <https://www.nationalgrideso.com/future-energy/the-pathway-2030-holistic-network-design>

and opportunities for multi-purpose interconnectors. This will support our Net Zero ambitions as quickly and as sustainably as possible, whilst delivering benefits to consumers, communities, the environment and supporting Britain's energy security.

Alongside this, DESNZ has recently made a public commitment that as we transition to a secure and low-carbon electricity system, affordability will remain at the centre of our thinking, and we will take steps to ensure Britain has among the cheapest wholesale electricity prices in Europe by 2035².

Recommendations

Following a consultation on proposals for developing and deploying offshore wind and associated transmission infrastructure, interconnectors and multi-purpose interconnectors we have collaborated with OTNR project partners to develop three key recommendations for a Future Framework. We have also identified key actions to take these recommendations forward. The recommendations and actions will be delivered in line with wider programmes and activities identified in Annex A.

Recommendation 1

DESNZ will work with project partners to develop options for a strategic approach for the deployment of offshore wind, interconnectors and multi-purpose interconnectors that evolves over time as roles and responsibilities change.

Actions

- a. **DESNZ will work with Devolved Administrations to consider options for setting a clear long-term view of the volume of offshore wind and interconnectors, including options for where this responsibility may lie in future. This will need to consider the recommendations from the Electricity Networks Commissioner³, and along with a holistic and improved approach to prioritising and protecting the marine environment that would allow seabed leasing to be undertaken in a more strategic way.** Although the UK has the greatest offshore wind resource in Europe, seafloor capacity is finite and there are increasing

² DESNZ (2023) *Powering Up Britain: Energy Security Plan*: <https://www.gov.uk/government/publications/powering-up-britain/powering-up-britain-energy-security-plan#a-future-of-cheap-clean-and-british-energy-1>

³ Appointed in July 2022 as part of the British Energy Security Strategy to accelerate the delivery of crucial electricity network infrastructure.

pressures on the marine environment. With some scenarios suggesting that the UK could need more than 100GW by 2050, we will need to ensure that the use of this resource is planned appropriately to maximise its value and reduce the environmental and community impacts.

- b. **The Electricity System Operator (ESO) and The Crown Estate, Crown Estate Scotland and Marine Scotland will work together to incorporate network considerations in the seabed leasing processes:** One key difference between the HND for the Pathway to 2030 projects and the network planning approach for the Future Framework is the ability to take a more strategic approach to seabed leasing as proposed under action 1a. The outputs of action 1a should allow network planning to take account of the overall ambition for offshore wind and consider the electricity transmission network earlier in the process.
- c. **The ESO will work to deliver Centralised Strategic Network Planning (CSNP):** CNSP has the potential to better consider cumulative impacts from electricity network infrastructure. We anticipate the ESO will build on the approach taken for the HND to take a whole electricity system approach to network planning to ensure economic and efficient delivery of network infrastructure. This will take account of the forward-look for seabed leasing (the output of action 1a), so that transmission can be planned in advance, with increased confidence that generation will come forward in certain areas at the times expected. It is our expectation that the Future System Operator (FSO), when established, will take on responsibility for the CSNP.
- d. **Conduct environmental assessments ahead of the designation of seabed leasing areas:** It is a legal requirement to undertake an environmental impact assessment on a Nationally Significant Infrastructure Project and to submit this as part of the application for planning consent. Project partners will work together to understand which party is best placed to undertake plan-level assessments and to ensure that it aligns with wider reforms taking place across the legislative landscape. A more integrated approach will enable protected and sensitive areas to be considered earlier in the process. Environmental assessments covering the leasing area and transmission infrastructure will also help with the consideration of cumulative impacts, reduce risks associated with planning approvals, and reduce the time between seabed leasing and delivery.

Recommendation 2

Adopt delivery models that maximise efficiency in terms of cost and risk.

Actions

- a. **DESNZ will work with Ofgem to consider the appropriate delivery model(s) to maximise consumer benefits from competition while giving the right incentives for innovation and efficient deployment of transmission:** Currently developers typically build the transmission infrastructure and transfer it to an OFTO after construction and commissioning. While this may continue to be the most appropriate model for point-to-point connections in the future, we expect a more centralised network design to deliver fewer of these radial connections and more shared connections. Ofgem will examine the stage at which competition is introduced to the process.
- b. **Ofgem and DESNZ should consider aligning the onshore and offshore competition regimes as far as possible:** This would streamline the arrangements and maximise the efficiency of competition. For reinforcements to the onshore network clauses are being brought forward in the Energy Bill which will enable an early-stage competition model with a view to incentivising innovative approaches to both network design and technology choices. This is likely to be particularly beneficial for more complex offshore reinforcements, such as those recommended through the HND. With the boundary between the onshore and offshore network becoming increasingly blurred, there is a logic in applying the same delivery models to both.

Recommendation 3

Consider the timing of transmission design and delivery.

Action

- a. **Ofgem should undertake further analysis on the optimum timing of detailed design and delivery of transmission infrastructure to determine changes required for a future framework delivery model:** A more forward-looking approach to the location and timing of new offshore wind developments reduces the risk of investing in strategic network infrastructure (such as high-capacity overhead lines) ahead of need. Interactions with the delivery model will need to be considered.

Next steps

Responsibility for developing implementation detail, as well as necessary stakeholder engagement to agree preferred options, will rest with project partners responsible for specific areas of delivery according to their existing remit.

Project partners have confirmed their commitment to delivery of the Future Framework recommendations through a joint statement of support, published alongside this document. DESNZ will convene project partners to monitor implementation progress and work through the interactions between project partners.

Introduction

Background

The UK has committed to ending our contribution to climate change and delivering an ambitious increase in renewable energy deployment. We are also under pressure to reduce our dependency on energy imports considering Russia's invasion of Ukraine and rising energy costs globally. Offshore wind is expected to play a key role in meeting these challenges and ensuring that the UK has access to secure, clean and affordable domestic power supply for the long-term. The British Energy Security Strategy⁴ extended the government's offshore wind delivery target of 40GW by 2030 originally set out in the Ten Point Plan⁵, to an ambition of up to 50GW by 2030⁶. Modelling from the CCC shows that c.65GW of offshore wind will be required for a decarbonised power sector by 2035 (end of the Sixth Carbon Budget) and as much as 100GW to reach Net Zero by 2050^{7,8}. In addition, the government has committed to an ambition to realise at least 18 GW of interconnector capacity by 2030⁹, over double the current capacity of 8.4 GW.

The Offshore Transmission Network Review (OTNR) was launched in 2020 to review the approach to the design and delivery of offshore transmission to ensure it is consistent with our significantly increased ambition for delivery. The current approach was developed when offshore wind was a nascent sector and ambition for delivery by 2030 was just 10GW. The developer-led process that was put in place reduced the delivery risks for projects and helped the sector mature into one of the most investible offshore wind markets in the world. However, the resulting radial connections do not represent the most efficient way to connect offshore wind needed to support our decarbonisation and net-zero ambitions. Delivery of transmission

⁴ BEIS and PM's Office (2022), *British Energy Security Strategy*, <https://www.gov.uk/government/publications/british-energy-security-strategy/british-energy-security-strategy>

⁵ HM Government (2022), *The Ten Point Plan for a Green Industrial Revolution*, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/936567/10_POINT_PLAN_BOOKLET.pdf

⁶ HM Government (2022), *Major Acceleration of Homegrown Power in Britain's Plan for Greater Energy Independence* [BEIS press release], <https://www.gov.uk/government/news/major-acceleration-of-homegrown-power-in-britains-plan-for-greater-energy-independence>

⁷ Climate Change Committee (CCC) (December 2020), *Sixth Carbon Budget*, <https://www.theccc.org.uk/publication/sixth-carbon-budget/>

⁸ 2045 in Scotland

⁹ BEIS (December 2020), *Energy White Paper*, <https://www.gov.uk/government/publications/energy-white-paper-powering-our-net-zero-future> [Page 80]

infrastructure is currently a limiting factor in the delivery of offshore generation, and this represents a significant risk to achieving our goals in an efficient manner.

The delivery of the Holistic Network Design¹⁰ (HND) in July 2022 marked a significant shift towards a more centrally designed, coordinated network. As we look further into the future for projects that have yet to secure a seabed lease, we can build on this by taking a more integrated approach to the development and deployment of offshore wind, interconnectors and multi-purpose interconnectors. This is with a view to achieving Net Zero as quickly and as sustainably as possible, whilst delivering benefits to consumers, communities, the environment and supporting Britain's energy security. Alongside this, DESNZ has recently made a public commitment that as we transition to a secure and low-carbon electricity system, affordability will remain at the centre of our thinking, and we will take steps to ensure Britain has among the cheapest wholesale electricity prices in Europe by 2035¹¹.

The publication of the future framework recommendations is one of the key outcomes of the OTNR and marks the close of the 'Review' stage and move to delivery.

The recommendations and actions proposed in this document interact with wider system changes that are underway and we are working closely with colleagues to ensure that we are aligned. This includes the recommendations from the Electricity Networks Commissioner, considerations on the future of the Contracts for Difference scheme and development of the Future System Operator. A full list of interactions are provided in Annex A.

Future Framework objectives

The Future Framework for deploying and connecting offshore wind and associated electricity infrastructure seeks to:

- Address current barriers to deployment upfront;
- Facilitate early planning of network infrastructure;
- Reduce environmental and community impacts;
- Reduce overall costs, including considering and minimising costs to the end-consumer; and

¹⁰ National Grid ESO (2022) Holistic Network Design: <https://www.nationalgrideso.com/future-energy/the-pathway-2030-holistic-network-design>

¹¹ DESNZ (2023) *Powering Up Britain: Energy Security Plan*: <https://www.gov.uk/government/publications/powering-up-britain/powering-up-britain-energy-security-plan#a-future-of-cheap-clean-and-british-energy-1>

- Streamline processes to ensure infrastructure is brought forward in a coordinated way.

Consultation process and engagement

In 2021 we consulted¹² on proposals for a new approach to how offshore wind and associated transmission infrastructure, interconnectors and multi-purpose interconnectors is developed and delivered. We sought stakeholder views on key questions covering:

- Deployment and network planning processes;
- Transmission delivery models; and
- Timing of transmission design and delivery.

This publication provides the government response to the consultation and outlines recommendations with related actions to project partners for implementation. Whilst the OTNR focuses on offshore wind, associated transmission infrastructure and interconnectors, further benefits could be realised by extending an integrated approach to other aspects of the wider energy system. The recommendations in this document represent the first stage in a transition to a more strategic, wider-system approach.

We previously referred to the long-term workstream of the OTNR as an ‘Enduring Regime,’ however, to reflect the continually evolving nature of changes for offshore wind deployment more accurately, we have renamed it to ‘Future Framework’.

Future Framework approach

The Future Framework covers future offshore wind projects delivered from leasing rounds after Leasing Round 4, ScotWind¹³ and Celtic Sea¹⁴, and that are **not in scope of the Pathway to 2030 workstream**. Initial changes will apply to projects due to become operational by the mid to late 2030s. The Future Framework will be implemented in a transitional way, with different aspects put in place over time by relevant programmes or activity taken forward by project partners. This should

¹² BEIS (2021), *OTNR: Proposals for an Enduring Regime and Multi-Purpose Interconnectors*, <https://www.gov.uk/government/consultations/offshore-transmission-network-review-proposals-for-an-enduring-regime>

¹³ ScotWind was the first round of offshore wind leasing in Scottish waters for a decade. The ScotWind leasing process enabled developers to apply for seabed rights to plan and build windfarms in Scottish waters.

¹⁴ The programme is intended to provide seabed leasing for floating wind energy in the Celtic Sea.

provide a high degree of confidence to investors and market actors in the medium-term. In the longer-term, the approach will evolve for subsequent 'groups' of projects captured by future iterations of strategic network planning.

Changes may impact all elements of the end-to-end process for offshore wind development; however, our **immediate focus is on the early stages of the development process**. We are prioritising these to address the root causes of issues arising later in the project development process.

What is in this publication?

This publication consists of two parts:

- **Part 1** - The government response to the Future Framework consultation; and
- **Part 2** - Delivery recommendations to key project partners to implement Future Framework changes.

PART 1

Government response

Part 1 of this publication provides the government response to the OTNR consultation. This includes the consultation proposals and summary of consultation responses.

We received over 50 consultation responses from a wide range of stakeholders, as shown in Figure 1 below.



Figure 1 – Overview of consultation respondents

Strategic deployment and network planning

The OTNR consultation proposals

The consultation proposed a **more strategic approach to development and delivery of offshore wind and associated infrastructure**. This would support the UK in achieving its deployment and decarbonisation targets in an efficient, coordinated, and sustainable way.

We proposed that a more strategic approach could:

1. Optimise the geographic areas and timing for developing wind farm infrastructure, taking account of network considerations in the approach to leasing;

2. Incorporate onshore network considerations into a holistic network planning approach;
3. Avoid environmentally sensitive areas both onshore and offshore; and
4. Assess all impacts upfront to consider cumulative effects and reduce risks and delays at planning and consenting stages.

Figure 2 summarises the potential elements we suggested that a strategic plan could include:

What could a strategic plan contain?		
Target generation capacity	Level of interconnection	Network capacity view
Mapping of potential generation & MPIs	Mapping of sea floor constraints	Network reinforcement need
Community impacts	Strategic Environmental Assessment	Spatial planning

Figure 2 – Potential components of a strategic plan

We additionally proposed that the **HND approach currently underway in the Pathway to 2030 workstream could continue as part of a Future Framework**, with further changes and improvements building on lessons learned so far. We suggested that this might involve the National Grid Electricity System Operator (ESO) extending its current remit towards the role of a strategic network planner or another party taking on this role.

Summary of consultation responses

Q1 – We think that a more strategic approach to the planning and development of offshore wind is needed to achieve the Review’s objectives. Do you agree?

All respondents welcomed our proposals for taking a more strategic approach to development and delivery of offshore wind and associated infrastructure, with many stakeholders highlighting the important role it can play in delivery against the UK’s

deployment and decarbonisation targets as well as addressing the environmental and social impacts of deployment. Other potential benefits of taking a more strategic approach include:

1. Opportunity to better align several processes within the current policy and regulatory landscape – e.g., leasing, planning, consenting;
2. ‘Front loading’ environmental considerations and thus facilitating projects through the consenting stage;
3. Greater transparency and foresight of network design, timings and costs;
4. Opportunity to take a whole-system view to further optimise the use of finite seabed space; and
5. More efficient use of public funds and greater public confidence in the process.

However, several respondents noted that the development and implementation of any strategic framework should not cause delays to deployment by creating uncertainty regarding the future landscape and undermine the benefits of competition in the current approach.

Q2 - If you agree, do you have any views about the scope of the strategic plan? For example, should it cover generation or be limited to transmission?

Most stakeholders considered it necessary for any strategic plan or framework to include both generation and transmission. There was also broad support for the proposed nine elements of scope (Figure 2 above) and suggestions for further inclusions such as supply chain investments, the entire grid connections process, consenting, alignment with funding mechanisms or geographical scope covering the whole North Sea basin.

Several stakeholders called for a whole-system approach that would expand to other technologies and seabed users. However, several stakeholders also recognised that to maintain current deployment, the focus may initially need to be on specific technologies or processes, to deliver on deployment and Net Zero objectives.

Q3 - What governance arrangements would be appropriate for a strategic plan? For example, which organisation should take the lead, and what roles and responsibilities would other partner organisations have?

Stakeholders recognised that successfully delivering the objectives will require action by several key organisations which must all be accountable. Respondents also saw the need for an overall governance or an oversight function to manage this delivery. Most stakeholders viewed DESNZ as best suited to lead the overall governance.

Respondents also emphasised the need to involve key partners throughout development and delivery, recognising their existing remit and capabilities. Organisations most frequently mentioned as having a significant role to play included Ofgem, DEFRA, ESO, The Crown Estate/ Crown Estate Scotland, Welsh and Scottish Governments and Transmission Owners.

Several stakeholders commented that regardless of which organisation eventually takes overall responsibility, it needs to have the right expertise to deliver changes and must secure stakeholder buy-in.

Q4 - How should stakeholders be consulted during the development of a strategic plan?

Several respondents emphasised that keeping stakeholders informed and allowing opportunity to provide feedback will be essential to ensure buy-in throughout the development, implementation, and review of any future framework. Respondents suggested that whilst a formal consultation would be welcome, a further mix of engagement methods and frequency should be used, for example workshops, webinars, newsletters, or a steering group.

The Central Design Group from OTNR's Pathway to 2030 workstream has been cited by several stakeholders as an example of good practice with respect to stakeholder engagement. A small number of respondents additionally asked for a Statement of Community Involvement.

Q5 – What time-period should be covered by a strategic plan and how frequently do you think it should be updated?

A significant number of stakeholders advocated taking a structured temporal approach which balances long-term strategic clarity with flexibility to accommodate change. They proposed that the plan should be sufficiently forward-looking to give confidence to developers and investors that the fundamentals will not change at least for the duration of one end-to-end development cycle. At the same time, the plan needs to have a built-in review process and sufficient flexibility to adapt to policy, economic or technological changes and innovation.

To achieve this, most respondents agreed that two time-horizons are appropriate: a least-regret, scenario-based, high-level long-term view to 2050, and a more detailed,

medium-term view for the next 10-15 years aligned with the 2035 target for a decarbonised power sector.

A common suggestion involved reviewing and updating a strategic plan with 5-year update periods aligned to Carbon Budgets and more frequent, smaller ad-hoc updates driven by changing circumstances. Several stakeholders also noted the importance of aligning time horizons and review cycles with those of other plans or activities such as network planning processes or sectoral marine plans in Scotland.

Q6 - We think that there is a need for a Holistic Network Design that plans offshore transmission for the long-term as an integrated part of a transmission network, do you agree? Please explain your answer.

All stakeholders agreed with our proposals that holistic, centralised network planning should continue under a long-term regime. However, several stakeholders pointed out that it will be important to use lessons learnt from OTNR's Pathway to 2030 workstream and further adapt and improve the original approach so that it is suitable for the longer term.

Several respondents from the developer community emphasized that the HND approach should retain a level of flexibility to optimise individual sites, especially when faced with changing circumstances. There were also some comments suggesting that radial solutions should not be completely ruled out where they are most optimal considering the balance of economic, environmental and community impacts.

Q7 - If you agree, do you think a Holistic Network Design should also include onshore transmission?

An overwhelming majority of respondents thought that in the long term, the HND should continue to include onshore transmission. Several stakeholders noted the parallels between OTNR and ETNPR proposals in this area and pointed out the need for alignment between the programmes. Several respondents also noted the importance of clearly setting out how the HND interacts with existing onshore transmission system planning processes, which include the Networks Option Assessment, Future Energy Scenarios and Electricity Ten Year Statement.

Q8 - Who do you think is best placed to undertake a Holistic Network Design? Please explain your answer.

Most respondents thought that the Future System Operator (FSO) (or ESO until FSO is established) is best placed to undertake a HND in future. However, respondents also emphasized that the FSO should be collaborating closely with other key stakeholders: transmission owners, developers, The Crown Estate, Crown Estate Scotland and other Central Design Group members.

A small number of stakeholders additionally pointed out that interested parties should be allowed to develop and submit alternative design proposals for consideration and that this is difficult under the current approach.

Delivery Models

OTNR consultation proposals

We proposed a range of possible delivery models, corresponding to those set out in Ofgem's consultation on the Pathway to 2030¹⁵. The models assumed different options for:

- Who is best placed to undertake which activity in the process of delivering offshore transmission? and
- At what point competition can deliver the greatest consumer value?

We suggested that the risks should reside with those that are best able to manage them and that the appropriate incentives need to be in place to ensure timely and good quality delivery. We also suggested that the choice of delivery model(s) should be informed by what model will produce the required acceleration of offshore wind deployment, whilst minimising environmental impacts.

Summary of responses and government responses

Q9 – Which delivery model would provide the appropriate balance of incentives and cost savings?

Most stakeholders discounted model seven (the current approach) as it is not viable long-term and would not deliver the levels of coordination necessary for the expected

¹⁵ Ofgem (2021), *Consultation on Changes Intended to Bring About Greater Coordination in the Development of Offshore Energy Networks*, <https://www.ofgem.gov.uk/publications/consultation-changes-intended-bring-about-greater-coordination-development-offshore-energy-networks>

scale of deployment. There was no strong overall preference for a specific model, however there was an emerging preference for models with early competition (agnostic of the specific option from the table).

Several stakeholders pointed out that any delivery model introduced as part of OTNR's Pathway to 2030 might not be the right choice for a long-term approach. Whilst our 'clean slate approach' to choosing an enduring delivery model was welcomed, several respondents noted that at the same time there needs to be a smooth transition from any delivery model adopted under Pathway to 2030 and a phased approach. It was suggested that, at least initially, there should be a combination of models and a flexible approach.

A significant number of respondents felt that a form of developer-build model should continue to play a role in the near-term for two main reasons:

- For some sites, the radial approach will still be the most appropriate and recommended by holistic/centralised network design; and
- Developers have the most experience in developing and delivering transmission infrastructure. Even if a decision is made to move to a model where another party takes on these responsibilities, this will have to be a gradual change, to ensure a smooth transition and transfer or creation of required capabilities and expertise.

Several stakeholders proposed that a single approach for both onshore and offshore should be used, and existing policy work on onshore competition should be leveraged.

Several stakeholders proposed alternative models for consideration. These included: energy islands and new developer-led models e.g., model six with developers in the operations stage or third-party models.

A small number of respondents noted that the choice of delivery model depends on the solution developed as part of any future HND so will differ with each HND output.

Several stakeholders expressed preference for models with fewer handovers between different organisations (one or five), suggesting that they would perform better in retaining knowledge between stages and pose a lower delivery risk.

A small number of respondents suggested decoupling the delivery of transmission and generation.

Timing of detailed design and delivery of transmission

OTNR consultation proposals

The consultation noted that, if the entity that designs, develops, and delivers the transmission is separate from the entity developing the generation (i.e., transition to a different delivery model(s)), there are decisions to be made about whether the transmission is designed and delivered early or late in the process. We outlined the benefits and risks of both options:

Early – i.e., ahead of seabed leasing for generation:

Benefits: Increased assurance for developers, thus reducing the risk (and related costs) of taking on a commitment without the certainty that the transmission would be consented.

Risks:

- It would be particularly challenging to efficiently design the network with the uncertainty of whether and when transmission projects will reach a Final Investment Decision. This would increase the risk of underutilised transmission capacity (and associated consumer cost) if one or more generators do not ultimately come forward or come forward later;
- Such an approach would also likely require establishing and setting out upfront common technology standards to ensure that technological solutions used for the wind farm assets and transmission assets are compatible; and
- There would be significant timing challenges as the work to develop both the high-level and detailed designs would take some time and could extend the end-to-end process.

Late – i.e., once there is more certainty about the project progressing (for example, when generation has secured funding or is entering into construction contracts):

Benefits: Reduces the risk to consumers of underutilised transmission.

Risks: Increases the risk to generators of stranded assets if the transmission is delayed or not delivered.

Key themes from stakeholder responses

Q10 – At what stage should the detailed design and construction of transmission be conducted?

Many stakeholders responded that proposals need to be further defined to answer this question as, for example, it would depend on the delivery model chosen.

Nonetheless, several stakeholders noted the importance of commencing detailed design early whilst not starting construction too early i.e., timing the delivery of the transmission asset to the need, to minimise the risk of stranded generation assets.

High level future framework approach

OTNR consultation proposals

In the consultation we set out three possible broad approaches for an end-to-end future framework alongside their impacts on key policy areas, potential benefits, and challenges:

- **Approach 1 – Incremental change:** retains the current developer-led approach to the design and delivery of offshore transmission and introduces new incentives to encourage cooperation.
- **Approach 2a – Holistic Network Design and Delivery:** builds on the approach being developed under the Pathway to 2030 workstream and involves the ESO developing a network design to connect offshore generation that also takes account of onshore transmission requirements and reinforcements.
- **Approach 2b – Holistic Network Design with combined seabed lease and financial support:** in addition to the Holistic Network Design, this approach would combine the seabed lease auction with the allocation of government support into a single competitive process.

Key themes from stakeholder responses

Q11 - Do you have any views on the relative merits of these high-level approaches? 1. Incremental change; 2a. Holistic network design and delivery; 2b. Holistic network design with combined seabed lease and financial support

Most stakeholders did not feel that Approach 1 was suitable to deliver required levels of change in a long-term regime. Most respondents were supportive of pursuing Approach 2a.

Several stakeholders welcomed consideration of Approach 2b and emphasized its potential to streamline the deployment journey even further. However, some respondents also noted that implementing Approach 2b would entail significant policy change and uncertainty, meaning that it might not be a viable option for the first tranche of projects in the future framework, but rather a longer-term option.

PART 2

Recommendations

Part 2 of this publication provides the delivery recommendations and actions to key project partners to implement Future Framework changes.

The development of the following recommendations is the result of careful consideration of the consultation responses and feedback received through further stakeholder engagement. This includes internal policy development subgroups, bilateral conversations with consultation respondents and multilateral workshops with project partners and industry representatives to agree the recommendations. In addition to developing the recommendations we have also sought to define specific actions to take these forward. Project partners have confirmed their commitment to delivery of the Future Framework recommendations through a joint letter of support, published alongside this document.

Recommendation 1

DESNZ will work with project partners to develop options for a strategic approach for the deployment of offshore wind, interconnectors and multi-purpose interconnectors that evolves over time as roles and responsibilities change.

We recommend a more strategic approach with improved integration and coordination between the different parts of the end-to-end process for the development and delivery of offshore wind. The proposed actions below take account of the current ownership of different elements of the process by different organisations and the competences devolved to Scotland and Wales, with an understanding that this is likely to change in the future as the Future System Operator is established.

Recommendation 1 will be delivered through the following actions:

1a. DESNZ will work with Devolved Administrations to consider options for setting a clear long-term view of the volume of offshore wind and interconnectors, including options for where this responsibility may lie in future. This will need to consider the recommendations from the Electricity Networks Commissioner, and along with a holistic and improved approach to prioritising and protecting the marine environment that would allow seabed leasing to be undertaken in a more strategic way.

Responses to the consultation identified the need to establish a clear process for making more strategic decisions regarding the deployment of offshore wind. While we agree that having foresight of the volume and location of offshore wind would make it easier to plan and build the most efficient network, there are significant challenges with doing so.

There are several existing sources of information and modelling that could be used to inform an appropriate trajectory. These include modelling by the ESO to produce the Future Energy Scenarios¹⁶ or by the Climate Change Committee to define offshore wind deployment pathways set out in the Sixth Carbon Budget. DESNZ, The Crown Estate and Crown Estate Scotland also conducted a UK-wide 'Future Offshore Wind Scenarios' study to assess the different areas that could potentially accommodate future offshore wind capacity up to 2050. For interconnection, the ESO has provided analysis on the system need for, and potential impacts of, future interconnectors in different geographical regions.

DESNZ will progress options, considering any relevant recommendations made by the Electricity Networks Commissioner and in close collaboration with key project partners, many of which have existing capabilities and responsibilities in this space. This includes The Crown Estate, Crown Estate Scotland, Scottish Government (Energy and Marine Scotland Directorates), DEFRA, ESO, the Marine Management Organisation, Welsh Government and Natural Resources Wales. DESNZ has also recently committed to set out an ambition for interconnection beyond 2030 before spring 2024¹⁷ which will complement the existing ambition to realise at least 18GW of interconnection by 2030.

¹⁶ National Grid ESO (2022), *Future Energy Scenarios*, <https://www.nationalgrideso.com/future-energy/future-energy-scenarios>

¹⁷ DESNZ (2023) *Powering Up Britain: Energy Security Plan*: <https://www.gov.uk/government/publications/powering-up-britain/powering-up-britain-energy-security-plan#a-future-of-cheap-clean-and-british-energy-1>

In the longer-term there may be a role for the Future System Operator to take a wider view of deployment as it moves towards a whole system approach to network planning.

1b. The Electricity System Operator (ESO), The Crown Estate, Crown Estate Scotland and Marine Scotland will work together to incorporate network considerations in the seabed leasing processes.

The Holistic Network Design (HND) recommends a more coordinated network design for connecting offshore wind projects to 2030¹⁸. The HND follow-up exercise is underway to provide design recommendations for an additional 24GW of capacity. Consultation responses were supportive of continuing with a more strategic approach to network planning. The outputs of action 1a should allow network planning to take account of the overall ambition for offshore wind and consider the electricity transmission network earlier in the process.

The outcomes of The Crown Estate's Offshore Wind Leasing Round 4 and Crown Estate Scotland's ScotWind were used as inputs to the HND and HND follow-up exercise. In line with consultation responses, in future, we want network considerations to also inform deployment planning, so this approach will need to evolve. This could ensure that, once deployment areas are chosen, there is sufficient time to plan networks in advance and address any constraints in time for projects' connections.

Key project partners including the government, The Crown Estate, Crown Estate Scotland, Scottish Government (Energy and Marine Scotland Directorates), Transmission Owners, the ESO/Future System Operator, DEFRA and the Marine Management Organisation, will work together to consider ways in which this could be achieved while respecting the different approaches in Scotland and Wales.

As a step towards this, The Crown Estate is already working closely with ESO on its Celtic Sea floating offshore wind programme, collaborating on the development of the HND follow-up exercise. This activity has reinforced the interdependency between offshore wind leasing and transmission network design and has highlighted the importance of open and collaborative ways of working to support the development and delivery of coordinated grid solutions.

¹⁸ National Grid ESO (2022), *Pathway to 2030 HND*, <https://www.nationalgrideso.com/future-energy/the-pathway-2030-holistic-network-design>

1c. The ESO will work to deliver Centralised Strategic Network Planning, building on the Holistic Network Design. It is our expectation that the Future System Operator, once established, will take on responsibility for the CSNP.

Ofgem is leading the Electricity Transmission Network Planning Review (ETNPR)¹⁹, an ongoing programme of work that proposes ‘Centralised Strategic Network Planning’ (CSNP). This resulted in the decision on the centralised strategic network plan (CSNP) output for the FSO. This is expected to replace the HND approach and would take a GB-wide, holistic view to develop new, whole-system network planning arrangements across all of electricity transmission, including scope for interconnectors and multi-purpose interconnectors.

The HND approach balances deliverability, economic, environmental and community impact criteria and the recommended design to connect 23 GW will deliver an estimated overall net consumer saving of approximately £5.5 billion²⁰. The broader approach envisaged by CSNP has the potential to better consider cumulative impacts from electricity network infrastructure and will consider various options. This would support more anticipatory network build required in the future and ensure that system cost is included as part of overall considerations. Further change proposals and next steps are set out in the consultations^{21,22} and the decision on the initial finding of the ETNPR²³.

¹⁹ Ofgem (2021), *Consultation on the Initial Findings of our Electricity Transmission Network Planning Review*, <https://www.ofgem.gov.uk/publications/consultation-initial-findings-our-electricity-transmission-network-planning-review>

²⁰ National Grid ESO (2022) *The Pathway to 2030 Holistic Network Design*, <https://www.nationalgrideso.com/future-energy/pathway-2030-holistic-network-design>

²¹ Ofgem (2021), *Consultation on the Initial Findings of our Electricity Transmission Network Planning Review*, https://www.ofgem.gov.uk/sites/default/files/2021-11/Consultation_Electricity_Transmission_Network_Planning_Review_v2.pdf

²² Ofgem (2022) *Decision on the initial findings of our Electricity Transmission Network Planning Review* <https://www.ofgem.gov.uk/publications/decision-initial-findings-our-electricity-transmission-network-planning-review>

²³ Ofgem (2022), *Consultation on our Minded-to Decisions on the initial findings of our Electricity Transmission Network Planning Review* [Consultation on our Minded-to Decisions on the initial findings of our Electricity Transmission Network Planning Review | Ofgem](https://www.ofgem.gov.uk/publications/consultation-on-our-minded-to-decisions-on-the-initial-findings-of-our-electricity-transmission-network-planning-review)

1d. Conduct environmental assessments ahead of the designation of seabed leasing areas.

It is a legal requirement to undertake an environmental impact assessment on a Nationally Significant Infrastructure Project and to submit this as part of the application for planning consent. Earlier assessment of the environmental and social impacts of planned deployment and associated transmission, ahead of designating seabed leasing areas, would enable the cumulative impacts to be taken into account, including consideration of impacts from onshore networks. This will enable the cumulative impacts to be better avoided, mitigated or as a last resort, compensated for. Identified impacts would be addressed according to the mitigation hierarchy and, where environmental compensation is required for unavoidable impacts, this could be addressed strategically. Opportunities for environmental net gain could also be considered at an early stage. These upfront assessments would influence network and deployment planning.

We note that in Scotland, a plan-level Strategic Environmental Assessment (SEA), Habitats Regulations Assessment (HRA) and Socio-Economic Impact Assessment (SEIA) are completed ahead of seabed leasing for the generation assets. In England and Wales, The Crown Estate has committed to a revised approach to spatial design and HRA for its Celtic Sea Floating Offshore Wind leasing round^{24, 25}. The Crown Estate is seeking to accelerate deployment of floating offshore wind by bringing forward the plan-level HRA for offshore generating sites and zones for potential cable routes and is undertaking this simultaneously with the identification of Project Development Areas²⁶. The Crown Estate will also conduct engineering and environmental surveys in advance of consenting, with a view to being able to supply data to successful bidders to accelerate delivery of their projects²⁷. This will help identify key environmental issues earlier, reduce uncertainty and de-risk investment, minimise environmental risk and accelerate delivery timescales. In England, onshore components of offshore infrastructure, including the intertidal zone, will be subject to

²⁴ The Crown Estate (November 2021), *The Crown Estate Develops Proposals for Floating Wind in Celtic Sea, Outlining 4GW Opportunity*, <https://www.thecrownestate.co.uk/en-gb/media-and-insights/news/the-crown-estate-develops-proposals-for-floating-wind-in-celtic-sea-outlining-4gw-opportunity/>

²⁵ The Crown Estate will determine the best approach to Plan Level HRA based on the specific considerations of a leasing round.

²⁶ The Crown Estate (November 2021), *The Crown Estate updates developers on latest steps in the leasing process for floating wind in the Celtic Sea*, <https://www.thecrownestate.co.uk/en-gb/media-and-insights/news/the-crown-estate-develops-proposals-for-floating-wind-in-celtic-sea-outlining-4gw-opportunity/> <https://www.thecrownestate.co.uk/en-gb/media-and-insights/news/2022-the-crown-estate-updates-developers-on-latest-steps-in-the-leasing-process-for-floating-wind-in-the-celtic-sea/>

²⁷ The Crown Estate (2022), *Celtic Sea Floating Wind: December 2022 Update*, <https://www.thecrownestate.co.uk/en-gb/what-we-do/on-the-seabed/floating-offshore-wind/celtic-sea-floating-wind-december-2022-update/>

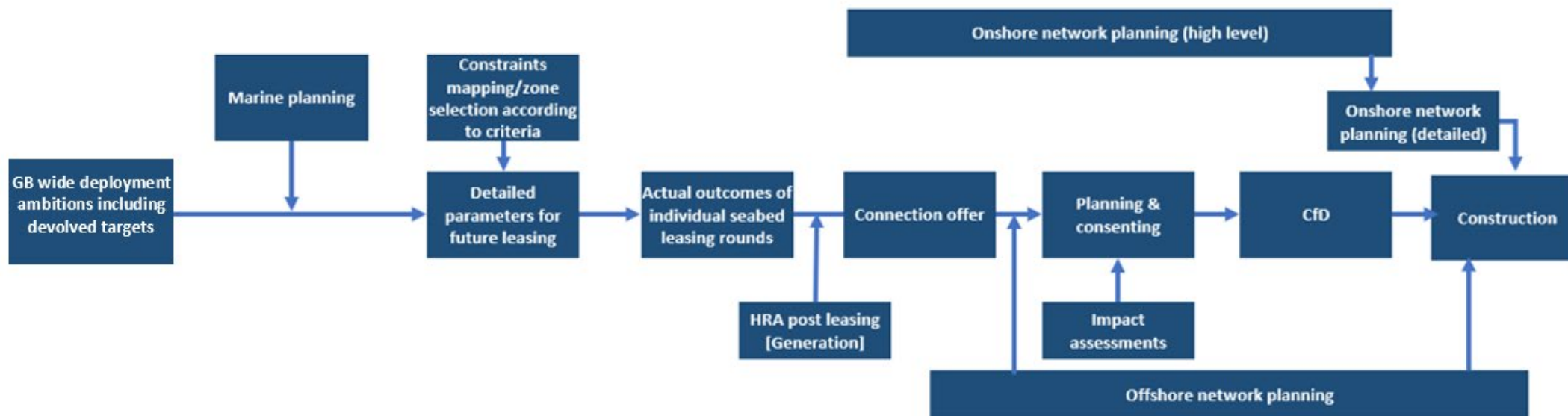
mandatory biodiversity net gain, expected to be implemented by November 2025. Work is ongoing to develop approaches through collaboration with relevant organisations including the Marine Management Organisation, Scottish Government (Energy and Marine Scotland Directorates), Natural Resources Wales and The Crown Estate.

Illustrative process charts

The flow charts below set out the current approach to deployment and what the process could look like in future once a strategic approach is implemented.

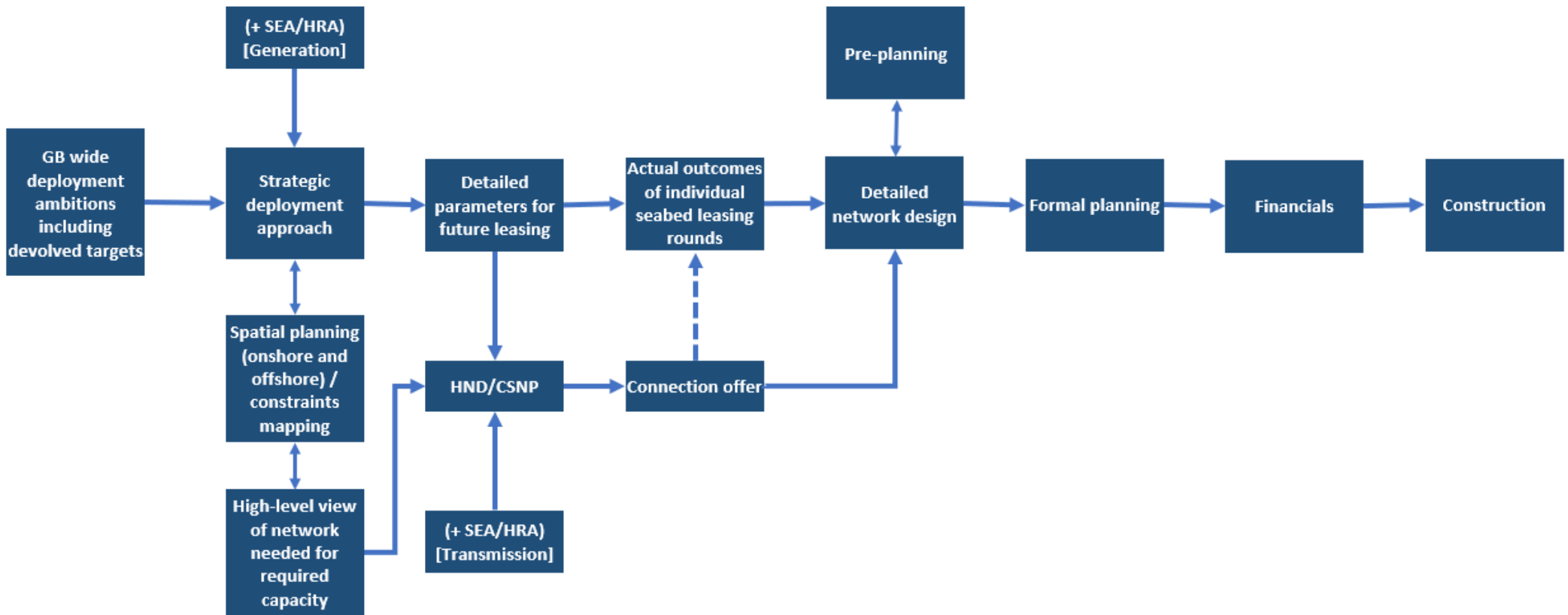
Current approach to the deployment and delivery of offshore wind

This is a linear process, that has limited interactions between stages which has led to issues being played out later in the development cycle and causing delays to deployment. This approach is not optimal to achieve the levels of coordination required to meet Government deployment and decarbonisation commitments.



Potential Future Framework approach to the deployment and delivery of offshore wind

The illustrative changes on this diagram represent a more upfront, integrated approach which is characterised by coordination between different stages. The proposed process takes account of network & environmental considerations ahead of seabed leasing with the intention of smoothing and speeding up the process for deployment.



Some of the proposed changes are already underway, reflecting an evolution of the framework over time. We expect that this iterative approach to change will continue and it is likely that there will continue to be incremental changes to elements of the process over time as we move closer to a strategic whole-system approach.

Recommendation 2

Adopt delivery models that maximise efficiency in terms of cost and risk.

Recommendation 2 will be delivered through the following actions:

2a. DESNZ will work with Ofgem to consider the appropriate delivery model(s) to maximise consumer benefits from competition while giving the right incentives for innovation and efficient deployment of transmission.

The current 'very late competition' approach for offshore transmission works well where the design and technology choice for a transmission asset is relatively straightforward, and cheaper finance can be accessed on a lower risk asset. Early competition is more suited to complex design challenges or difficult technology choices where it can leverage innovation and cost savings in design and construction of solutions to needs on the transmission system. Transitioning from individually designed radial connections to coordinated network infrastructure therefore means that the current approach may no longer be suitable.

Further work is needed to confirm that the right incentives and guarantees are in place. This is necessary to ensure the party that delivers the connection, does so in a timely manner, at good value to the consumer, adhering to quality standards and considering environmental impacts.

In some circumstances, holistic/strategic network design may indicate that a radial connection is the optimal approach. For example, smaller scale, isolated projects that are close to the shore. In such cases, the generator-build delivery model set out in the existing offshore transmission owner (OFTO) tender regime may continue to be the most appropriate approach.

Policy development in this area would be progressed by Ofgem, building on existing work to date to implement delivery model(s) for Pathway to 2030.

2b. Ofgem and DESNZ should give consideration to aligning the onshore and offshore competition regimes as far as possible.

The Energy Security Bill, introduced to Parliament in July 2022, sets out the legislative measure that the Government is proposing to enable competition in onshore electricity networks. This legislation builds on the existing OFTO regime, and includes the ability for different models of competition, including early model competition, to be run by a Designated Body. More details on how this policy is expected to be implemented in practice are included in the Government Response to the Onshore Competition consultation, published in August 2022.²⁸

Introducing early competition offshore would require consideration of its application to other elements of the OFTO approach – for example, consideration of how Tender Revenue Streams could work in such a model. It is important to note that even if we align the timing of competition, there is the potential for some differences to persist in the detailed approach for onshore and offshore transmission. For example, offshore transmission faces some different risks which could justify a different treatment through the approach to competition.

Recommendation 3

Consider the timing of transmission design and delivery.

Recommendation 3 will be delivered through the following action:

3a. Ofgem should undertake further analysis on the optimum timing of detailed design and delivery of transmission infrastructure to determine changes required for a future framework delivery model.

²⁸ BEIS (2021), *Consultation Outcome: Competition in Onshore Electricity Networks*, <https://www.gov.uk/government/consultations/competition-in-onshore-electricity-networks>

Under the current approach, before the implementation of the HND, the design and delivery of offshore transmission takes place in parallel with that of the generation asset. This is consistent with the developer-build model as the two assets are effectively developed as a single project and the delivery risks are managed by the same entity.

In the future, responsibility for design and delivery of transmission could rest with a different party than for the generating asset creating an opportunity to decouple the delivery timings for transmission and generation. There could be scope for further alignment of onshore and offshore transmission infrastructure. The approach being developed as part of Recommendation 1 should give more foresight to the location, capacity and timing of generation, which would allow earlier design and delivery of transmission at a lower risk than the current approach would allow. Starting the delivery of transmission earlier should speed up the time between seabed leasing and completion of generation assets resulting in faster deployment and reduced overall development costs.

Although the level of ambition from the sector and the integrated approach will reduce the risks associated with anticipatory investment overall, it may be that different timings would be proposed for different pieces of infrastructure, depending on the level of certainty of their need. There are obvious interactions with the delivery model that will need to be considered.

Governance, roles and responsibilities

Delivering these recommendations will involve working across a range of organisations with differing powers, roles, and responsibilities. In particular, spatial planning and environmental consenting are devolved to the Scottish and Welsh Governments and The Crown Estate Scotland has responsibility for leasing the seabed in Scotland. An overarching coordination function will be required to oversee delivery of recommendations by multiple project partners in line with their current remit, as well as provide a platform for discussion, join-up and accountability. In line with consultation feedback, the government will work with the Scottish and Welsh Governments and the project partners to develop necessary arrangements and agree roles and responsibilities.

Next Steps

The recommendations set out in this document are intended to apply across Great Britain, taking account of devolved powers. We consider that with sufficient coordination, the same end goal can be achieved in Scotland and Wales, even if delivered by different bodies and through different processes. DESNZ will convene project partners to monitor implementation progress against the actions in this document. Appropriate representation from the Scottish and Welsh Governments in the monitoring forum will be key to achieving this.

In the short- to medium-term, we propose that **project partners are responsible for delivery against the recommendations in line with their current remit**, while recognising that this may change in future to reflect the changes in the framework. DESNZ will set up a forum for coordination between the project partners to monitor delivery and ensure coordinated and aligned progress.

In line with the scope of the OTNR, **the recommendations are focused on offshore wind and associated transmission infrastructure, interconnectors as well as opportunities for multi-purpose interconnectors.** However, this does not preclude taking a more whole-system approach²⁹ in the longer term – and many of our recommendations once implemented will enable other technologies and system impacts to be better considered earlier in the process.

Over time, the recommended strategic **approach could be extended to take a more whole-system view**, accounting for other renewable technologies and demand to achieve further synergies. However, it is important that a **transitional approach to change is taken to maintain the pace of deployment.** As a result, our recommendations focus on making immediate improvements for future projects. There are other ongoing programmes of change that already take a wider system view, such as Ofgem's Electricity Transmission Network Planning Review (ETNPR) or the government's Marine Spatial Prioritisation work. We intend to use these as delivery vehicles wherever opportunity for alignment arises.

²⁹ E.g. accounting for demand, other types of renewable generation or marine activity

Annex A – Interactions

Programme	Lead organisation involved	Description of activity and interaction with OTNR Future Framework
Contracts for Difference (CfD)	DESNZ	<p>The CfD scheme is the government’s main mechanism for supporting new the deployment of low-carbon renewable electricity generation projects in Great Britain. Looking ahead, as more renewables are added to the system, we will continue to consider how the CfD scheme could evolve over the longer term to ensure it reflects the impact of renewables on the wider system, which includes reviewing how the CfD scheme interacts with the OTNR.</p>
Electricity Transmission Network Planning Review (ETNPR)	Ofgem, ESO	<p>The ETNPR is aimed at ensuring electricity transmission network planning can efficiently support the delivery of Net Zero at lowest cost to consumers. The stated objectives for designing efficient electricity transmission network planning arrangements include:</p> <ol style="list-style-type: none"> 1. Proactive identification and progression of low regret 'strategic investments' in the electricity transmission network; 2. Facilitating strategic planning of the energy system; 3. Ensuring that the onshore and offshore electricity transmission networks, including potentially interconnection, are planned holistically; and 4. Providing viable routes for fair and transparent assessment and delivery of innovative and/or non-network solutions developed by third parties. <p>To deliver these objectives, in the longer term ETNPR propose to introduce a new 'Centralised Strategic Network Planning' model and process. The Holistic Network Design under OTNR Pathway to 2030 workstream is forming transitional arrangements towards introduction of a 'Centralised Strategic Network Planning' model.</p> <p>For info: Ofgem (2022), <i>Consultation on Our Minded-to Decision on the Initial Findings of Our Electricity Transmission Network Planning Review</i>, https://www.ofgem.gov.uk/publications/consultation-our-</p>

Programme	Lead organisation involved	Description of activity and interaction with OTNR Future Framework
		minded-decisions-initial-findings-our-electricity-transmission-network-planning-review
Future System Operator (FSO)	DESNZ, Ofgem, ESO	<p>Government has introduced legislation, as part of the 2022 Energy Bill, to establish a new, publicly owned Future System Operator (referred to as the Independent System Operator and Planner or ISOP in legislation). FSO will be as an expert, impartial body with responsibilities across both the electricity and gas systems, to drive progress towards our decarbonisation targets while maintaining energy security and minimising costs for consumers. Government is working closely with Ofgem and the parties involved (including National Grid plc and the Electricity System Operator) to ensure a smooth transition. The FSO could be established by, or in, 2024 subject to timings of the Energy Bill and progress by parties involved.</p> <p>For info: DESNZ (2022), <i>Consultation Outcome: Joint Statement on the Future System Operator</i>, https://www.gov.uk/government/consultations/proposals-for-a-future-system-operator-role/outcome/joint-statement-on-the-future-system-operator</p>
Marine Spatial Prioritisation (MSPri)	DEFRA	<p>The Marine Spatial Prioritisation programme aims to build our understanding on future demands, optimise use of our seas, maximise colocation between all seas uses and balance the needs of industries with restoring and protecting the marine environment.</p>
Offshore Wind Acceleration Taskforce	DESNZ	<p>OWAT brings together industry, government, and regulators to co-ordinate their efforts and drive acceleration of offshore wind to support the UK in achieving its deployment and decarbonisation targets.</p> <p>The Taskforce, is co-chaired by UK Offshore Wind Champion (Tim Pick) and the Minister for Climate.</p>
Offshore Wind Enabling Actions	DEFRA	<p>This programme is designed to explore strategic solutions to mitigate the impact of offshore wind on the marine environment.</p>

Programme	Lead organisation involved	Description of activity and interaction with OTNR Future Framework
Programme (OWEAP)		<p>In April 2022, the British Energy Security Strategy committed to an Offshore Wind Environmental Improvement Package, through which OWEAP will be delivering several measures. These include reforms to Habitat Regulations Assessments, a Marine Recovery Fund and Offshore Wind Environmental Standards. Each measure will contribute to the sustainable deployment of offshore wind, ensuring we meet our climate change commitments whilst providing greater energy security for the UK and a healthier marine environment.</p>
Offshore Wind Evidence and Change Programme (OWEC)	The Crown Estate, Crown Estate Scotland	<p>The Offshore Wind Evidence and Change Programme is reviewing legal and regulatory challenges to strategic approaches for the marine environment, amongst other things.</p> <p>OWEC will interact with Future Framework by ensuring alignment to gather intelligence and avoid duplicated effort.</p>
Onshore competition	Ofgem, DESNZ, ESO	<p>Competition in the design and delivery of energy networks is a central aspect of Ofgem’s RII0-2 price controls. Competition in the build, ownership and operation of network solutions has a key role to play in driving innovative solutions and efficient delivery that can help us meet our decarbonisation targets at the lowest cost to consumers.</p> <p>Ofgem determined that it is in consumer interest for the ESO to complete its development of an early competition model that can be applied to the electricity transmission sector.</p> <p>Early competition refers to a competition to determine a solution to a need on the network that is run before detailed design of the preferred solution has been carried out. It encourages additional innovation in the design, delivery, and operation of transmission infrastructure. This should help ensure that solutions can be delivered quicker and at lower cost.</p> <p>For info: DESNZ (2022), <i>Consultation Outcome: Competition in Onshore Electricity Networks</i>,</p>

Programme	Lead organisation involved	Description of activity and interaction with OTNR Future Framework
		<p>https://www.gov.uk/government/consultations/competition-in-onshore-electricity-networks</p> <p>Ofgem (2022), <i>Consultation on Accelerating Onshore Electricity Transmission Investment</i>, https://www.ofgem.gov.uk/publications/consultation-accelerating-onshore-electricity-transmission-investment</p>
Review of Electricity Market Arrangements (REMA)	DESNZ	The government made a commitment in the British Energy Security Strategy to undertake a comprehensive review of electricity market design, to ensure that it is fit for the purpose of maintaining energy security and affordability for consumers as the electricity sector decarbonises.
Scottish Government Energy Strategy and Just Transition Plan	Scottish Government	<p>Scotland’s Energy Strategy and Just Transition Plan will provide a whole-system vision and route map for Scotland’s future energy system. It will look at how individual parts of the energy system – energy generation, distribution, and demand – fit together and interact with one another.</p> <p>The evidence base developed as part of the energy modelling exercise could be used to inform more strategic approaches to offshore wind deployment and network planning under OTNR or future whole-system planning approaches.</p>
Welsh Government Future Energy Grids for Wales (FEW) project		<p>Welsh Government is working with the Energy Systems Catapult on a project that considers the future grid requirements in Wales to accommodate a Net Zero energy system. It considers electricity and gas distribution and transmission.</p> <p>For info: Catapult Energy Systems, <i>Welsh Future Energy Grid for Net Zero</i>, https://es.catapult.org.uk/project/welsh-future-energy-grid-for-net-zero/</p>

Programme	Lead organisation involved	Description of activity and interaction with OTNR Future Framework
Welsh Government Strategic Resource Areas (SRAs)		<p>Welsh Government are initiating work to map potential Strategic Resource Areas. An SRA is a tool to safeguard areas of natural resource. They will help to:</p> <ol style="list-style-type: none"> 1. Ensure a sector’s interests are taken into account by others; 2. Support the management of sector-to-sector interactions; and 3. Provide a focus for further strategic planning. <p>For info: Welsh Government (2021), <i>Strategic Resource Areas: Guidance</i>, https://gov.wales/strategic-resource-areas-guidance</p>

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