



Sheringham Shoal and Dudgeon Offshore Wind Farm Extension Projects

Project Vision


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equinor

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This document sets out
the background and the Vision,
Objectives and Design Objectives
of the Sheringham Shoal Offshore
Windfarm Extension (SEP) and
Dudgeon Offshore Windfarm
Extension (DEP), together
known as the Project.

Background

Owners and Undertakers

The undertaker of the Sheringham Shoal Extension Project will be Scira Extension Limited (SEL), which is registered in England and is a wholly owned subsidiary of the Equinor New Energy Limited.

The undertaker of the Dudgeon Extension Project will be Dudgeon Extension Limited (DEL), which is registered in England and is jointly owned by Equinor New Energy Limited (Equinor), Masdar Offshore Wind UK Limited and CR Power (UK) Limited.

The partners forming SEL and DEL are also owners of the existing Sheringham Shoal and Dudgeon Wind farms respectively, and are united by shared commitments to sustainably addressing climate change, developing offshore wind energy, technical innovation and investment in the Project in Norfolk and the East of England where it is located. SEL and DEL are both represented by Equinor and subscribe to the Vision and Objectives and Design Objectives that it has established for the Project.

Sheringham Shoal and Dudgeon Offshore Windfarms and their Extensions

Equinor is a long-term partner for Norfolk and has been an active member of the community for over a decade through the Sheringham Shoal and Dudgeon wind farms it operates off the Norfolk coast.

Currently, the combined output of Sheringham Shoal and Dudgeon wind farms is sufficient to power around 710,000 UK homes. The proposed extensions will double the capacity by 785,000 additional UK homes, making an important contribution to the UK's decarbonisation goals.







Currently, about 100 people are employed full time by the wind farms operated out of Great Yarmouth. The operation of the Project will add opportunities for services from local industry and a further 55 full time employees.

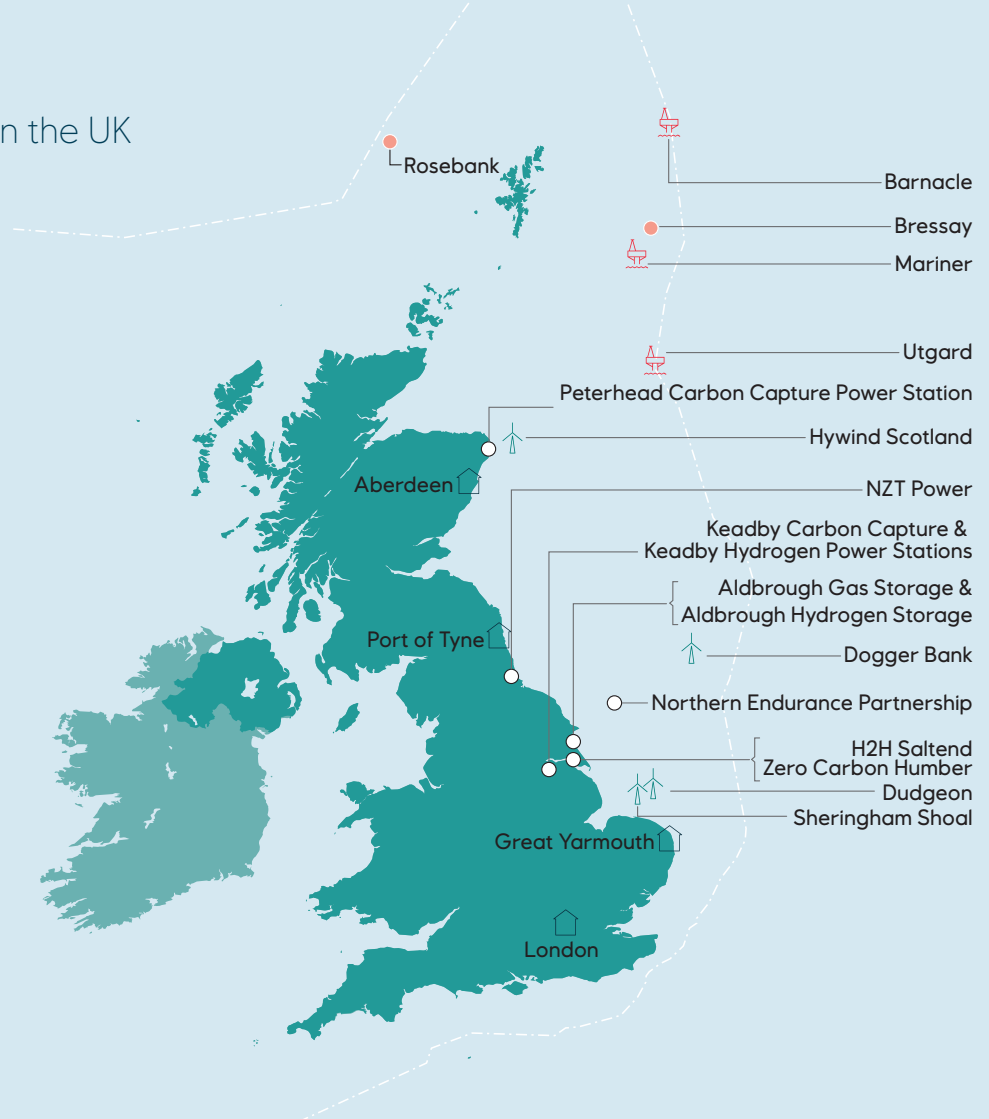
Both existing wind farms have established community funds which have, in total, awarded well over £1.4 million to projects in Norfolk. The funds were set up to provide grants to Norfolk community groups, including schools and charities, for projects that focus on renewable energy, marine environment, safety, sustainability, or education within the project areas.

Equinor is the Applicant for both SEP and DEP, ensuring a coordinated application. Equinor will also be the developer.

The Applicant - Equinor in the UK

Equinor's broad energy portfolio in the UK

-  Producing field
-  Field development
-  Wind farm
-  Decarbonisation initiatives
-  Gas storage
-  Offices



At a glance



38+

year presence
in the UK



650+

UK employees



700

suppliers
working for
Equinor in the UK



£5_{bn}

in energy sales to the
UK each year



29%

of UK gas demand
met by Equinor



15%

of UK oil demand
met by Equinor



5

million homes
powered by our
UK wind farms by 2030

All figures are correct as of August 2022

Equinor is the UK's leading energy provider, supplying natural gas, oil and electricity to the country. Equinor has been operating in the UK for nearly 40 years, and currently supports the UK economy by investing billions in crucial energy infrastructure, working with over 700 suppliers across the country. Equinor believes the energy transition requires investment, innovation and a broad mix of energy sources, to assure reliable, affordable, and sustainable energy.

Equinor's strategy is now to accelerate its transition. By 2030, Equinor aims to have installed a net capacity of renewable energy of up to 16 GW, and aims to reach net zero emissions globally by 2050.

Equinor's strategic pillars are;
always safe - high value - low carbon.

Vision, Objectives and Design Frame work



Project Vision

The Sheringham Shoal and Dudgeon Offshore Wind Farm Extension Project will double the generation capacity of the existing assets by 2030, making a meaningful contribution to the UK's offshore wind and decarbonisation targets.

As a result of our long-term presence in Norfolk, Equinor has identified the need to take a coordinated approach to the development of the two projects, to minimise impacts on local communities and to maximise benefits for the area. As a result of this coordinated planning, the Project has proposed utilising a shared transmission asset through Norfolk, and has been selected as a Pathfinder project in coordinated offshore transmission development under the UK Government's Offshore Transmission Network Review. The design of the shared transmission asset will enhance the environment and create lasting value for local people and communities in Norfolk.



Project Objectives

	Objective	Basis for the Objective
1	<p>Decarbonisation: To generate low carbon electricity from an offshore wind farm by 2030 in support of the UK target to generate 50GW of offshore wind power by 2030 and associated carbon reduction targets</p>	<p>The UK Government has committed to reducing its greenhouse gas emissions by at least 100% based on 1990 levels (net zero) by 2050. This commitment is made through the Climate Change Act 2008 (2050 Target Amendment) Order 2019 which was brought into force in June 2019 in response to recommendations by the UK independent Climate Change Committee (CCC, 2019a). The CCC states that 75GW of offshore wind could be required to reach net zero by 2050 (CCC, 2019b). Legislation has committed the UK to achieving Net Zero emissions by 2050.</p> <p>Part 3 of NPS EN-1 (DECC 2011) states (3.3.15) <i>“In order to secure energy supplies that enable us to meet our obligations for 2050, there is an urgent need for new (and particularly low carbon) energy NSIPs to be brought forward as soon as possible, and certainly in the next 10 to 15 years, given the crucial role of electricity as the UK decarbonises its energy sector”.</i></p> <p>The British Energy Security Strategy (BEIS 17th April 2022) commits the UK to an ambition to deliver “50GW by 2030”. Paragraph 3.3.21 of draft NPS EN-1 (BEIS September 2021) already committed the UK to “an ambitious target to have 40GW of offshore wind capacity (including 1GW floating wind) by 2030” as a key component in delivering energy security and net zero by 2050. This is likely to be amended in the final NPS to align with the British Energy Security Strategy (BEIS, 2022).</p> <p>SEP and DEP will contribute to meeting UK Government objectives of delivering sustainable development to enable decarbonisation.</p>

	Objective	Basis for the Objective
2	<p>Security of supply: To export electricity to the UK National Grid to support UK commitments for offshore wind generation and security of supply</p>	<p>Part 2 of NPS EN-1 notes that <i>“it is critical that the UK continues to have secure and reliable supplies of electricity as we make the transition to a low carbon economy”</i> and acknowledges the need for a diverse mix of technologies to ensure security of supply. This is reiterated in Part 2 of the draft NPS EN-1 which states <i>“Given the vital role of energy to economic prosperity and social well-being, it is important that our supply of energy remains secure, reliable and affordable.”</i></p> <p>This is reinforced by the British Energy Security Strategy (BEIS, 2022), one of whose key purposes is to improve security from diverse sources of energy, with offshore wind playing a leading role.</p> <p>Paragraph 3.4.3 of NPS EN-1 states <i>“offshore wind is expected to provide the largest single contribution towards the 2020 renewable energy generation targets”</i>.</p>

	Objective	Basis for the Objective
3	<p>Optimisation: To coordinate and optimise generation and export capacity within the constraints of available sites and onshore transmission infrastructure whilst delivering project skills, employment and investment benefits in the Norfolk area.</p>	<p>The 2017 Extension projects, which include SEP and DEP, were identified by TCE to provide an intermediate process between Rounds 3 and 4 to help achieve the urgent need for renewable energy and recognising that extensions to existing offshore wind farms are a proven way of efficiently developing more offshore generating capacity (The Crown Estate, undated).</p> <p>The Government's Offshore Transmission Network Review begun in August 2020, under which SEP and DEP are a Pathfinder Project, had the objective <i>"To ensure that the transmission connections for offshore wind generation are delivered in the most appropriate way, considering the increased ambition for offshore wind to achieve net zero. This will be done with a view to finding the appropriate balance between environmental, social and economic costs"</i>.</p> <p>Workstreams include the need to:</p> <ul style="list-style-type: none"> ▪ <i>identify and implement changes to the existing regime to facilitate coordination in the short-medium term</i> ▪ <i>assess the feasibility and costs/benefits of centrally delivered, enabling infrastructure to facilitate the connection of increased levels of offshore wind by 2030</i> ▪ <i>explore early opportunities for coordination through pathfinder projects, considering regulatory flexibility to allow developers to test innovative approaches</i> ▪ <i>focus primarily on projects expected to connect to the onshore network after 2025</i>

Objective	Basis for the Objective
	<p>The long-term workstream will seek to:</p> <ul style="list-style-type: none"> ▪ <i>conduct a holistic review of the current offshore transmission regime and design and implement a new enduring regime that enables and incentivises coordination while seeking to minimise environmental, social, and economic costs</i> ▪ <i>consider the role of multi-purpose hybrid interconnectors in meeting net zero through combining offshore wind connections with links to neighbouring markets and how the enduring offshore transmission regime can support the delivery of such projects</i> ▪ <i>focus on projects expected to connect to the onshore network after 2030</i> <p>These Review workstreams find support in the Energy White Paper “Powering our Net Zero Future” of December 2020, one policy of which is “To minimise the impact on local communities, we will implement a more efficient approach to connecting offshore generation to the mainland grid”.</p> <p>Under East Inshore and East Offshore Marine Plans (EIEOMP - DEFRA 2014) Objective 2 is: “To support activities that create employment at all skill levels, taking account of the spatial and other requirements of activities in the East marine plan areas”, whilst EIEOMP Policy EC2 is that “Proposals that provide additional employment benefits should be supported, particularly where these benefits have the potential to meet employment needs in localities close to the marine plan areas”.</p> <p>NPS EN-1 policy is that the Secretary of State should take into account (4.1.3) “potential benefits including its contribution to meeting the need for energy infrastructure, job creation and any long-term or wider benefits” which may be (4.1.4) “at national, regional and local levels” and that (5.12.8) “The [SoS] should consider any relevant positive provisions the developer has made or is proposing to make to mitigate impacts (for example through planning obligations) and any legacy benefits that may arise as well as any options for phasing development in relation to the socio-economic impacts”.</p>

Design Objectives

Overarching Energy National Policy Statement EN-1 establishes the criteria for good design for energy infrastructure in its statement that (paragraph 4.5.1) "Applying 'good design' to energy projects should produce sustainable infrastructure sensitive to place, efficient in the use of natural resources and energy used in their construction and operation, matched by an appearance that demonstrates good aesthetic as far as possible" and that (paragraph 4.5.2) "Good design is also a means by which many policy objectives in the NPS can be met, for example the impact sections show how good design, in terms of siting and use of appropriate technologies can help mitigate adverse impacts such as noise". The Statement requires the Secretary of State (paragraph 4.5.3) "to be satisfied that energy infrastructure developments are sustainable and, having regard to regulatory and other constraints, are as attractive, durable and adaptable (including

taking account of natural hazards such as flooding) as they can be. In so doing, the [SoS] should satisfy itself that the applicant has taken into account both functionality (including fitness for purpose and sustainability) and aesthetics (including its contribution to the quality of the area in which it would be located) as far as possible".

The National Infrastructure Commission (NIC) provide expert impartial advice to Government on major infrastructure projects. The NIC's Design Group has identified four principles to guide the planning and delivery of major infrastructure projects: **Climate**, **People**, **Places** and **Value**. These four principles have been used to develop design objectives for SEP and DEP. A fifth objective, **Safety**, has also been added to reflect Equinor's commitment to providing a safe and secure environment for everyone working at our facilities and job sites.

These objectives will ensure the project fits sensitively into the local context, mitigating and providing enhancements to community and environment where possible whilst achieving the requirements of energy production to help meet growing demand for low carbon energy.



Safety

- Always be safe and committed to preventing harm to people, to the environment and the communities we are a part of and comply with regulatory requirements in the construction, operation and decommissioning of the projects

Climate

- Maximise generation capacity within constraints to positively contribute to the UK energy transition and net-zero target by 2050
- Prioritise sustainable resource management and techniques and minimise carbon emissions throughout the project lifecycle
- Design for resilience and adaptation to future climate change

People

- Behave as a considerate neighbour through both construction and operation

- Engage openly, transparently and meaningfully with stakeholders taking their feedback into account and making use of local knowledge to improve our projects
- Be proactive and collaborative about developing local skills, jobs and employment opportunities throughout construction and operation of the wind farms

Value

- Recognising the advancing nature of technology, coordinate project elements and their construction aim to serve multiple needs to maximise efficiency, and
- Foster innovation and extend supply chain to leave a lasting legacy value for Norfolk and the UK

Place

- Protect the amenity of our neighbours and local communities and where possible enhance the environment and green infrastructure including

protecting biodiversity and developing measures aiming to deliver Biodiversity Net Gain

- Respond to the distinctive and unique character of the local landscape / seascape, including the Norfolk Coast AONB and views out to sea
- Recognise and respect the history and settings of local historic and cultural assets

The project objectives and design objectives have set the framework for the development of SEP and DEP, and under which the projects will continue to evolve through detailed design work into construction and operation. More specific layout commitments and design principles have been considered for SEP and DEP, and these will guide the design of the onshore and offshore infrastructure for the projects.



Offshore Layout Commitments

In the offshore environment the following Offshore Layout Commitments will take precedence over the Project's Design Objectives set out in this document.

1. The project will undertake a thorough appraisal of the potential for two consistent lines of orientation. Should two consistent lines not be possible, as a minimum the position of surface structures shall be arranged in straight lines with at least one consistent line of orientation with the exact locations to be determined with consideration of micro siting allowances agreed in consultation with the MCA (see Commitment 4). The spacing between these straight lines shall comply with MGN 654 (i.e., SAR lanes will be at least 500m in width tip to tip).
2. Where practically possible, the position of surface structures shall be aligned with existing lines of orientation of the nearest operational wind farm. Otherwise, the position of surface structures will be arranged as stated in commitment 1 with the modification that a minimum spacing of 1 nautical mile tip to tip will be maintained between the turbines of the nearest operational wind farm and the turbines of SEP and DEP.
3. The position of all structures along the perimeter will be arranged such to aid visual navigation and avoid outliers as far as is practicable within the shape of the Red Line Boundaries. They will be arranged in straight lines along the perimeter where practically possible.
4. Tolerance of ± 150 metres (inclusive of a 50m micro siting value in any direction) may be used in agreement with the MCA and will avoid placement of structures which impact on minimum SAR Access Lanes widths (i.e., any tolerance / micro siting applied will not reduce SAR lanes below 500m minimum in width) or result in dangerously protruding structures.



Onshore Design principles

The following onshore design principles have been adopted during the design process in accordance with the Project Objectives.

- 1. Coordinated Development:** the intention to coordinate the development of SEP and DEP as far as possible with the preferred option of developing the integrated electrical infrastructure system (providing transmission infrastructure which serves both of the wind farms) which would be constructed concurrently. This benefits the planning and construction of the electrical infrastructure system, is likely to reduce overall levels of environmental impact and disruption, and helps to respond to any concerns regarding the lack of a holistic approach to offshore wind development.
- 2. Underground cables:** onshore cables will be buried to reduce the need for permanent above ground infrastructure, thus avoiding the visual intrusion of new pylons and overhead cables during the operational phase.
- 3. Avoidance of sensitive features:** cable routing has been designed to avoid sensitive features including settlements, landscape and habitat features (including designated nature conservation sites), and designated landscapes, such as NNHC.
- 4. Trenchless crossings:** trenchless crossing will be utilised to minimise disturbance to above ground features where it is not possible to avoid them.
- 5. Reduced working widths:** reduced work widths will be adopted to minimise disturbance to above ground features where trenchless crossings are not used.
- 6. Landscape restoration:** where landscape features have been removed, they will be restored wherever possible and the impact mitigated.
- 7. Ecological enhancement:** design proposals will seek to deliver a biodiversity net gain using the current Defra Metric. Compensation and enhancements which will achieve net gains for biodiversity will include reinstating habitats such as trees, hedgerows and grasslands where these are impacted during construction, infill planting of existing gaps in hedgerows and planting of trees and shrubs in suitable locations within the DCO boundary (subject to landowner agreements).

The Onshore Design and Access Statement and Offshore Design Statement documents present further detail relating to the design process for SEP and DEP.





