

Integrating major expansion of the offshore wind system – challenges of transformation





Dating back more than 260 years,
The Crown Estate is a unique
business with a diverse portfolio
that stretches across England,
Wales and
Northern Ireland



Established by The Crown Estate Act of 1961

As an independent commercial business with accountability to Parliament.



Return our net revenue profit to the Treasury

For the benefit of the nation's finances, with £3bn generated in the last 10 years.



Active owners and managers of land and seabed

We are one of the UK's largest landowners, with some of the nation's most remarkable places and spaces. We seek to leverage our scale and convening power to make a meaningful difference.



Guided by a compelling purpose

To create lasting and shared prosperity for the nation



Delivering an ambitious strategy

Guided by our purpose and informed by major trends impacting our business, we seek to create broad financial, environmental and social value for our stakeholders, customers and the nation.

Creating lasting and shared prosperity for the nation...



Be a leader in supporting the UK towards a net zero carbon future



Help create thriving communities and renew urban centres in London and across the UK



Take a leading role in stewarding the UK's natural environment and biodiversity

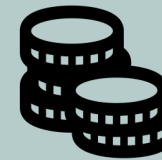
Within the **marine environment**, we seek to help the country optimise its economic, environmental and social potential, taking action in three distinct areas to help address the strategic challenges this presents



Building data & evidence



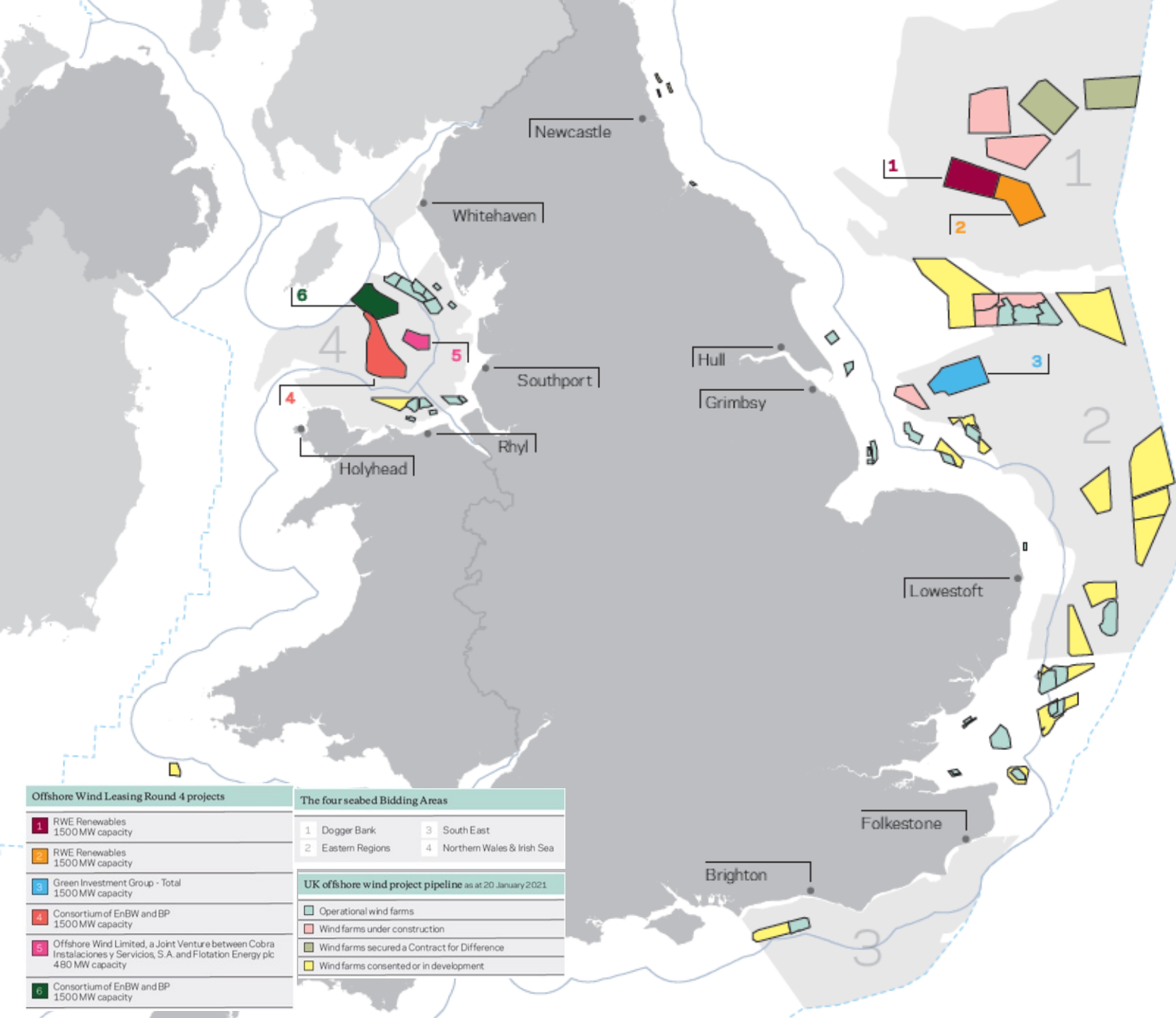
Develop new leasing and participation models



Investing to accelerate development

UK Offshore Wind Development Pipeline

June 2023



Offshore Wind Leasing Round 4 projects	
1	RWE Renewables 1500 MW capacity
2	RWE Renewables 1500 MW capacity
3	Green Investment Group - Total 1500 MW capacity
4	Consortium of EnBW and BP 1500 MW capacity
5	Offshore Wind Limited, a Joint Venture between Cobra Instalaciones y Servicios, S.A. and Flotation Energy plc 480 MW capacity
6	Consortium of EnBW and BP 1500 MW capacity

The four seabed Bidding Areas			
1	Dogger Bank	3	South East
2	Eastern Regions	4	Northern Wales & Irish Sea

UK offshore wind project pipeline as at 20 January 2021	
	Operational wind farms
	Wind farms under construction
	Wind farms secured a Contract for Difference
	Wind farms consented or in development

2030 Policy ambition (50 GW)
British Energy Security Strategy, April 2022

14 GW
FULLY COMMISSIONED

15 GW
COMMITTED*

50 GW
UNDER DEVELOPMENT/
PRE-PLANNING

10 GW
FUTURE LEASING
POTENTIAL
(Floating Wind Test &
Demo, Celtic Sea
Leasing and INTOG)

Up to
51 GW
FURTHER CAPACITY
REQUIRED TO MEET
2050 'HIGH' TARGET

The seabed holds vast further potential

The scale of change demanded by net zero targets will transform what needs to happen across the marine environment over the next 30 years. This will require a different approach.

UK 2030 ambition for marine

 Support the UK's target of 68% reduction in greenhouse gases

 Up to 50GW of OSW (5GW floating)

 Up to 10Mt/yr of CCUS

 Up to 10GW of hydrogen

UK 2050 ambition for marine

 Support the UK's net zero target

 Over 95GW of offshore wind

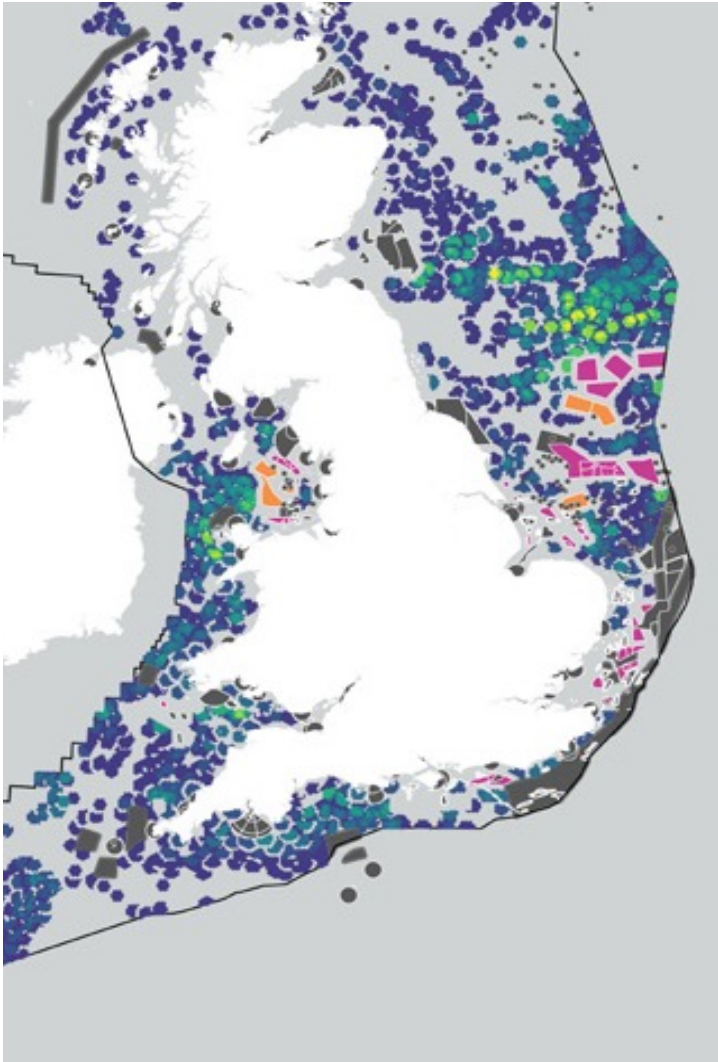
 Over 100MtCO₂ of CCUS

 Up to 35GW of hydrogen

Balancing other seabed uses

- Protecting and enhancing the ecological value of the sea
- Food and mineral resources and open shipping routes for trade
- New cables and other nationally important infrastructure to support the digital economy

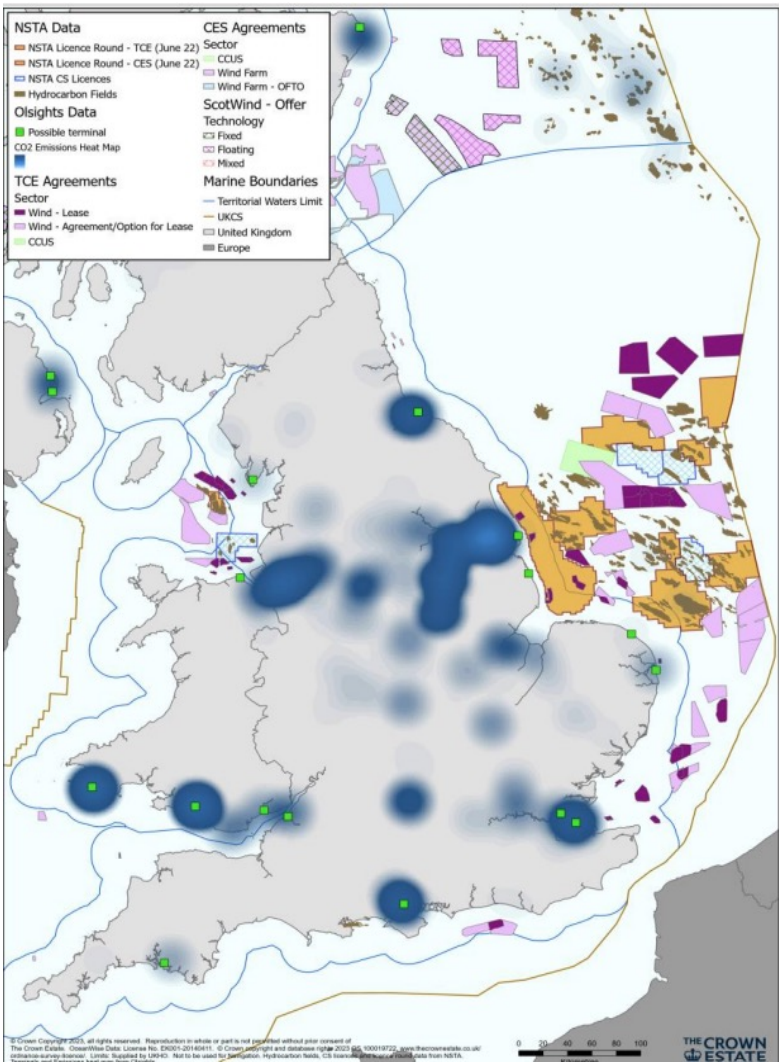
Future potential – offshore wind and CCUS



- Active NSTA Platforms
 - Wind Site Agreements
 - Wind Leasing Round 4 Preferred Projects
 - Nuclear Power Stations (10km buffer)
 - IMO Traffic Sep. Schemes
 - Navigational Dredging
 - CAA Airports (10km buffer)
 - Minerals Aggregates Site Agreements (1km buffer)
 - Tidal Stream Site Agreements (5km buffer)
 - Natural Gas Storage Site Agreements
 - Carbon Capture and Storage Site Agreements
 - Open Dredge Disposal Sites
 - Crown Estate Scotland Energy Sites
 - Coastal firing ranges
 - Floating Offshore Wind Test and Demo Sites
- Count of scenarios per cell
- 1 - 8
 - 9 - 23
 - 24 - 44
 - 45 - 73
 - 74 - 117

Heatmap showing potential wind development across all scenarios

Future Offshore Wind Scenarios, 2022



Potential CCUS Offshore Energy Agreements – Northern Ireland, Wales, England

Rapidly growing demands for marine space and the need to enhance nature mean there is major opportunity from coordinating delivery

Net Zero accelerating growth in demand for seabed, and range of other key sectors rely on marine space...

Govt targets driving push for energy infra offshore (e.g. zero carbon electricity by 2035, Net Zero by 2050)

Achieving Net Zero implies >75-115 GW Offshore Wind, plus Transmission, Interconnectors, CCUS and Tidal

Seabed demand expected to increase x10 to 2050 (for TCE sectors below) with further key demands from other sectors (e.g. fishing, shipping, defence) – see below

Marine nature is in decline and urgent action is needed to protect and restore biodiversity...

Habitat protection core to UK Govt's 25 Year Environment Plan (e.g. 30% of land and sea for nature by 2030)

As seabed gets more crowded, leasing / licensing / development choices have increasing impact

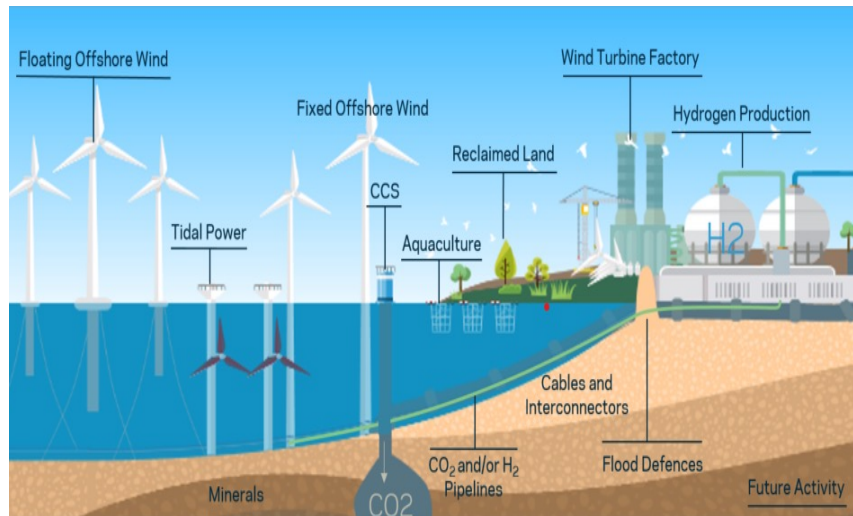
There are also major opportunities to enhance nature (e.g. co-location, strategic compensation, direct investment in nature)

More visibility and coordinated action needed to unlock investment...

Grid and supply chain constraints (e.g. ports, vessels) impeding development

Lack of visibility on future development makes this enabling investment difficult to plan

Globally, seabed leasing processes evolving to 'de-risk' investment with coordinated pre-development (e.g. consenting, grid)



Wind sector faces supply chain crunch this decade, industry body warns

UK renewable energy: the long wait for grid connections must end

Tim Pick, Offshore Wind **Champion**, April 2023...

"[TCE] should move to a system where grid connection capacity is pre-booked, and transmission system designs pre-agreed, for future leasing rounds"

Our response (1): Whole of Seabed Approach

Taking a ‘Whole of Seabed’ approach is the central pillar of our marine strategy; enabling the sustainable growth of the marine environment, and enabling The Crown Estate to pursue a more active role to deliver greater financial, social and environmental value.

By utilising The Crown Estate’s expertise in spatial analysis and data, the Whole of Seabed Programme is developing cross-sector analysis of demand and supply for marine space to 2050, creating an evidence base to support delivery decisions on the ‘what’, ‘where’ and ‘when’ of how space is used.




Energy

Offshore wind

Energy conversion

Marine energy




Storage

CCUS

Hydrogen

Natural gas



Infrastructure

Export/Interconnectors

Pipelines

Telecoms



Minerals

Reclamation

Aggregate dredging

Marine mining




Coastal

Ports and harbours

Aquaculture

Leisure



Habitats

Habitat creation

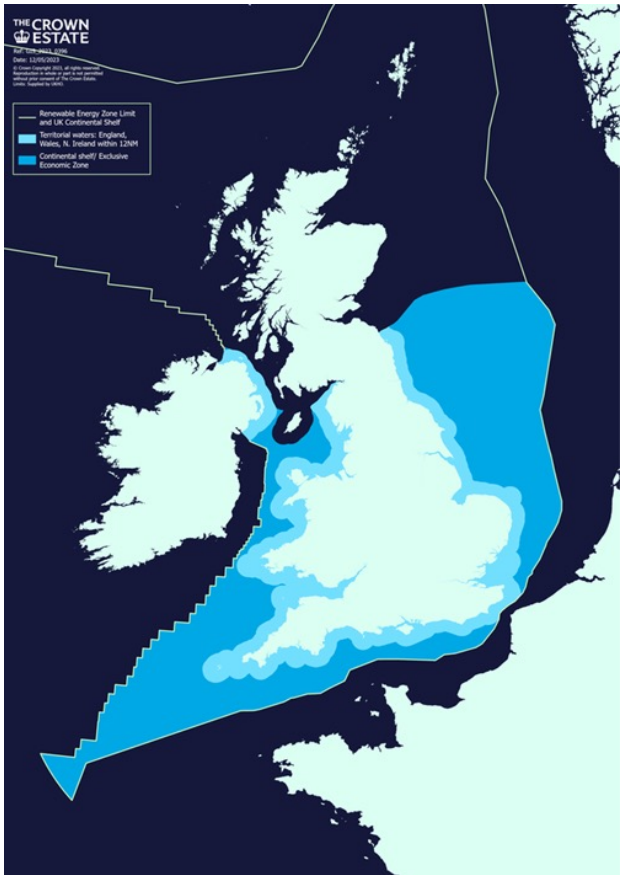
Biodiversity

Nature recovery

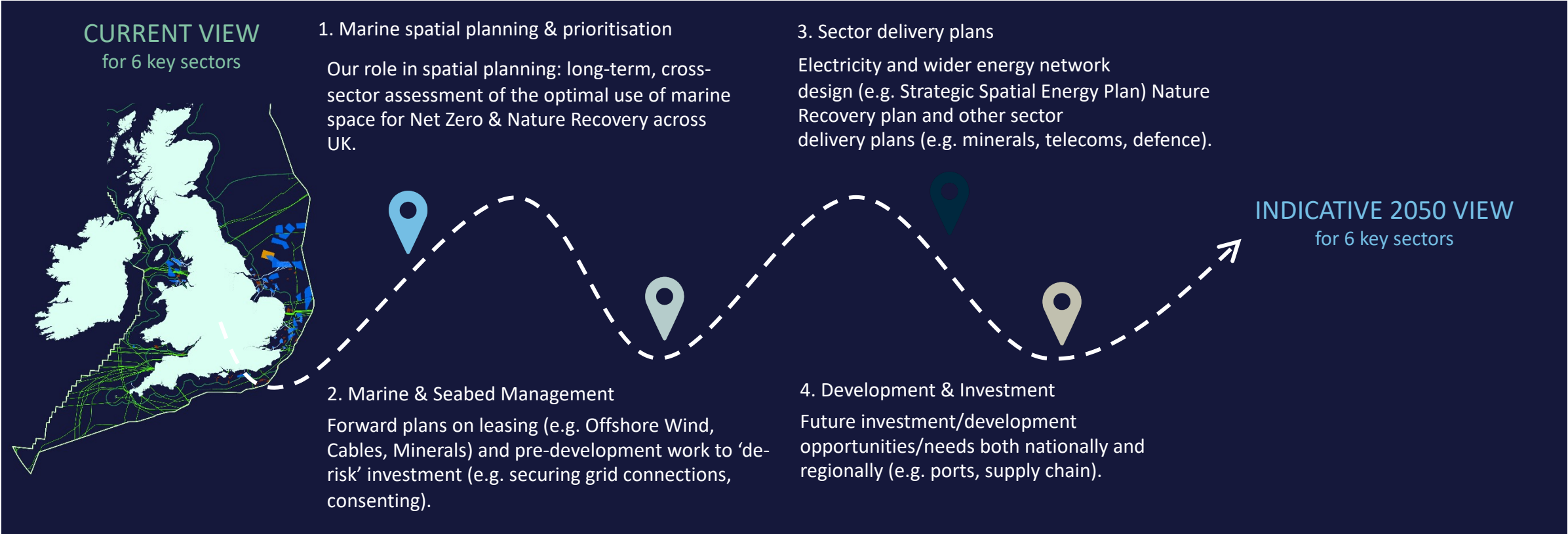
The analysis will develop a range of 2050 scenarios on how seabed supply/resources can meet demands across sectors, in 5-year time horizons.

This will bring benefits to our full range of stakeholders:

- ✓ Better outcomes for society. Understand the optimal uses of the seabed
- ✓ Better support to government & regulators. Evidence base to support policy and sector delivery (e.g. CSNP, MSPri)
- ✓ Better services for customers/developers. Enables full understanding of the spatial/investment opportunity over time
- ✓ Better leasing design and delivery – driving future leasing plans and pre-development activities (e.g. surveys, siting, grid design)



Our response (2): Proposed ‘Delivery Routemap’ would help coordinate action for Net Zero & Nature Recovery



This would be underpinned by our evidence base and spatial scenarios/pathways on how marine space can be used.

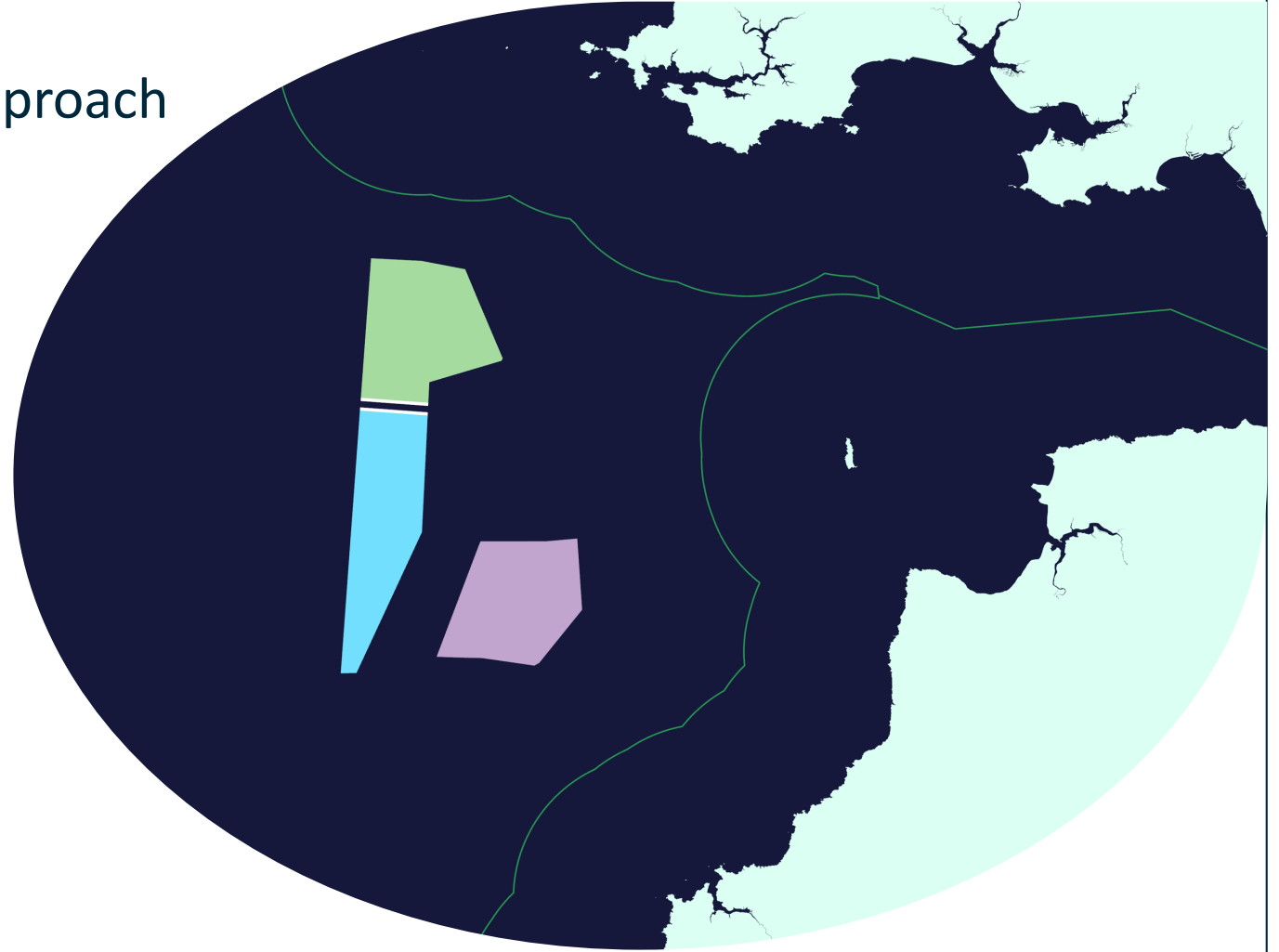


Co-developing with range of number of key govt. bodies & delivery agencies & coordinating with international neighbours.

Our response (3): Evolving our leasing approach

Leasing Round 5: seeking to enable the first generation of commercial-scale floating offshore windfarms:

- 4.5GW of projects, which may be developed in a phased or 'stepping stone' approach
- Provides opportunities for growth and investment and to facilitate the co-ordination of the necessary infrastructure, such as ports and grid connections
- Five broad 'Areas of Search' refined, into 3 smaller final 'Project Development Areas', each up to 1.5GW capacity
- TCE pursuing a range of investments and enabling actions to accelerate the build-out of floating offshore wind in the Celtic Sea – e.g. data collection programme
- Revised approach to spatial design and Habitats Regulations Assessment (HRA) (TCE led, pre-tender)



The first UK leasing process that contemplates grid infrastructure and coordinated solution in advance

Our response (4): OWECE



The programme brings together key stakeholders to gather and share evidence and data, and then use this enhanced evidence base to facilitate the growth of the offshore wind sector in a way that best protects and enhances the environment.

In collaboration with ...

- Centre for Environment, Fisheries and Aquaculture Science
- Crown Estate Scotland
- Department for the Economy, Northern Ireland
- Department of Agriculture, Environment and Rural Affairs, Northern Ireland
- Historic England
- Joint Nature Conservation Committee
- Marine Management Organisation
- Maritime and Coastguard Agency
- National Grid Electricity Systems Operator
- National Grid Transmission Owner
- Natural England
- Natural Resources Wales
- NatureScot
- Offshore Wind Industry Council / Pathways to Growth
- Office of Gas and Electricity Markets
- The Planning Inspectorate
- RenewableUK
- Royal Society for the Protection of Birds
- Scottish Government (Marine Scotland)
- Seabed User and Developer Group
- The Wildlife Trusts
- Trinity House
- Welsh Government

Programme Themes

- **Spatial coordination and co-location**
- **Improve understanding of environmental impacts and benefits**
- **Compensatory measures**
- **Net environmental gain**

OWEC Case study: Virtual offshore wind planning



The fishing industry and fisheries have an important role to play in unlocking the potential of the UK seaspace for offshore wind.

The Crown Estate worked with the National Federation of Fishermen's Organisations (NFFO) to bring together fishermen and offshore wind developers to improve understanding of fisheries, sharing knowledge, and test ways of working to integrate fisheries into the planning for new offshore wind growth, with a focus on floating wind.

Alongside the review of existing data, the workshops explored issues around co-location, the tides and other matters to improve knowledge and understanding of fisheries within the Offshore Wind and Marine Planning sectors.

The report is now available via the Marine Data Exchange summarising outcomes, recommendations and next steps:

[2022, NFFO, The Crown Estate, Offshore Wind Evidence and Change Programme, Virtual Floating Offshore Wind \(FOW\) Project | Marine Data Exchange](#)

Looking to the future

To achieve net zero as a country, the UK will need the vast resources of the seabed, and as an organisation we have a significant part to play in enabling that.

Delivering offshore wind at scale will require a wide range of associated infrastructure beyond simply the wind farms themselves – from the power cables to connect them to the energy grid on land, to the significant upgrades that will be required to UK ports.

Planning and coordination with other infrastructure developments is key and will require all those with a stake offshore to work together – Government, business regulators, NGOs, local communities.

Where we provide access to the seabed, we will do so in a way that is sensitive to the importance of our rich ecosystems and creates new opportunities for business across the supply chain to grow and create jobs across the country.



...To find out more:



1. The Crown Estate – Offshore Wind Leasing Round 4

<https://www.thecrownestate.co.uk/en-gb/what-we-do/on-the-seabed/offshore-wind-leasing-round-4/>

2. CCUS & Offshore Wind Colocation (inc Overlap Study)

[Offshore wind and CCUS co-location](#) | [Offshore wind and CCUS co-location \(thecrownestate.co.uk\)](#)

3. Offshore Wind Evidence and Change Programme

<https://www.thecrownestate.co.uk/en-gb/what-we-do/on-the-seabed/energy/offshore-wind-a-sustainable-future/>

4. Broad Horizons : A technical analysis of key resource areas for offshore wind

<https://www.thecrownestate.co.uk/media/3642/broad-horizons-offshore-wind-key-resource-area-summary-report.pdf>

5. Future Offshore Wind Scenarios

[FOWS \(futureoffshorewindscenarios.co.uk\)](https://futureoffshorewindscenarios.co.uk)

6. Round 5 Celtic Sea Floating Offshore Wind

<https://www.thecrownestate.co.uk/en-gb/what-we-do/on-the-seabed/floating-offshore-wind/>

Thank you

