Offshore Wind New Leasing Stakeholder Engagement Event

15th November 2018

Welcome

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For the avoidance of doubt, please note that The Crown Estate's management duties in Scotland have been transferred to Scottish Government. The information contained within this presentation therefore relates to the potential leasing of new offshore wind projects in England, Wales and Northern Ireland only.

Aims of this event

- To update you on the context of the leasing process, and why we are currently considering a new leasing round
- To share a summary of feedback received to date from statutory stakeholders, and the market
- To update you on the where we are in the process of deciding preferable seabed regions for new leasing
- To provide an indication of what information / materials we will make available
- To seek reflections and answer any questions on our process

Introduction

Huub den Rooijen

Policy context

Yuen Cheung

BEIS

Priorities

- Tackling climate change
- Leaving the environment in a better state than when we inherited it
- Industrial Strategy
- Clean Growth
- Reliable, affordable energy for consumers

Offshore wind's role

- Costs continue to fall
- Significant appetite to develop and invest in UK
- Offshore wind is now going global
- Becoming integral part of UK electricity system
- 6.2% of annual generation in 2017, over 10% by 2020
- 14GW by 2023

Offshore wind's role

- Government providing long term certainty
- Next Contract for Difference auction start by end May 2019
- Then auctions every two years
- Depending on auction prices, could see 1-2GW of new offshore wind per annum in 2020s
- Industry says it could deliver 30GW installed by 2030

New leasing

Offshore wind portfolio context

Will Apps

The Crown Estate is an independent, commercial business created by Act of Parliament

100%

Net revenue profit

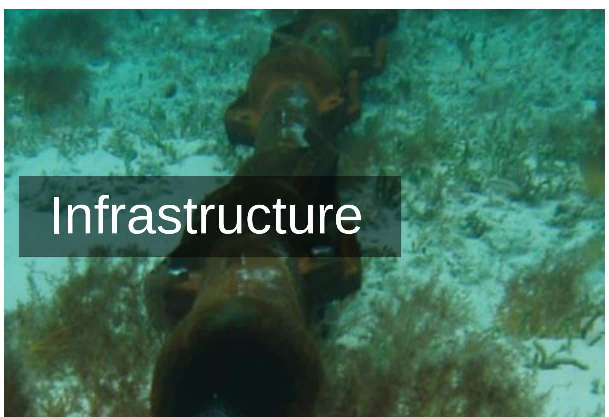
£329.4m

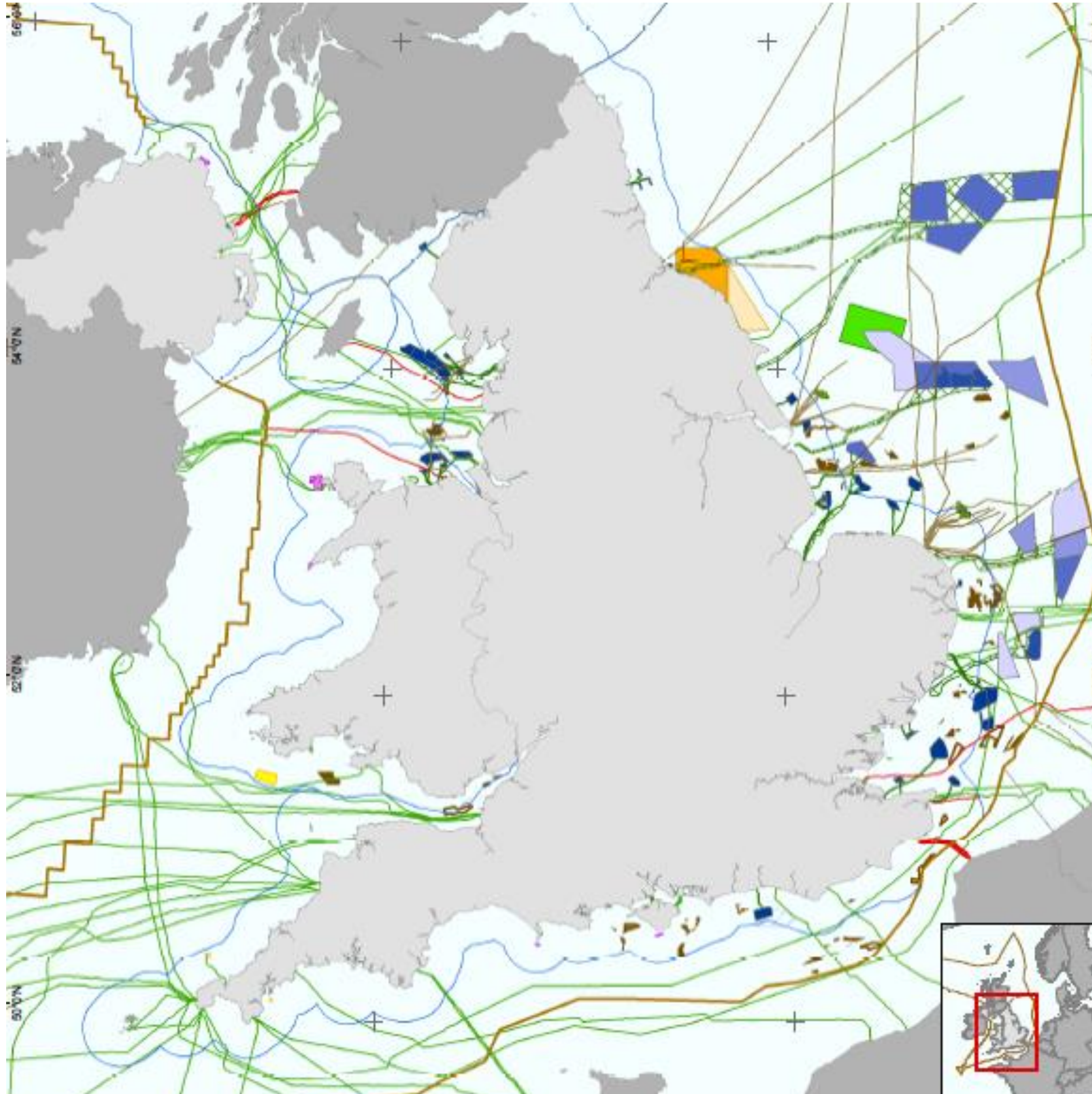
2017/18

Capital value

£14.1bn

2017/18

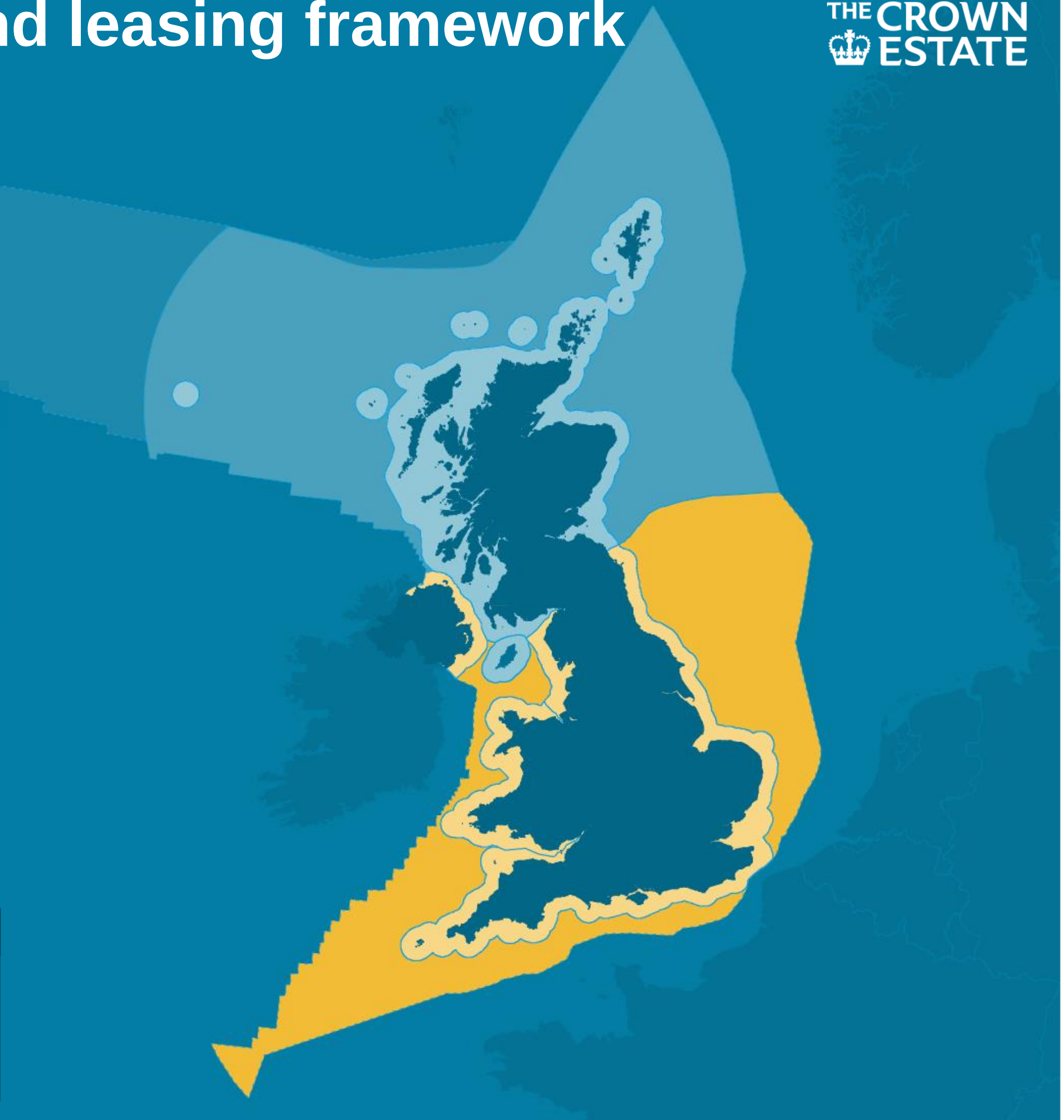




Positions shown relative to WGS 84. OceanWise Data: License No. EK001-20140411. Ordnance Survey Data: Licence No. 100019722, http://www.thecrownestate.co.uk/ordnance-survey-licence/. Limits: Supplied by UKHO. Not to be used for Navigation. Please note, only cables and pipelines that intersect in part or completely with the English, Welsh and Northern Irish portions of the UKCS are shown. Cable Data: Created from Kingfisher, OceanWise and Global Marine Systems data. Pipeline Data: Created from UKOGD, OceanWise and Global Marine Systems data. International Medians: Created from UKHO, OGA and EEA data.

www.thecrownestate.co.uk/en-gb/resources/maps-and-gis-data/

UK offshore wind leasing framework



Leasing the seabed

- Within 12nm - land owner managed under Crown Estate Act 1961
- Within REZ - Energy Act 2004 & 2008

The Crown Estate's responsibilities

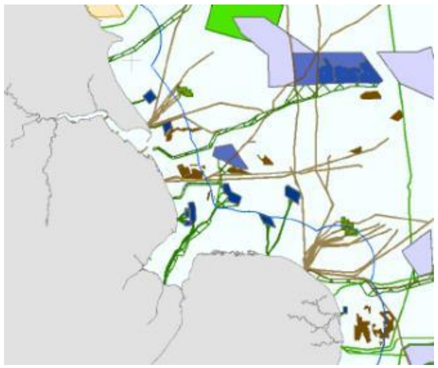
- England, Wales, Northern Ireland within 12nm – managed under Crown Estate Act 1961
- England, Wales, Northern Ireland within REZ - Energy Act 2004 & 2008

Key

- Territorial Waters Limit
- UK Continental Shelf
- Renewable Energy Zone Limit

Policy & regulatory setting: offshore renewables

Land rights



The Crown Estate (TCE) & Crown Estate Scotland (CES)
- Leasing rounds
- Statutory obligations
- Stakeholder interests
- Active management of seabed

Compete for sites

Consents to build and operate

Government
- Planning authorities
- Regional marine plans
- Statutory advisors

Ofgem
- Generation licence

Obtain consents & licences

Transmission

Ofgem / SO / OFTO
- Developer/System Operator agree connection
- Separate licence for offshore transmission
- "Generator Build" model
- OFTO tender round – now 25 year revenue

Secure grid connection

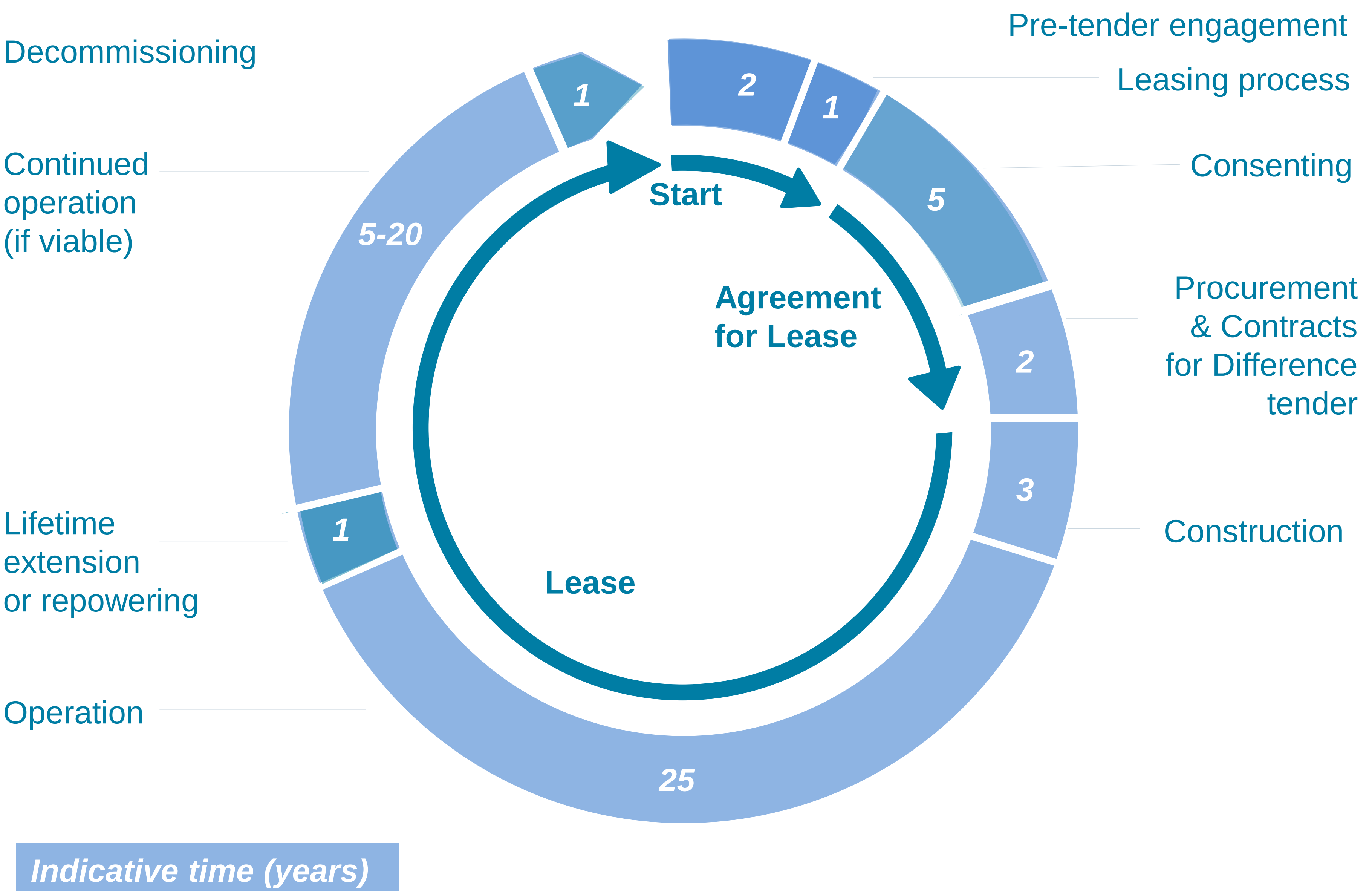
Economic support

Government
- Deliver energy policy objectives
- Allocation for 15-year CfDs
- AR3 by May 2019; every 2 years thereafter delivering 1-2 GW per annum in 2020s

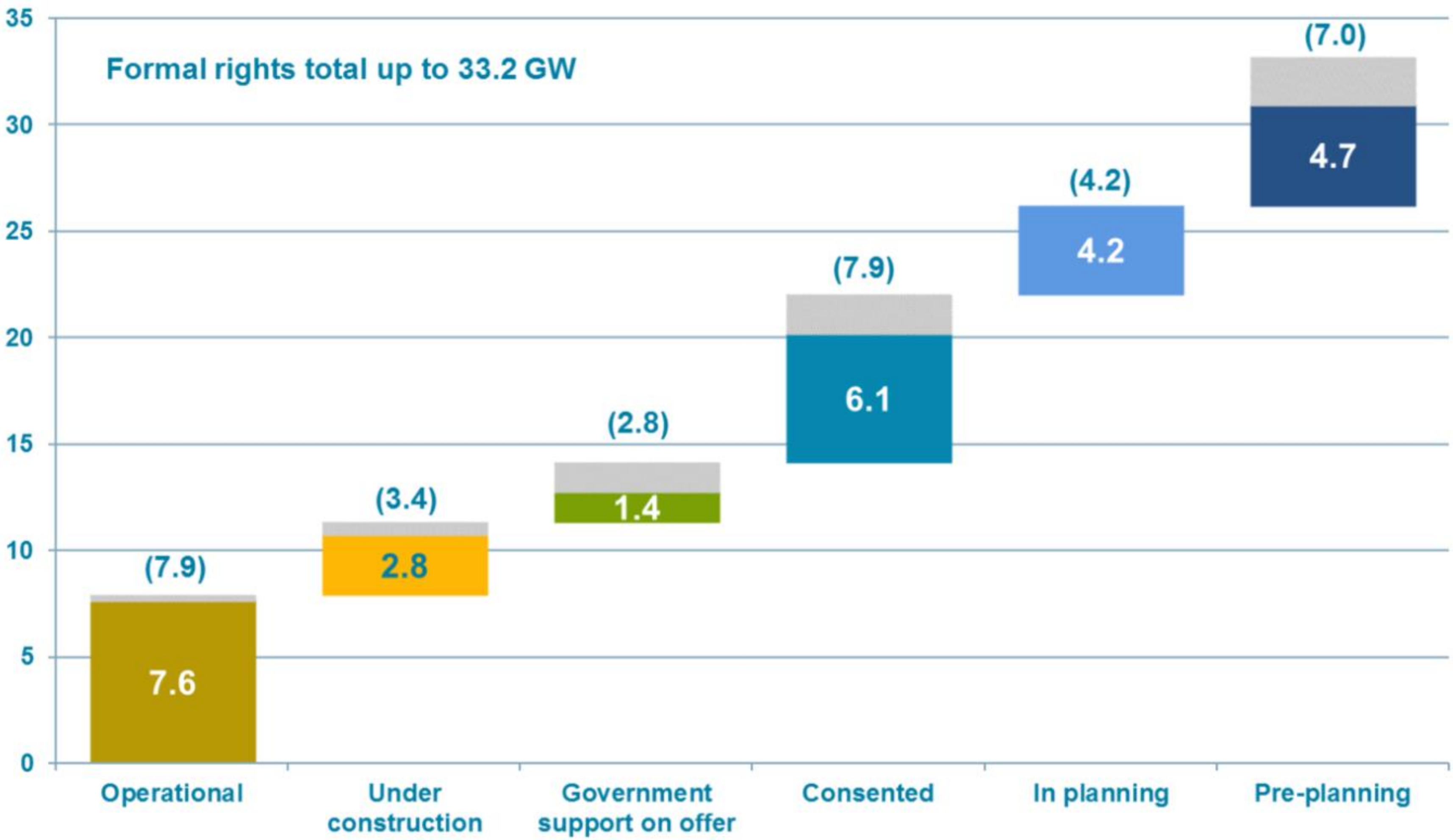
Compete for contracts

Private Sector / Developers / Investors

The lifecycle of offshore wind leasing



Existing UK Portfolio



Key

= Projects located in Scotland and managed by Crown Estate Scotland (CES)

(1.0) = *Numbers in brackets represent total UK pipeline, including Scotland, at each stage of development*

Climate Change Act & Carbon Budgets

Committee on Climate Change scenarios – July 2018

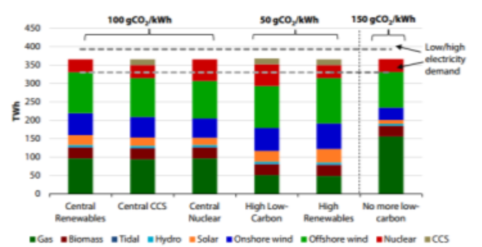
100gCO_2/kWh by 2032

28 – 34 GW by 2030

Table 2.5. Capacity and generation by technology in the CCC's new power scenarios

Technology	Central Renewables (GW (TWh))	Central CCS (GW (TWh))	Central Nuclear (GW (TWh))	High Low-Carbon (GW (TWh))	High Renewables (GW (TWh))
Nuclear	4 (35)	4 (35)	7 (59)	7 (59)	4 (35)
Onshore wind	25 (60)	24 (56)	22 (53)	26 (62)	29 (70)
Offshore wind	31 (111)	29 (106)	28 (102)	31 (114)	34 (123)
CCS	0 (0)	2 (16)	0 (0)	2 (16)	2 (16)
Solar	32 (27)	27 (23)	23 (20)	35 (29)	43 (37)
Tidal	1 (2)	1 (2)	1 (2)	1 (2)	1 (2)
Biomass	7 (29)	7 (29)	7 (29)	7 (29)	7 (29)
Hydro	2 (5)	2 (5)	2 (5)	2 (5)	2 (5)

Figure 2.7. The CCC's new power scenarios for 2030



Notes: 'No more low-carbon' is not a CCC scenario, but is used to illustrate a higher-carbon pathway for the power sector in 2030, assuming no more low-carbon generation is deployed beyond current commitments.

Future Energy Scenarios

National Grid – July 2018

Community Renewables: 23.6GW

Two Degrees: 29.9GW

Steady Progression: 24.8GW

Consumer Evolution: 16.8GW

Sector Deal

Industry aims to generate one third of the UK's electricity from offshore wind by 2030 - more than doubling capacity from 14GW deployed or contracted today, to 30GW by 2030

- £48 billion infrastructure investment
- Five-fold increase in export value, to £2.6 billion /year
- 27,000 skilled jobs
- £2.4 billion/year reduction in total electricity system costs

UK Offshore Wind Industry Reveals Ambitious 2030 Vision, Feb 2018

The consequential need for new seabed rights

Our task - proportionate and responsible release of sufficient development opportunity to support UK's energy security and clean energy ambitions out to 2030

Q: What will the current portfolio ultimately provide?

Q: What will 2017 Extensions provide?

Q: What deployment scenario do we need to satisfy?

Q: What new capacity is required?

				30	35	2030 deployment scenario
			(GW)	3	3	Buffer for competition
Scenario	**Existing Portfolio**	**2017 Extensions / Portfolio Growth**	**Available Portfolio**	33	38	Required portfolio
High case	30	5	35	0	3	Capacity required through new leasing
Low case	24	2	26	7	12	

Portfolio priorities

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2017 Extensions

Application assessment and plan level Habitats Regulations Assessment

Development portfolio

New consents, Contracts for Difference process, new leases

Asset portfolio

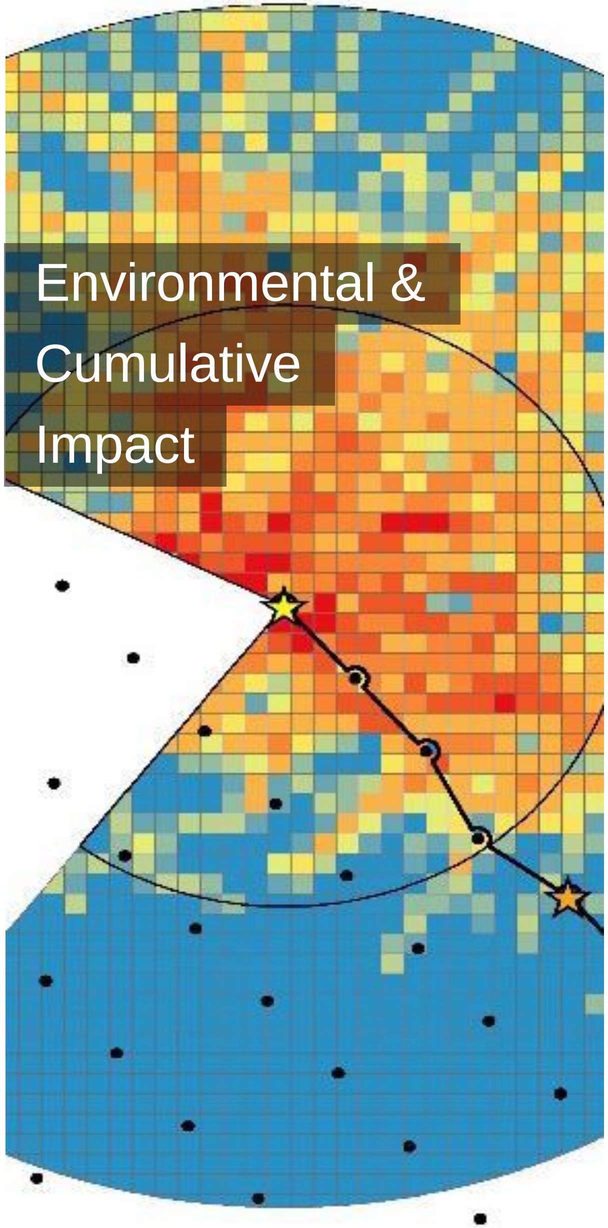
Operational performance, life-extensions, decommissioning

Advancement programme

Proportionate and responsible impact assessment and evidence base, the wider energy system

https://www.carbontrust.com/offshore-wind/orjip/birds/

Key strategic issues to be addressed by the sector



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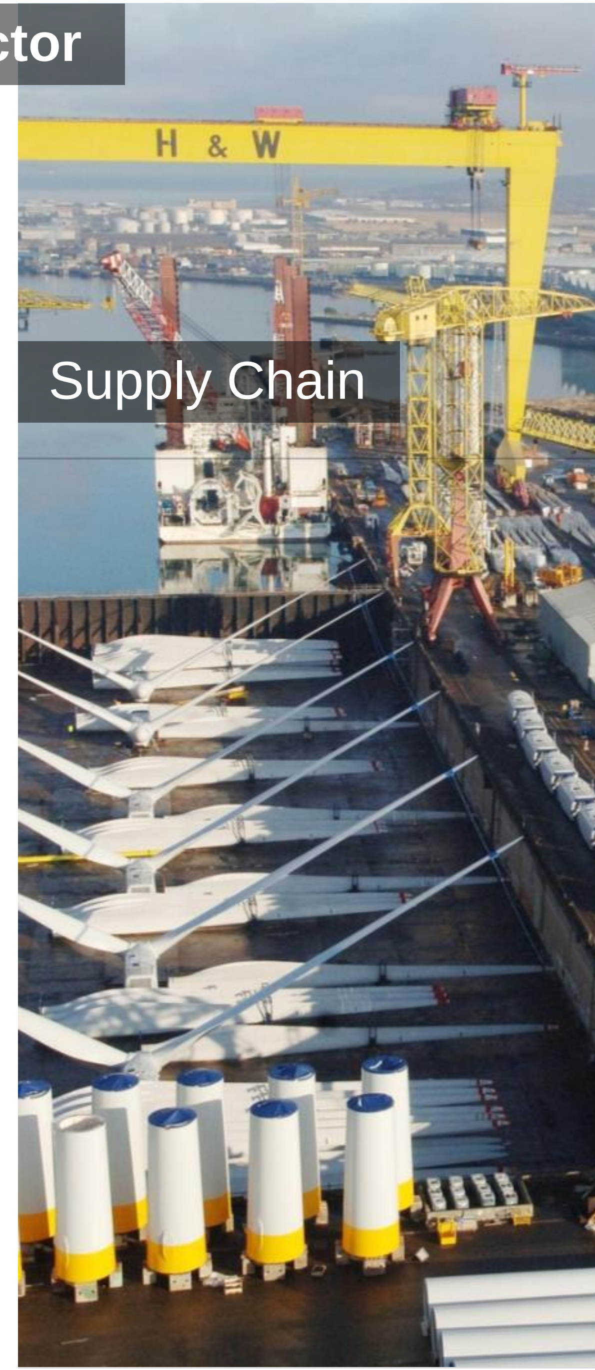
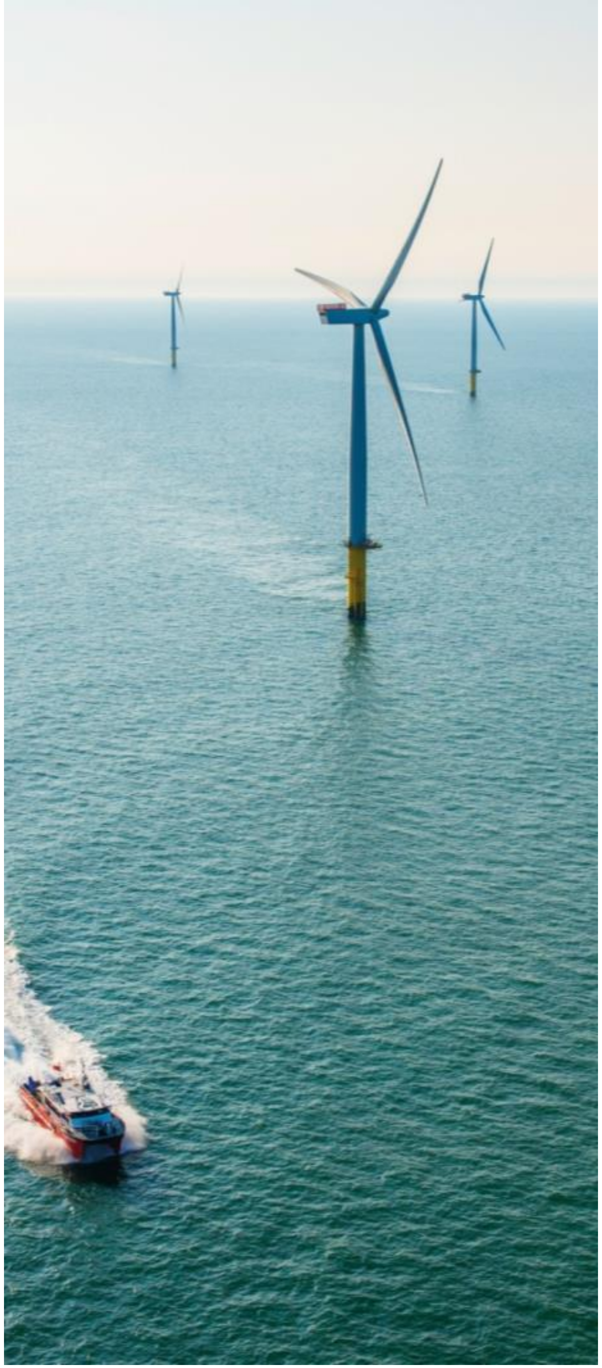


Image Credit: @pwesten1

New leasing

Other considerations

Olivia Thomas



Statutory Obligations

- The Crown Estate is a Competent Authority under the Habitats Regulations*
- We must conduct a plan-level Habitats Regulations Assessment (HRA) for any leasing/licensing activity that constitutes a 'plan'
- The plan-level HRA requires us to assess the impacts on Natura 2000 designated sites before full seabed rights can be awarded

*Habitats Regulations:
- The Conservation of Habitats and Species Regulations 2017
- The Conservation of Offshore Marine Habitats and Species Regulations 2017
- Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995 (as amended) in Northern Ireland

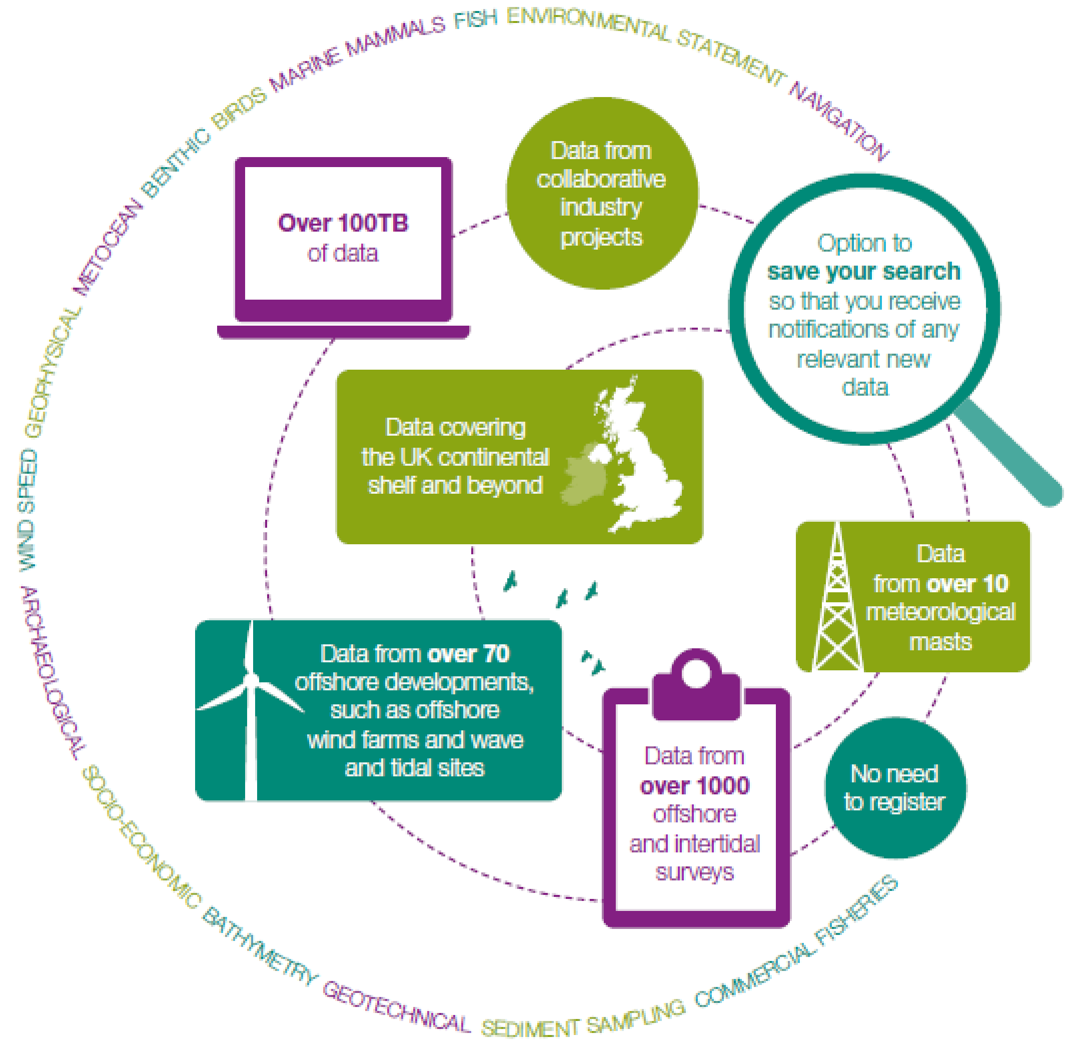
Statutory Obligations

- We are a Public Authority for the purposes of Marine and Coastal Access Act 2009 (MCAA) and the Marine Act (Northern Ireland) 2013
- We also contribute to the marine planning process by working with the MMO (England), Welsh Government, and DAERA (Northern Ireland)
- Under the MCAA, we must consider potential effects of our agreements on the habitats & species for which Marine Conservation Zones (MCZs) have been designated
- We also have obligations under the Wildlife and Countryside Act 1981

The Marine Data Exchange

The Marine Data Exchange provides **free access** to survey data and reports collected throughout the lifetime of an offshore project - from pre-construction through to decommissioning - by working closely with our offshore customers to capture and advocate the sharing of survey data.

www.marinedataexchange.co.uk



Other leasing processes

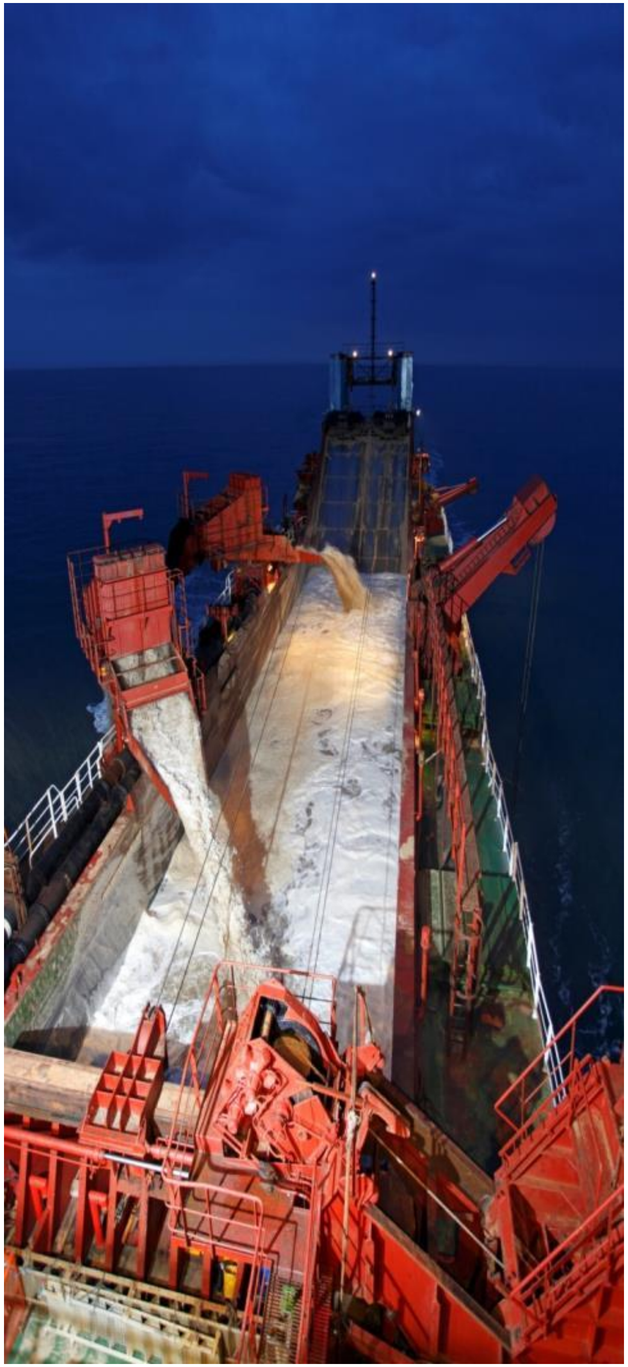
Marine Aggregate Tender

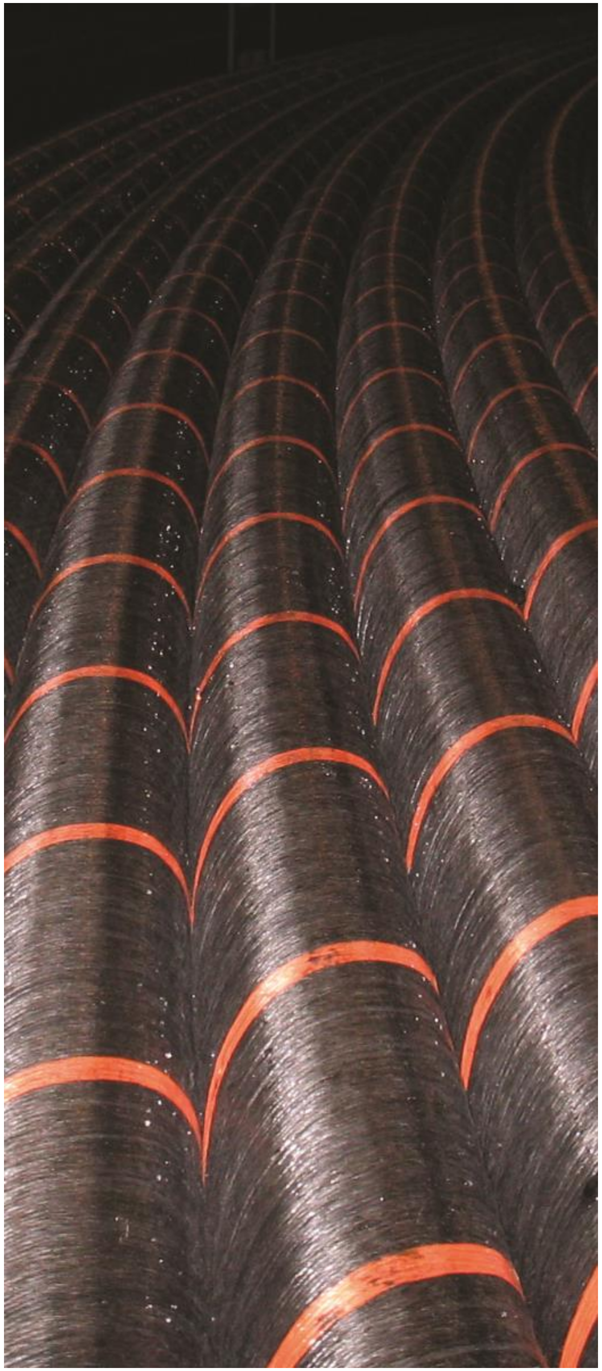
- Tender for new marine aggregate licences around England, Wales and Northern Ireland
- Invitation to Tender (ITT) closed in October 2018, rights to be awarded 2019

Other Marine Minerals Tender

- Increased market demand due to rising metal prices e.g. tin.
- Tender offer - waters inside 12nm off the coast of Cornwall reflecting extent of geographic interest
- ITT due to be launched shortly, rights to be awarded 2020

Both processes may involve plan-level HRA prior to award, and would then initially provide the opportunity to explore the potential resources.





Other leasing processes

Offshore wind 2017 extensions

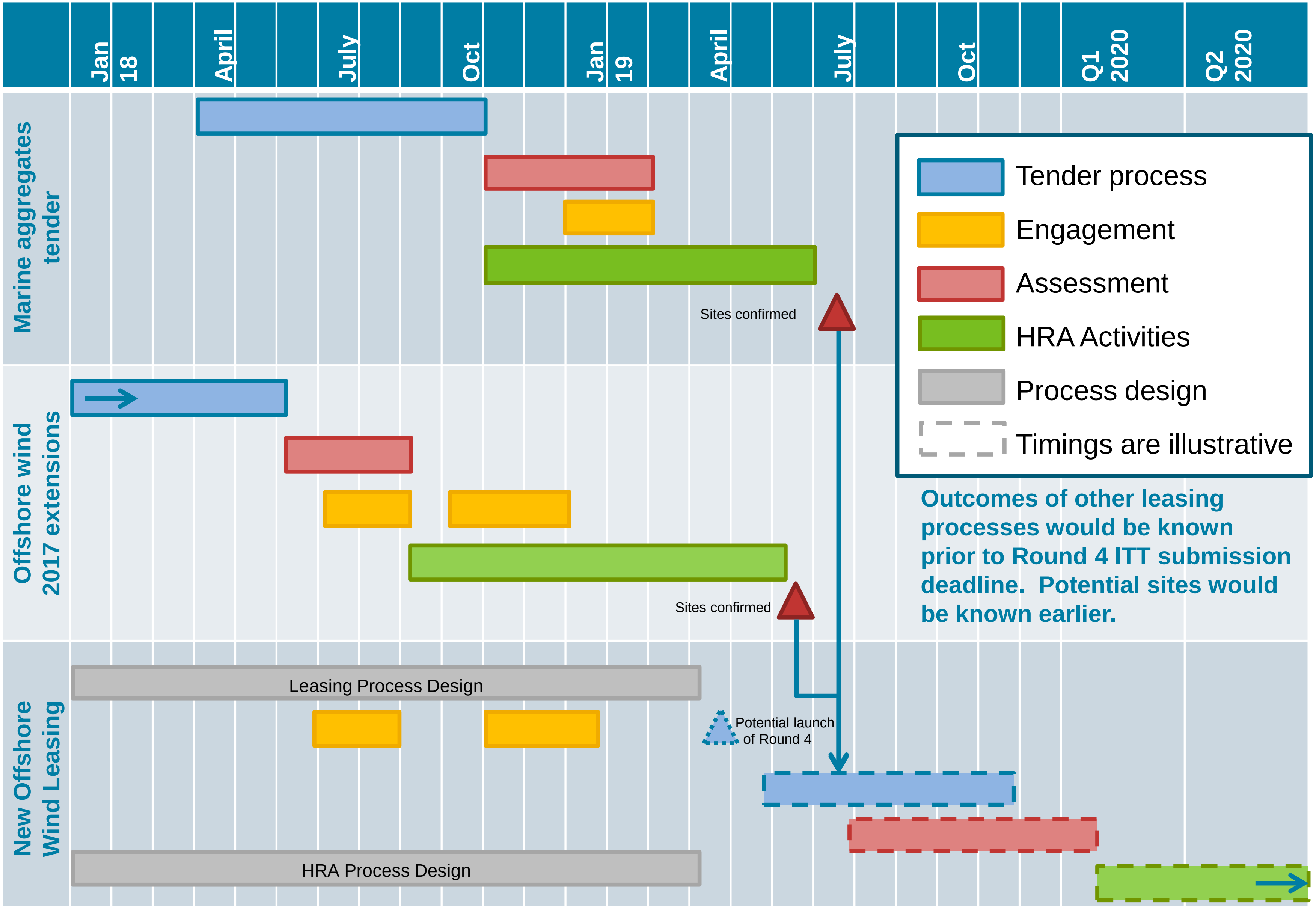
- 8 applications have met our initial assessment criteria. Representing potential for up to 3.4GW of new capacity on the seabed around England and Wales

- Plan-level HRA is now underway

Ad hoc applications - Ongoing

- We also have processes to allow ad hoc applications to be made in the following sectors:
  - Interconnectors
  - Telecoms cables
  - Pipelines
  - Aquaculture
  - Wave energy devices (up to 3MW)
  - Tidal current (up to 30MW)
  - Offshore wind test and demonstration including floating wind (up to 100MW)

Key offshore leasing processes



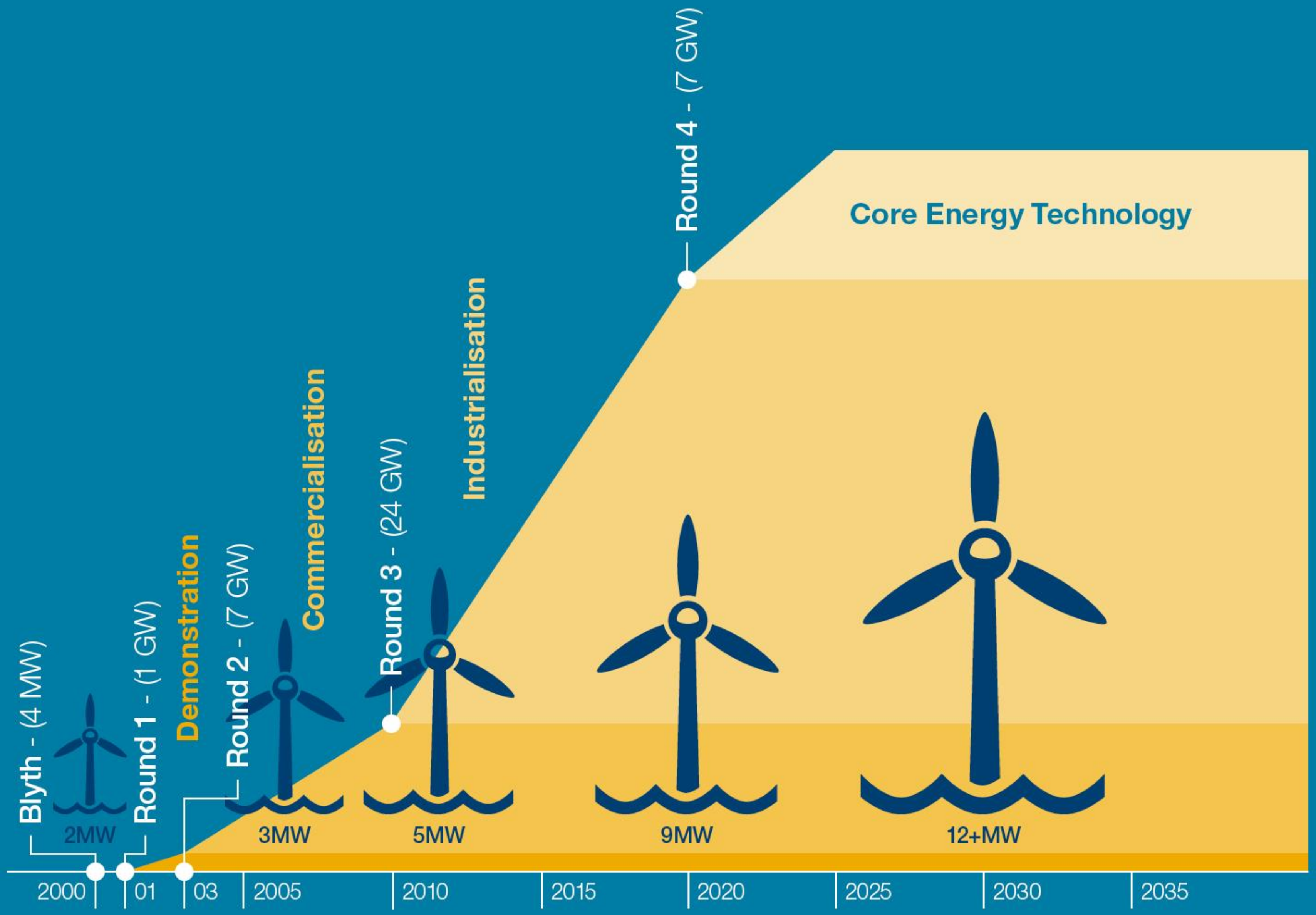
Outcomes of other leasing processes would be known prior to Round 4 ITT submission deadline. Potential sites would be known earlier.

New leasing

Overview of our approach

Jonny Boston

Context: previous major leasing rounds



Reflections from previous leasing rounds

We are using the feedback we received and our experience from previous leasing activity to inform the approach to potential new leasing.

Engagement

- There is benefit in early engagement with statutory and wider stakeholders regarding spatial constraints
- It is helpful to engage with industry on the leasing offer prior to the formal tender process

Site selection

- Sharing The Crown Estate's knowledge and data may improve site selection
- Including a mechanism to allow boundary adjustments can save time later

Scale

- Leasing rounds should be designed to provide projects in accordance with market conditions
- The size of project areas should balance the need to minimise uncertainty for other seabed users, with the need to optimise economic viability

Process

- Plan-level Habitat Regulations Assessment (HRA) is on the critical path to awarding rights
- It is important to provide clear timescales at the outset of formal leasing

Our approach: key principles

Balance a range of interests

Repeatable scale

Fair & transparent process

Responsible leasing

Balance our role with that of the market

Share our data & analysis

Refine and validate our proposals through extensive pre-tender engagement

Recap of proposed leasing concept

Prior to launch	• Through a process of engagement and seeking to balance a range of interests, The Crown Estate determines the regions of seabed to be included and available to bid projects into
Tender launch	• The Crown Estate shares its data in relation to these regions, including: GIS constraint model output, a qualitative assessment of constraints, and stakeholder views
Bid	• Developers identify and propose sites within available regions of seabed
Bid review	• Through a transparent assessment methodology, The Crown Estate selects projects, undertaking a plan-level HRA prior to Agreements for Lease being awarded

Recap of regions initially proposed

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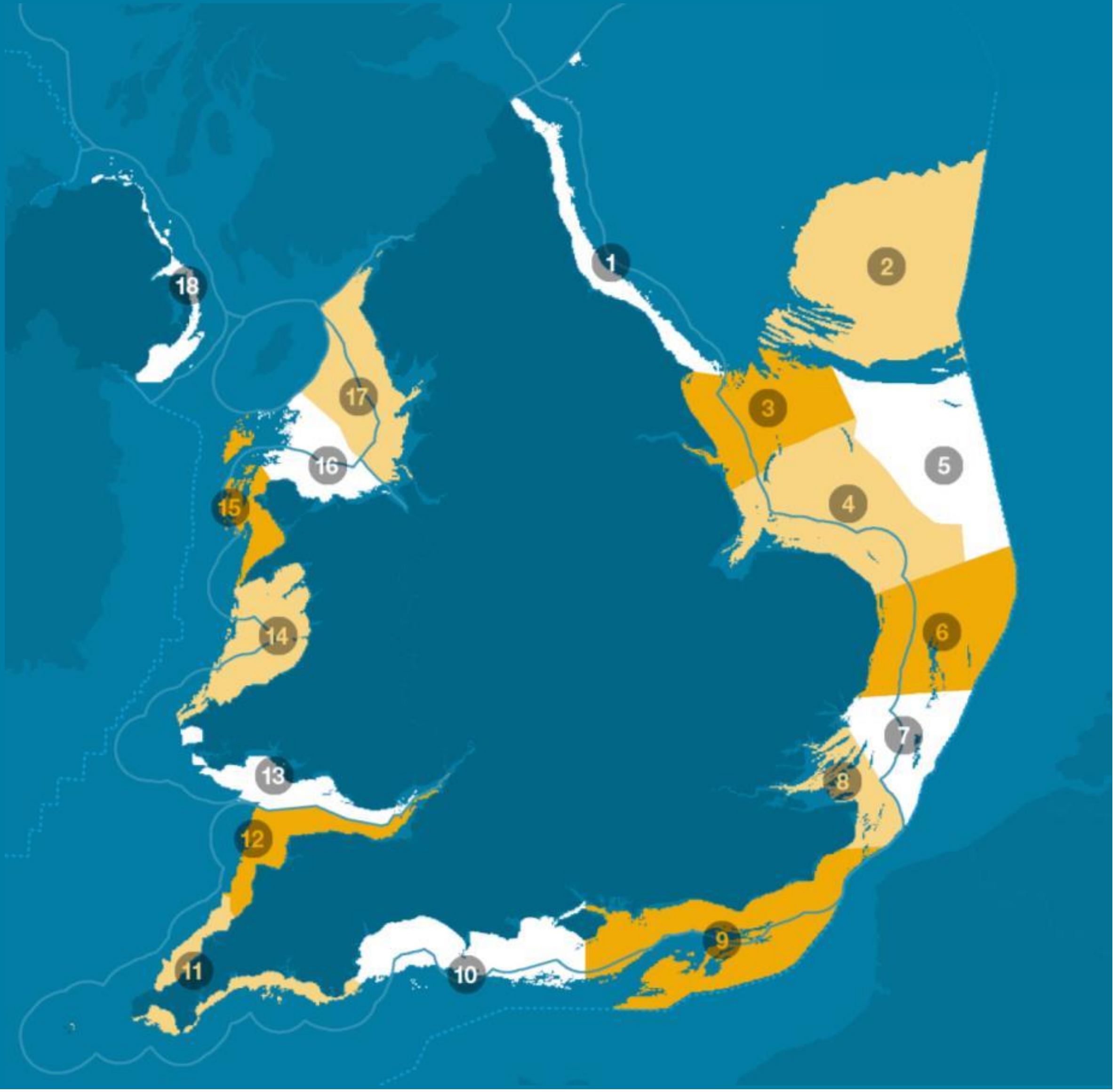
- Regional approach to tender proposed
- 18 potential regions identified
- We could open all regions to tender but some are quite constrained
- Feedback from statutory stakeholders is helping us decide which regions would be open to tender
- In any case, existing activities and hard constraints would need to be avoided

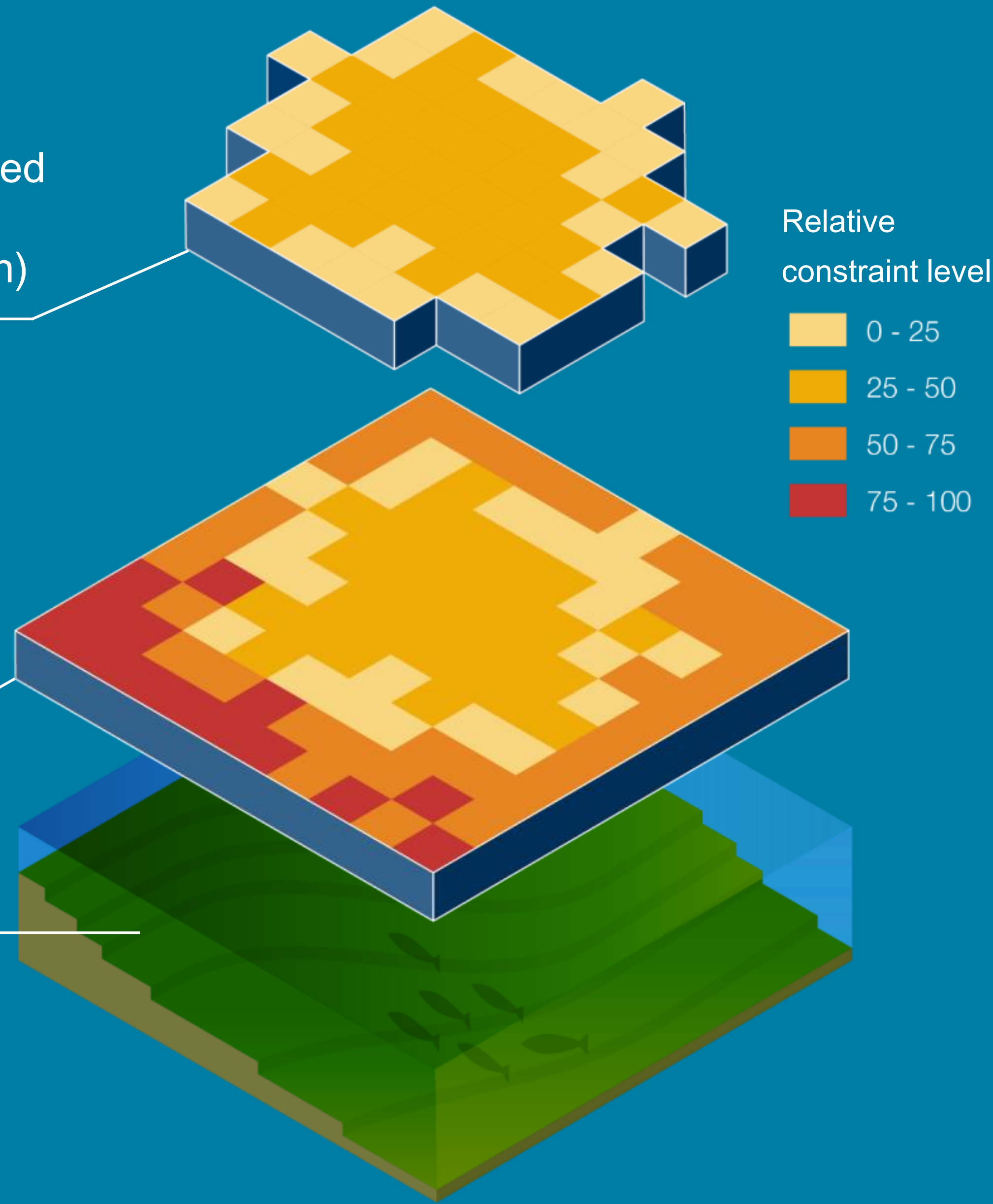


Recap of proposed leasing concept

More detailed qualitative analysis provided within the ‘characterisation area’ (ie the least constrained (<50) part of the region)

Exclusions and restrictions model output provided across the whole region

Region of seabed open to tender



Recap of initial proposals: summary

6GW

Developer-led site selection

Sharing our data

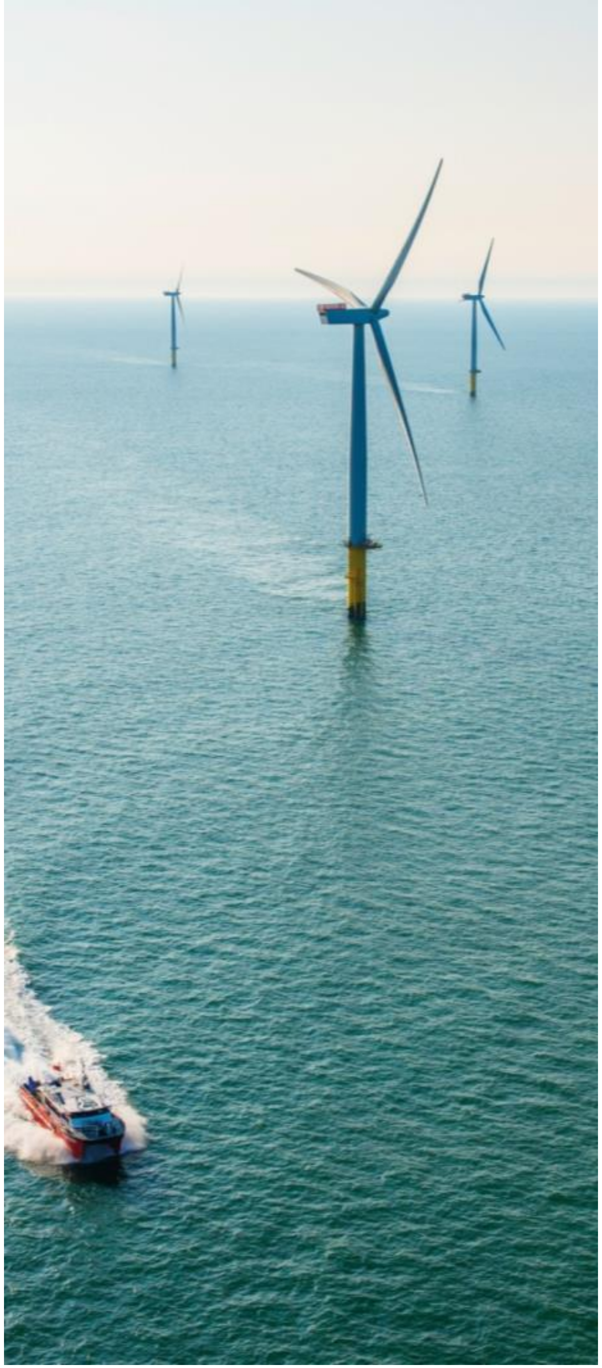
50m max depth

Extensive pre-tender engagement

New leasing

Introduction to resource and constraints assessment work

Mark Hazelton



Background

Aims

- Use our data, expertise and strategic overview as a vehicle to aid sustainable development of offshore wind in English, Welsh and Northern Irish waters

Objectives of the analysis

- Provide spatial context for policy development
- Support early engagement with stakeholders on constraints to development
- Provide a stakeholder validated evidence base to support developers in proposing potential development locations
- Enable us to refine our tender design

Scope of our analysis

- Focused on water depth traditionally used for fixed foundation offshore wind
- English, Welsh and Northern Irish waters
- No prerequisites in terms of size of turbines or project
- Limited to consideration of offshore array

The constraint analysis draws on expertise and knowledge within The Crown Estate, supported by peer review by RPS Energy

This has also been subject to review by statutory stakeholders over summer 2018

Modelling overview

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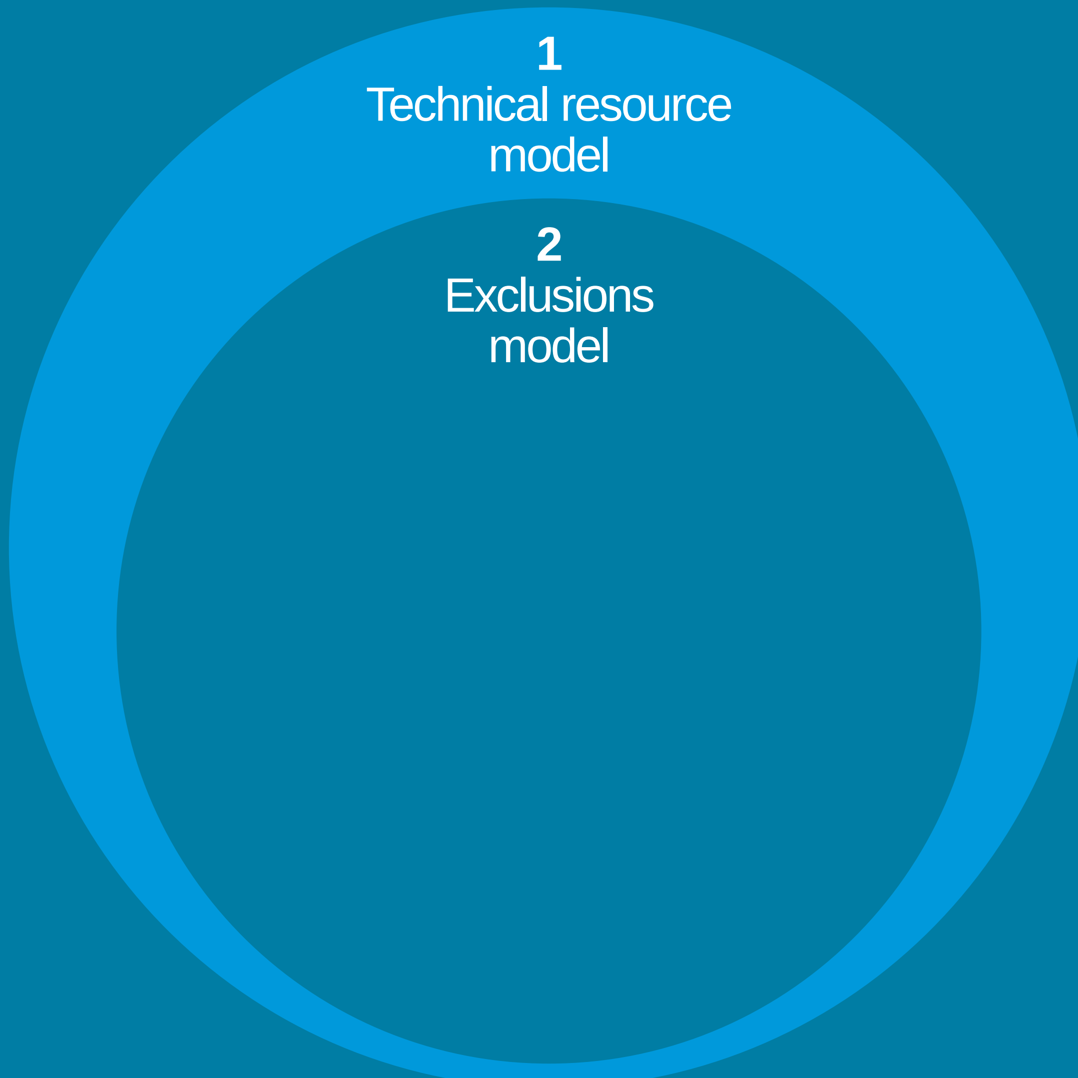
1
Technical resource model

Modelling overview



Modelling overview

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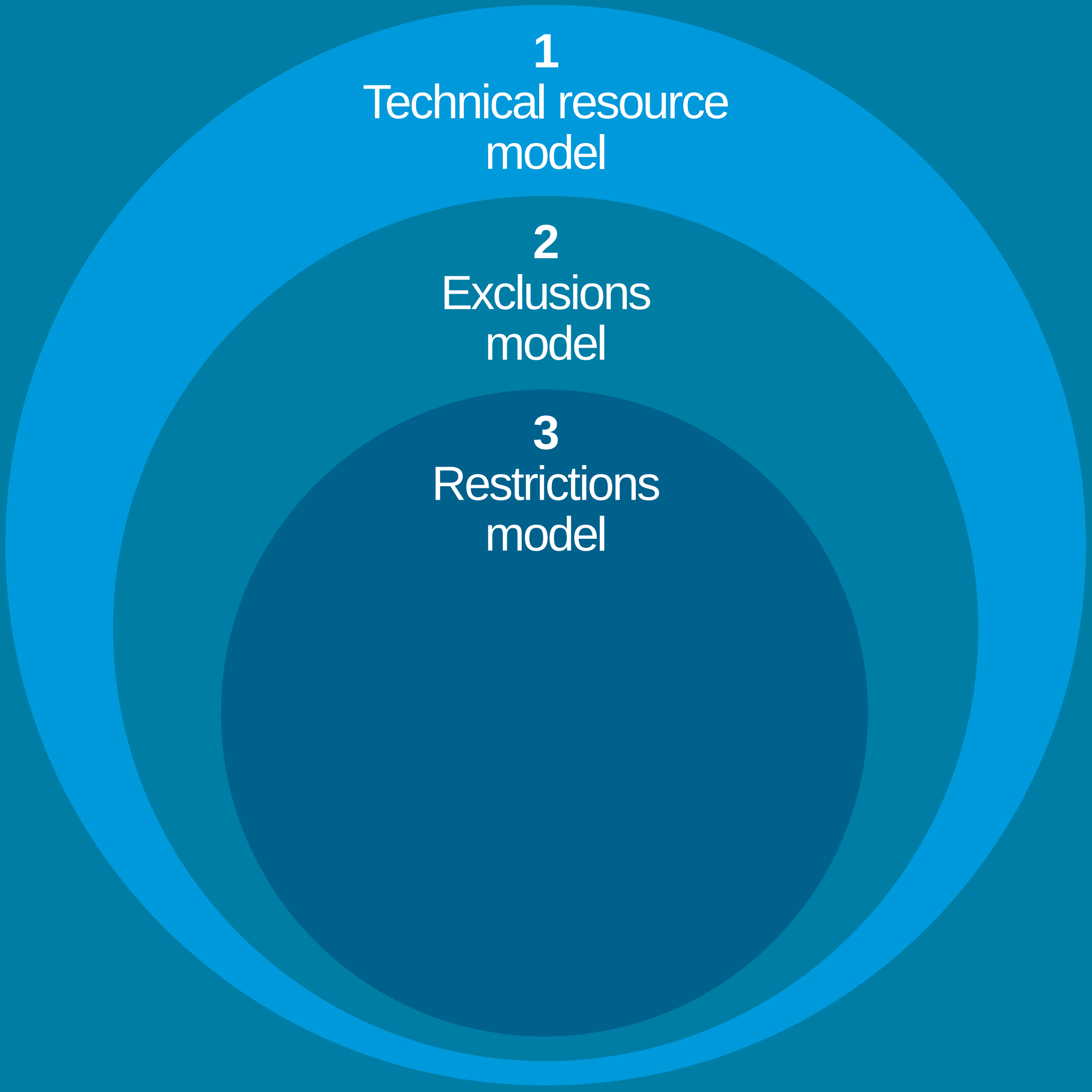
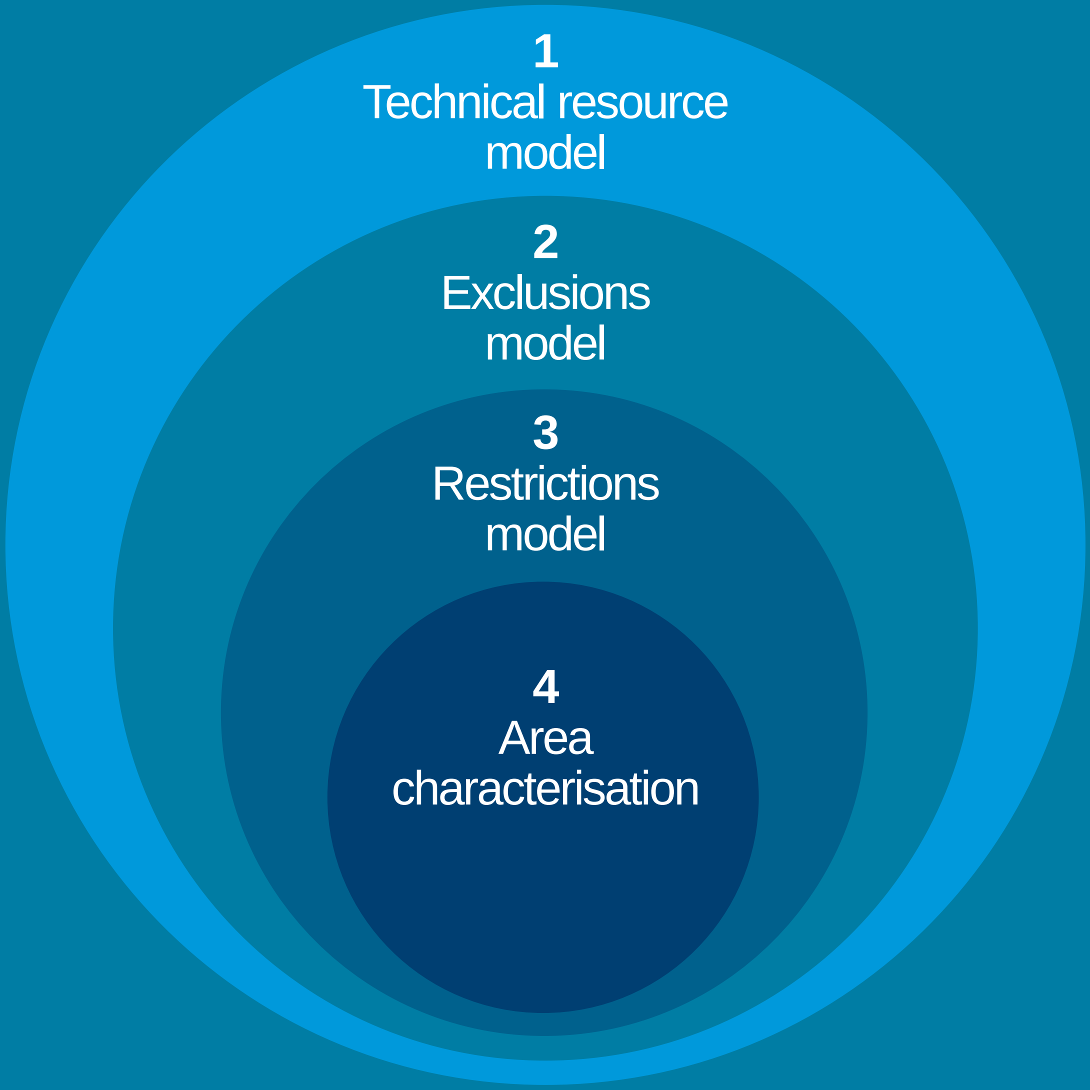
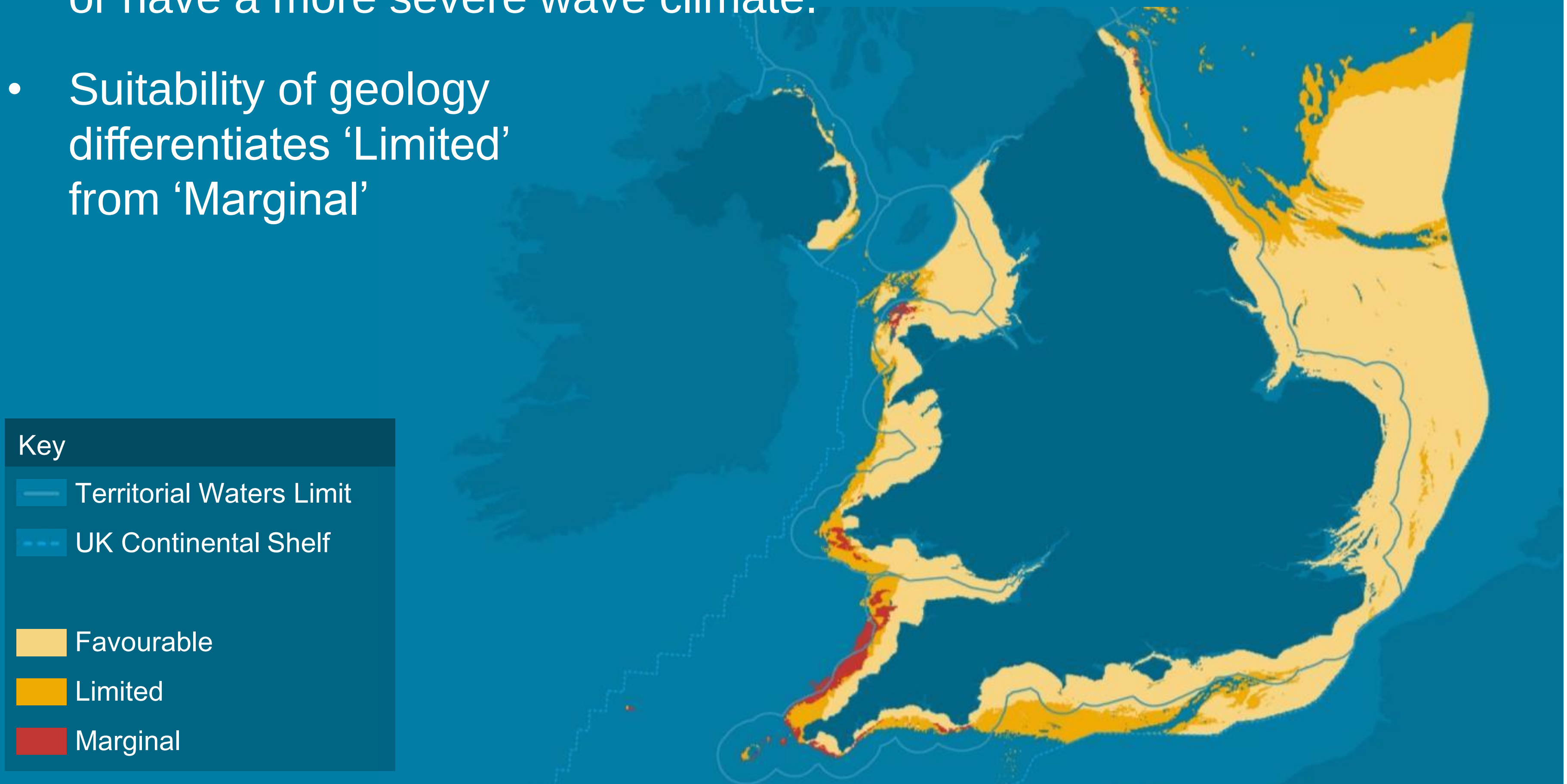


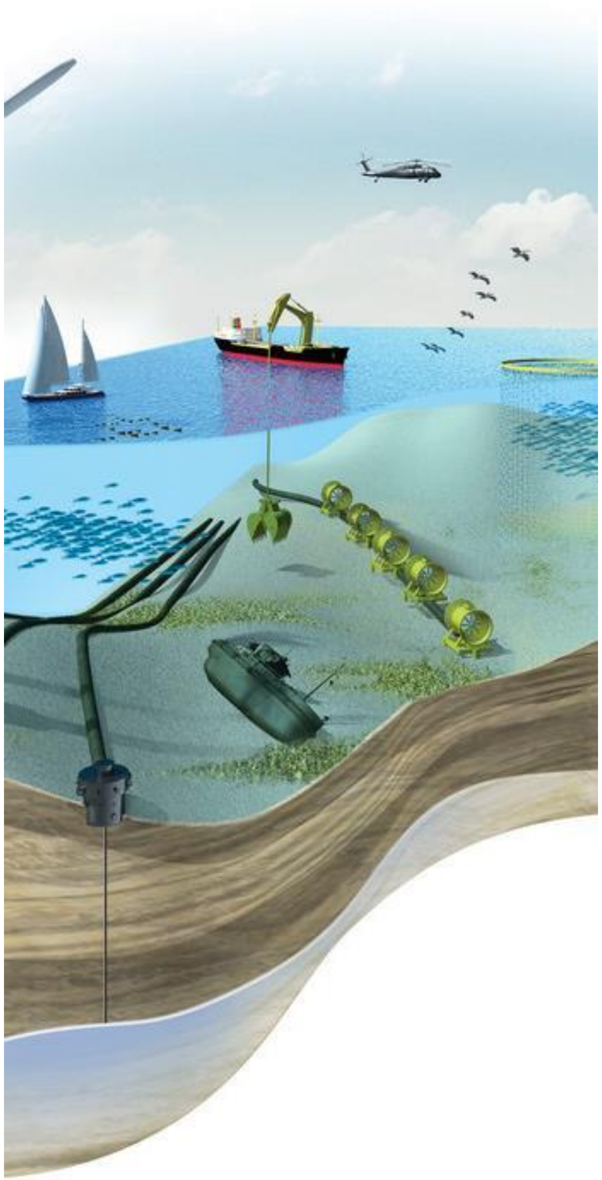
Modelling overview



1 - Technical resource model

- ‘Favourable’ technical resource area for fixed foundation offshore wind, defined by water depths 5-50m and good accessibility (>80%@2.5m Hs)
- ‘Limited’ and ‘Marginal’ technical resource areas are deeper (50-60m) or have a more severe wave climate.
- Suitability of geology differentiates ‘Limited’ from ‘Marginal’





A new approach to spatial analysis

MaRS (Marine Resource System):

- GIS-based multi-criteria analysis tool, to assess consent constraint based on some (but not all) constraints for offshore wind
- Used for Round 3, Scottish Territorial Waters leasing rounds, and Wave & Tidal demonstration zones and strategic areas
- Also used to support previous Marine Planning policy development

Consent Constraint Model uses MaRS and incorporates Analytical Hierarchical Processing (AHP) for the first time

Constraints are grouped into themes, and compared using pairwise analysis – improved rigour and transparency

2&3 - Exclusions and restrictions: data used

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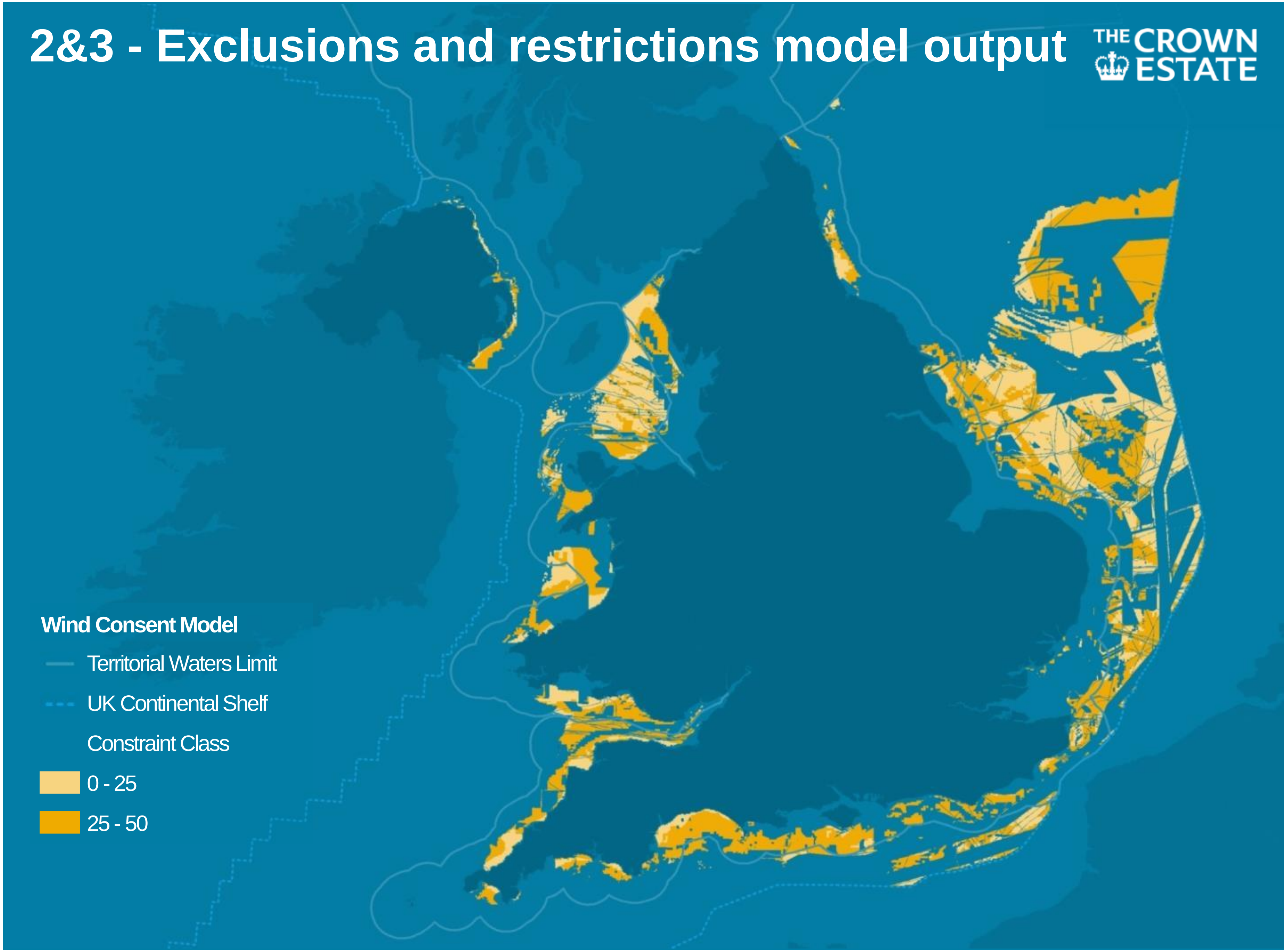
Exclusion Model
Oil and Gas Safety Zones
IMO Shipping Routes and designations
Shipping Traffic Separations Schemes
Protected Wrecks
Pipeline Infrastructure
Cables Infrastructure
Nuclear Power Stations
The Crown Estate Agreements
Cables agreements
Tidal Stream agreements
Wind agreements
Wave agreements
Minerals and Aggregates agreements
Pipelines agreements
Natural Gas Storage agreements
Capital and Navigation dredging agreements
Metocean Equipment agreements
Oil and Gas Infrastructure agreements
Aquaculture agreements
Lease Outfalls agreements
Licensed Navigational Dredging activity

Restriction Model
Shipping intensity
Harbour Authority areas
Anchorage Area
Disposal Sites
Fishing intensity 2015
High Intensity fish Nursery and Spawning overlap count
Recreational sailing intensity
Marinas
Bathing Beaches
Sites of Special Scientific Interest
Marine Conservation Zones
Special Areas of Conservation (SACs)
Mobile species candidate SACs
Special Protection Areas (SPAs)
Ramsar sites
Visibility from landscape designations
The Crown Estate Agreements
Evaporates
Carbon Capture and Storage

2&3 - Exclusions and restrictions model output

2&3 - Exclusions and restrictions model output



2&3 - Exclusions and restrictions model output

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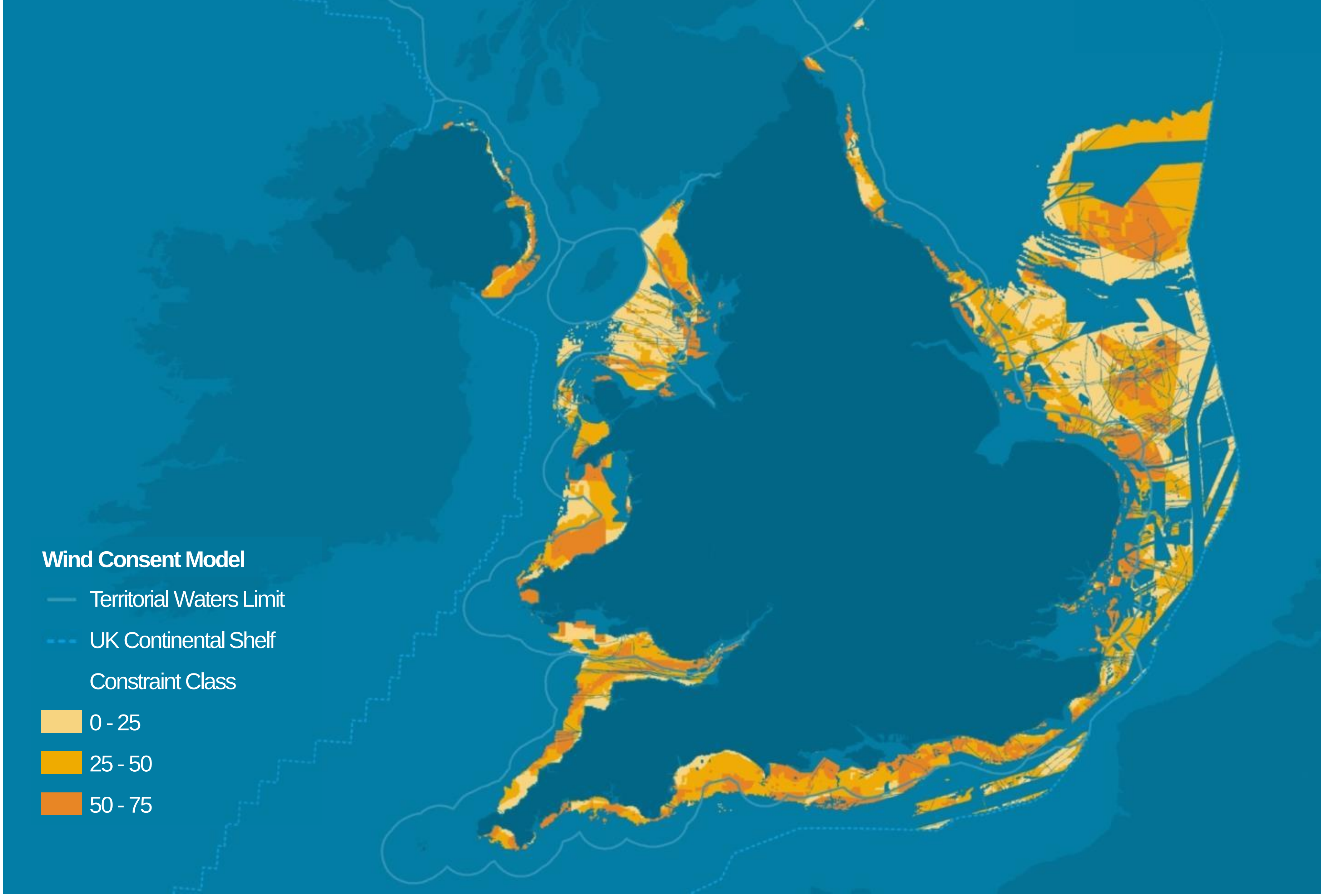

2&3 - Exclusions and restrictions model output

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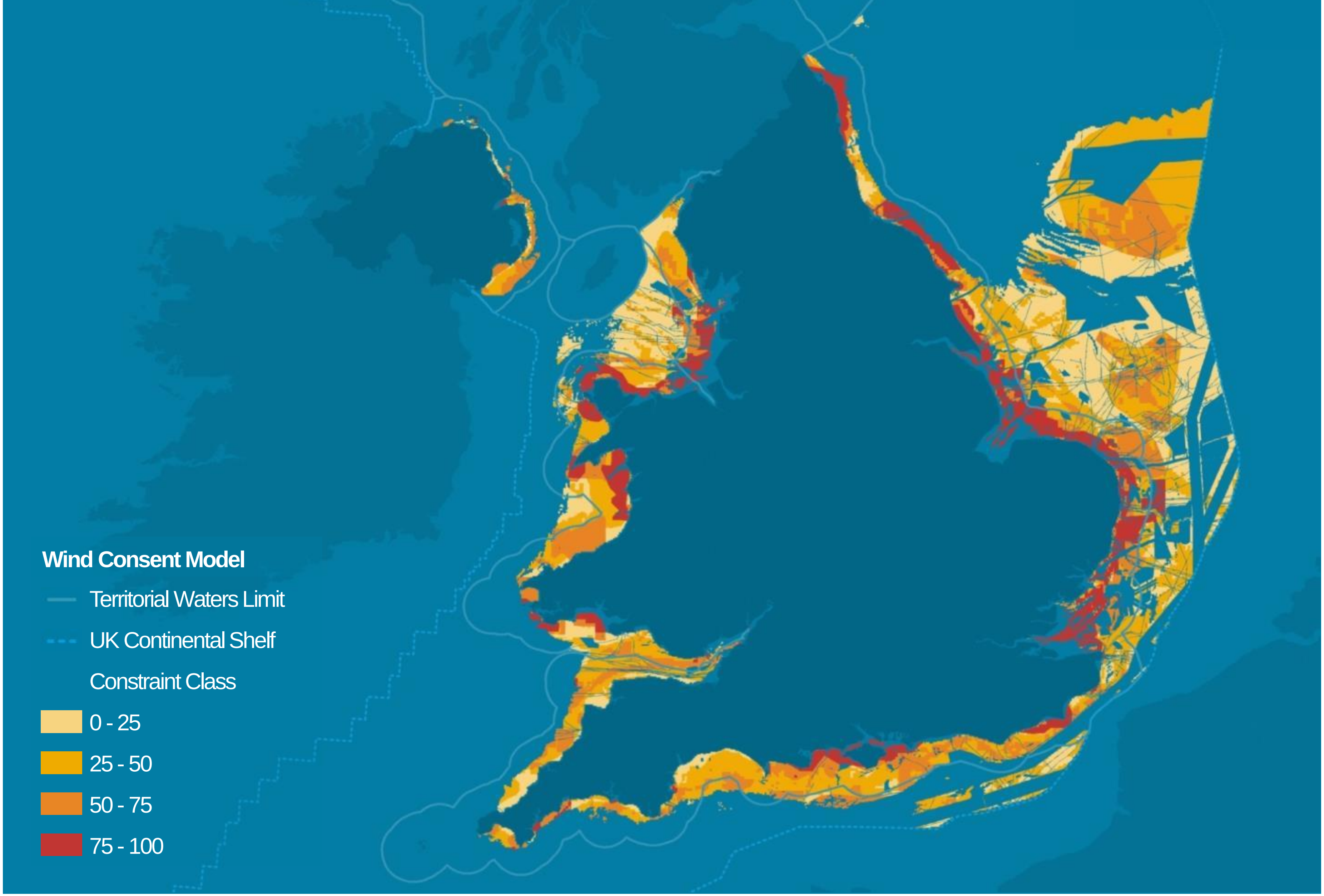
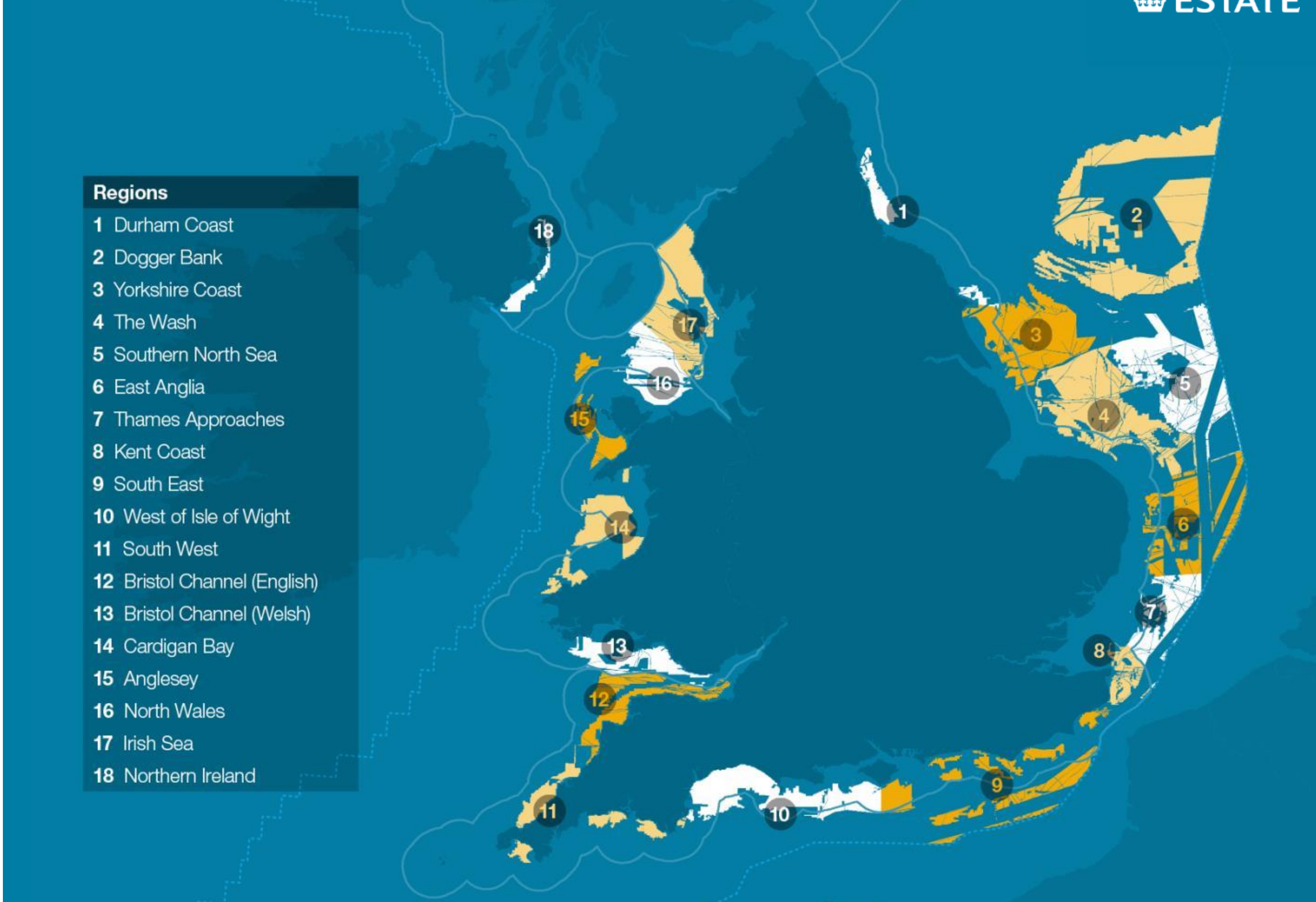


2&3 - Exclusions and restrictions model output

4 - Characterisation areas



4 - Characterisation documents: Review layers

- Everything that was in the model described
- Analysis of designations features and conservation objectives
- Ornithology outside of Special Protected Areas (SPAs) for high risk species
- Visibility analysis
- Ministry of Defence (MoD) activity
- Fisheries activity
- Oil and Gas helicopter consultation zones and blocks that are under license
- Marine plans and Marine Policy Statement (MPS)
- Water Framework Directive
- Cultural heritage
- National Air Traffic Services (NATS) radar
- The Crown Estate’s Key Resource Areas for other sectors

Characterisation documents – scoring methodology

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Receptor rating

Receptor assessed but no interaction noted	Interaction with receptor acceptable with best practice/accepted mitigation	Interaction with receptor acceptable with moderate mitigation
Interaction with receptor acceptable with significant mitigation	Very Significant/ insurmountable issue that would be challenging to mitigate within the area of influence of a receptor	No data coverage across the area

The receptor rating was completed by looking at what mitigation would be required within an area of influence for each receptor to enable offshore wind development.

Characterisation documents – scoring methodology

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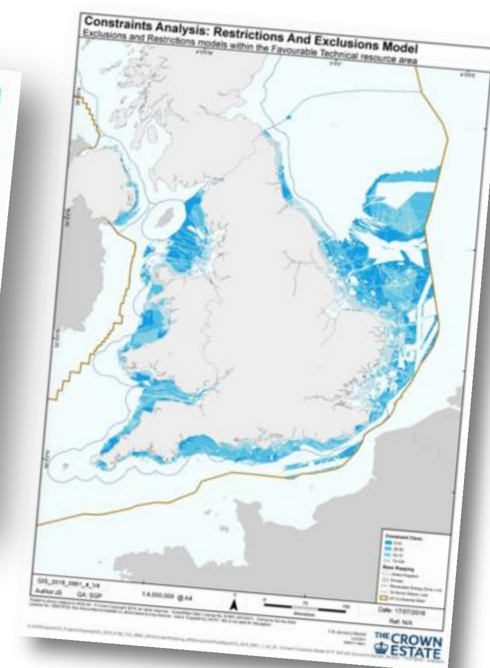
Area Rating

Receptor assessed but no interaction noted at an area level	Need to implement best practice/accepted mitigation measures to enable acceptable development within the whole area	Need to implement moderate mitigation measures to enable acceptable development within the whole area
Need to implement significant and/or strategic level mitigation to enable acceptable development within the whole area	Very significant/ Insurmountable issue that would be challenging to mitigate for any development within the whole area	No data coverage across the area

The area rating looked at how each of the constraints, in combination, would impact development across the whole area.

Deliverables of the analysis made available to Statutory Stakeholders in July 2018

- Methodology Report
- 18 Individual Characterisation Area Reports
- Model output shape files



Recap of regions initially identified

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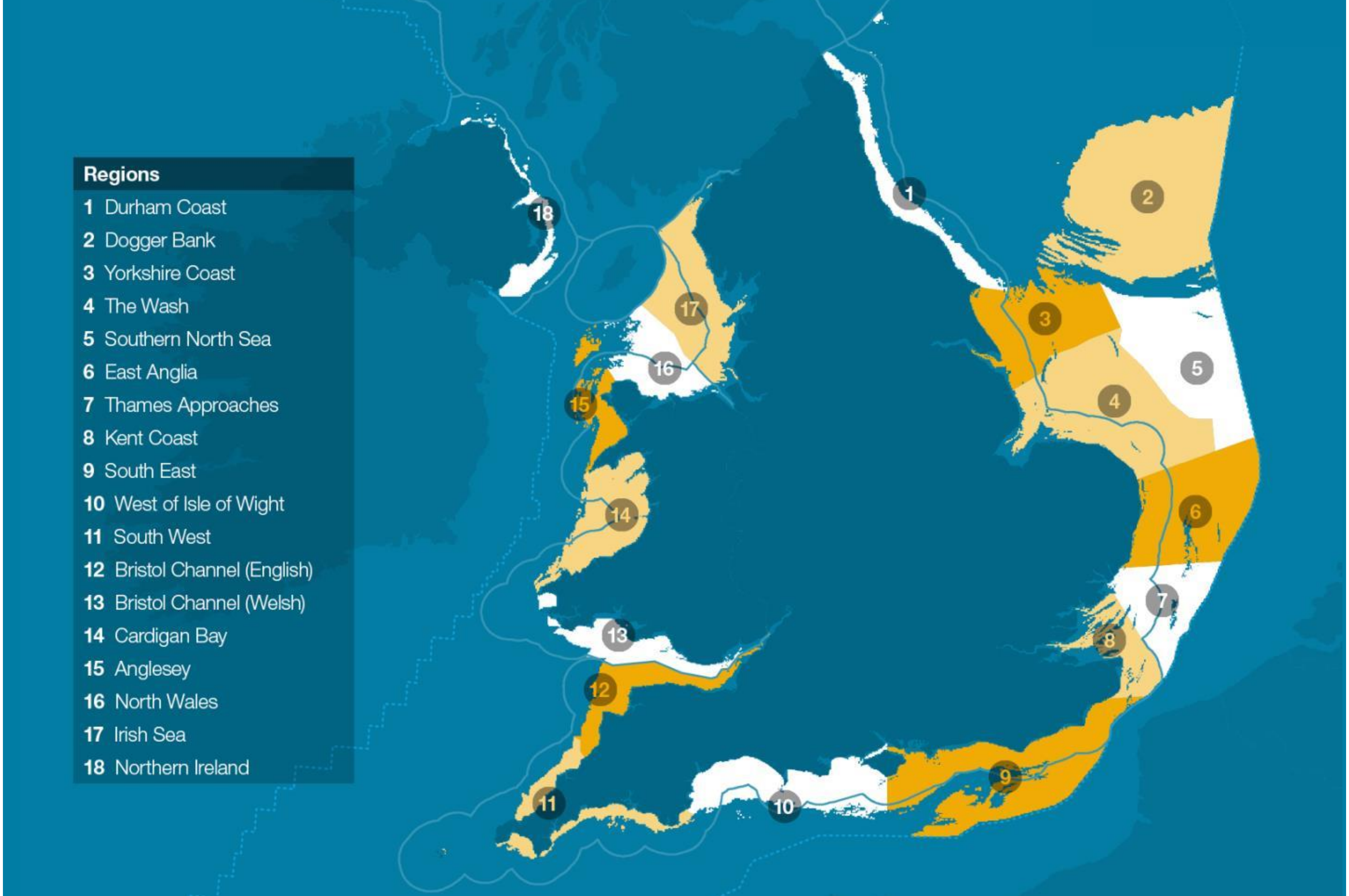
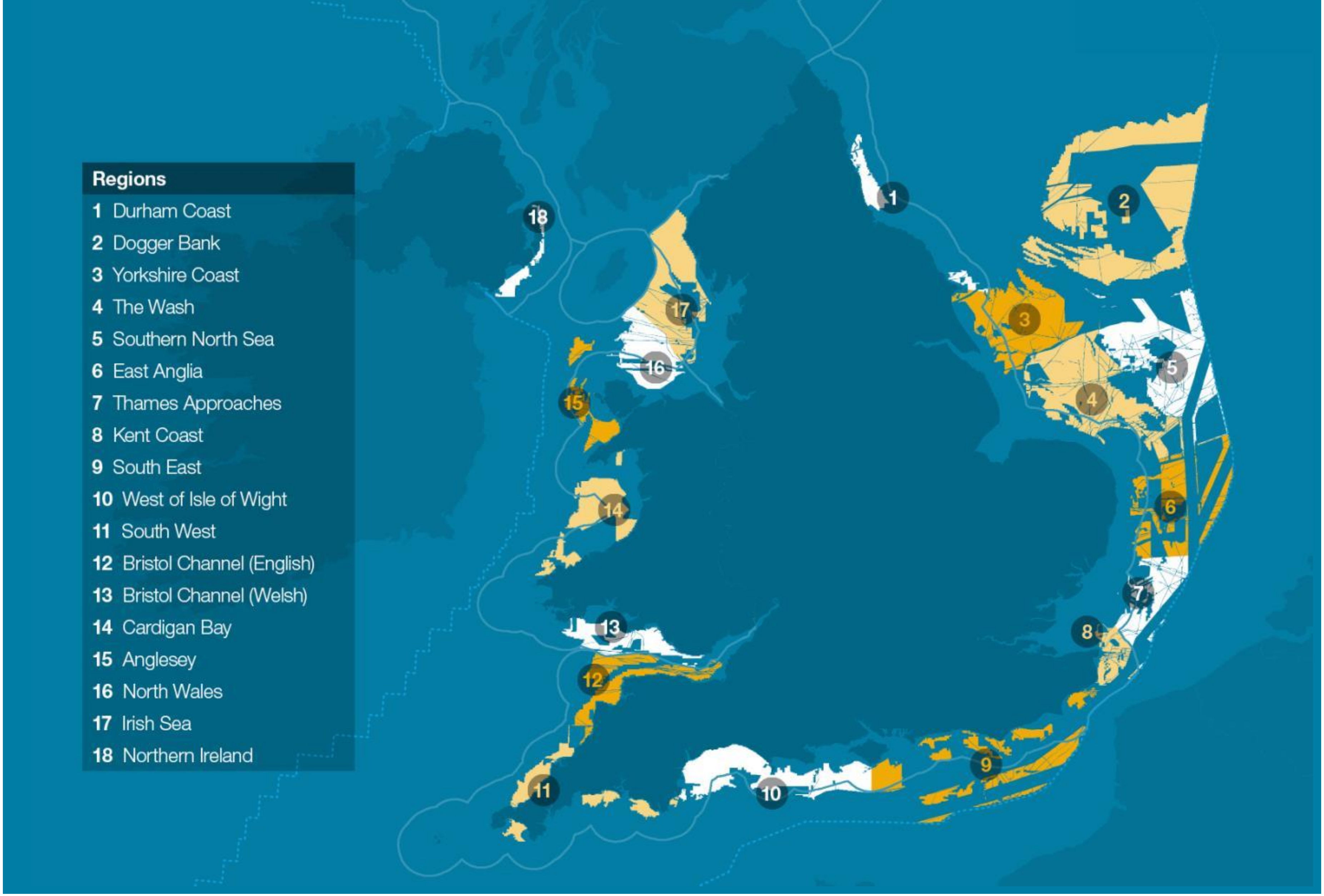


4 - Characterisation areas



Statutory stakeholder and Market feedback

Mark Hazelton

Jonny Boston

Summary of statutory stakeholder feedback

344 individual points of written feedback from 10 organisations such as:

Bilateral contributions from many others including:

Common themes raised in statutory stakeholder feedback

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How we are responding to the statutory stakeholder feedback we've received:

Updates to documents

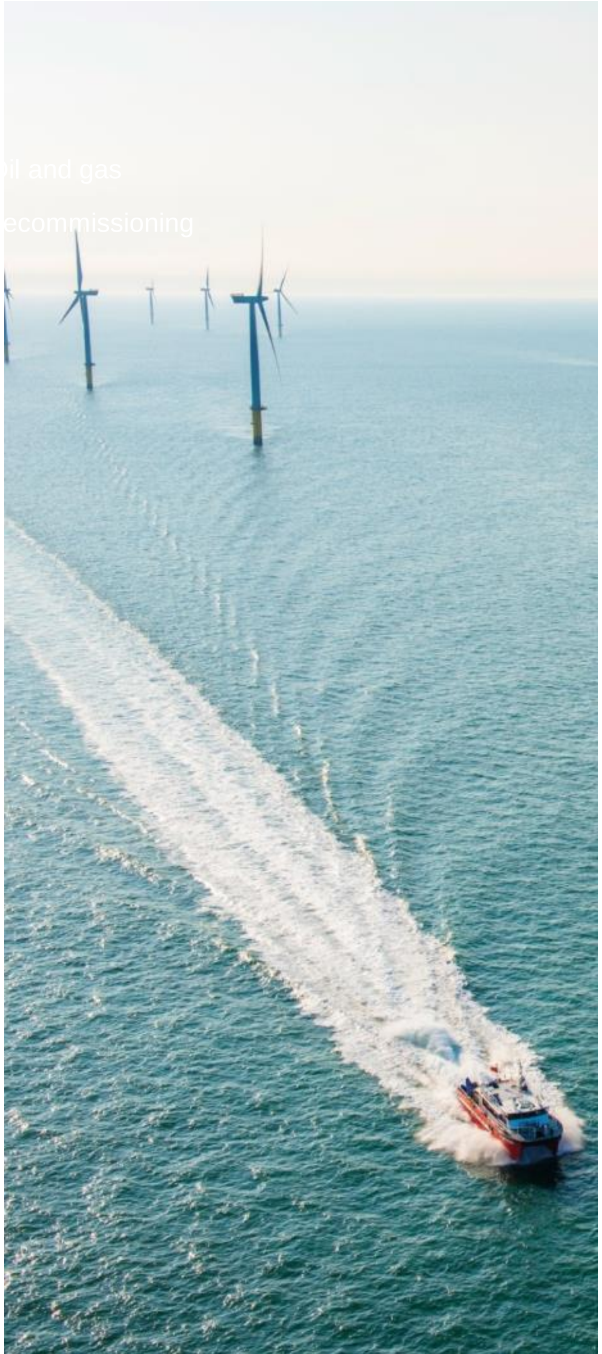
- Majority of feedback related specifically to spatial documents / reports
- Documents remain 'live' works in progress

Signposting

- Signpost other policies and information within the methodology and characterisation documents
- Share documents with developer applicants at the tender stage

Additional projects

- Identified a number of separate projects to commission (or work on in partnership with others)
- Information from these projects would feed into a bidder information pack



Additional projects under consideration

We are currently scoping additional projects which will be available to developers by the start of the tender phase

- Cable sensitivities mapping
  - Working with SNCBs to identify particularly sensitive habitats to cabling pressure, including facilitating conversations with National Grid
- Marine Protected Area sensitivities
  - Update and reassess the MPA sensitivity assessment based on feedback
- Oil and gas decommissioning
  - Investigating options for identifying decommissioning data
- Ornithology
  - Agree collective priorities with SNCBs
- Visibility analysis
  - Re-running model at 250m & 350m tip heights

Common themes from market feedback

- Support for proposed leasing model (developers identifying preferred sites within regions of seabed)
- Support for The Crown Estate sharing its data and analysis to help inform developers' selection of sites
- Appetite for at least 6GW of new seabed rights
- Many advocating a flexible approach to the timing of subsequent leasing rounds
- Appetite for as many regions to be available as possible
- Support for a leasing round focussed on fixed foundation offshore wind, but stating fixed foundation wind viable in water depths > 50 metres.
- Interest in the ability to enable hybrid projects (e.g. with oil & gas, interconnectors)

Updates to our proposals

- Capacity likely to be increased to 7GW, in light of strong market appetite
- A more flexible position on timing of any future leasing rounds – we will consider possible future rounds in light of energy policy, market demand and stakeholder views
- Refinement of regions, removing those with significant levels of constraint at this stage
- Extend the regions included in the leasing offer out to 60m depth
- Supporting data & analysis remains focused on the 'Favourable' resource area

Summary

- Constructive engagement to date from both market and statutory stakeholders
- This has enabled us to refine proposals and focus on key areas of concern
- Key decision to be taken is which regions will be taken forward – cover this in next session
- Market event on 26th November will set out more detail on tender process design
- Final decisions on leasing design will be taken after this second phase of engagement

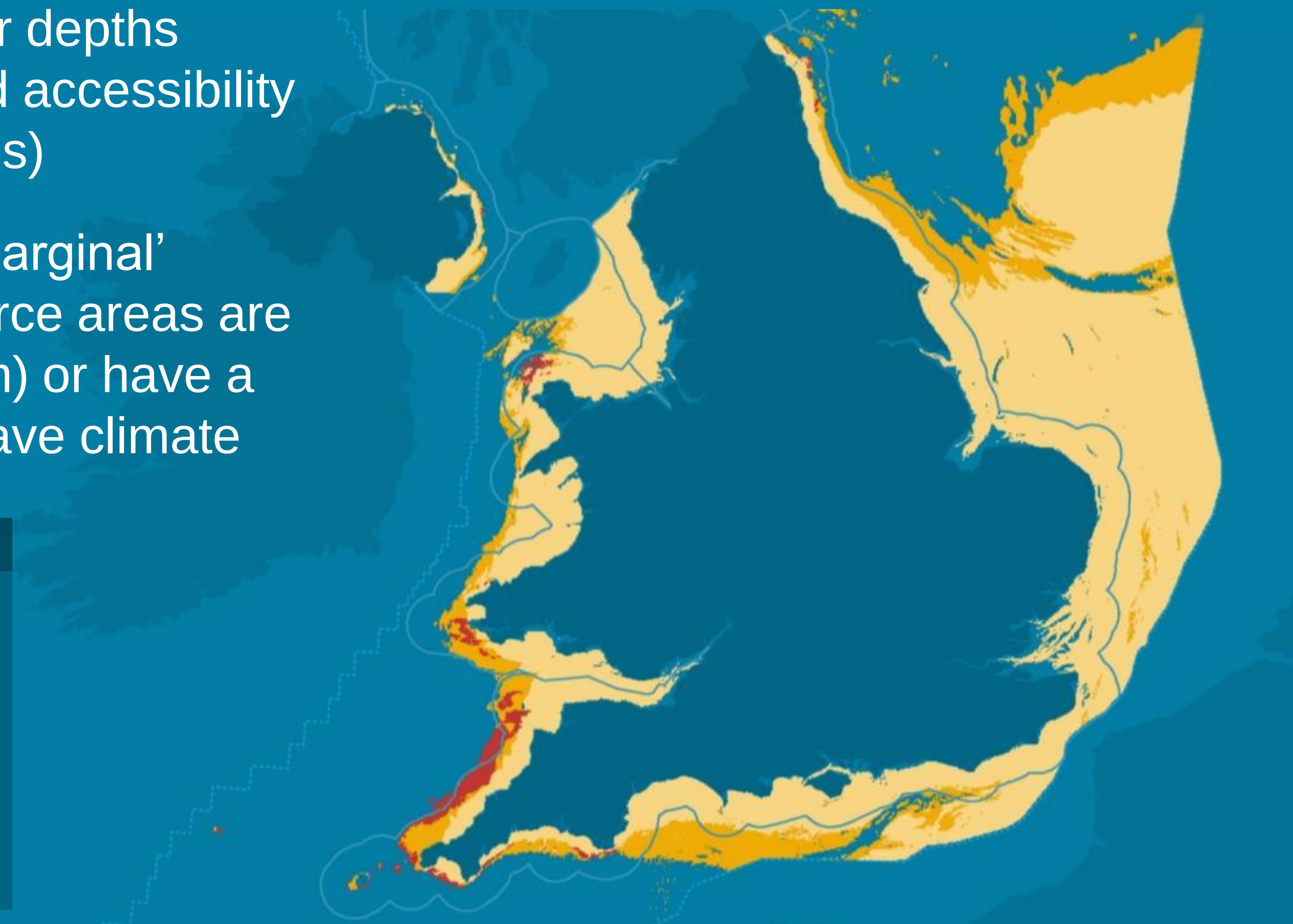
New leasing

Region refinement

Olivia Thomas

Technical resource area

- ‘Favourable’ technical resource area for fixed foundation offshore wind is defined by water depths 5-50m and good accessibility (>80%@2.5m Hs)
- ‘Limited’ and ‘Marginal’ technical resource areas are deeper (50-60m) or have a more severe wave climate



‘Favourable’ resource area – divided into regions

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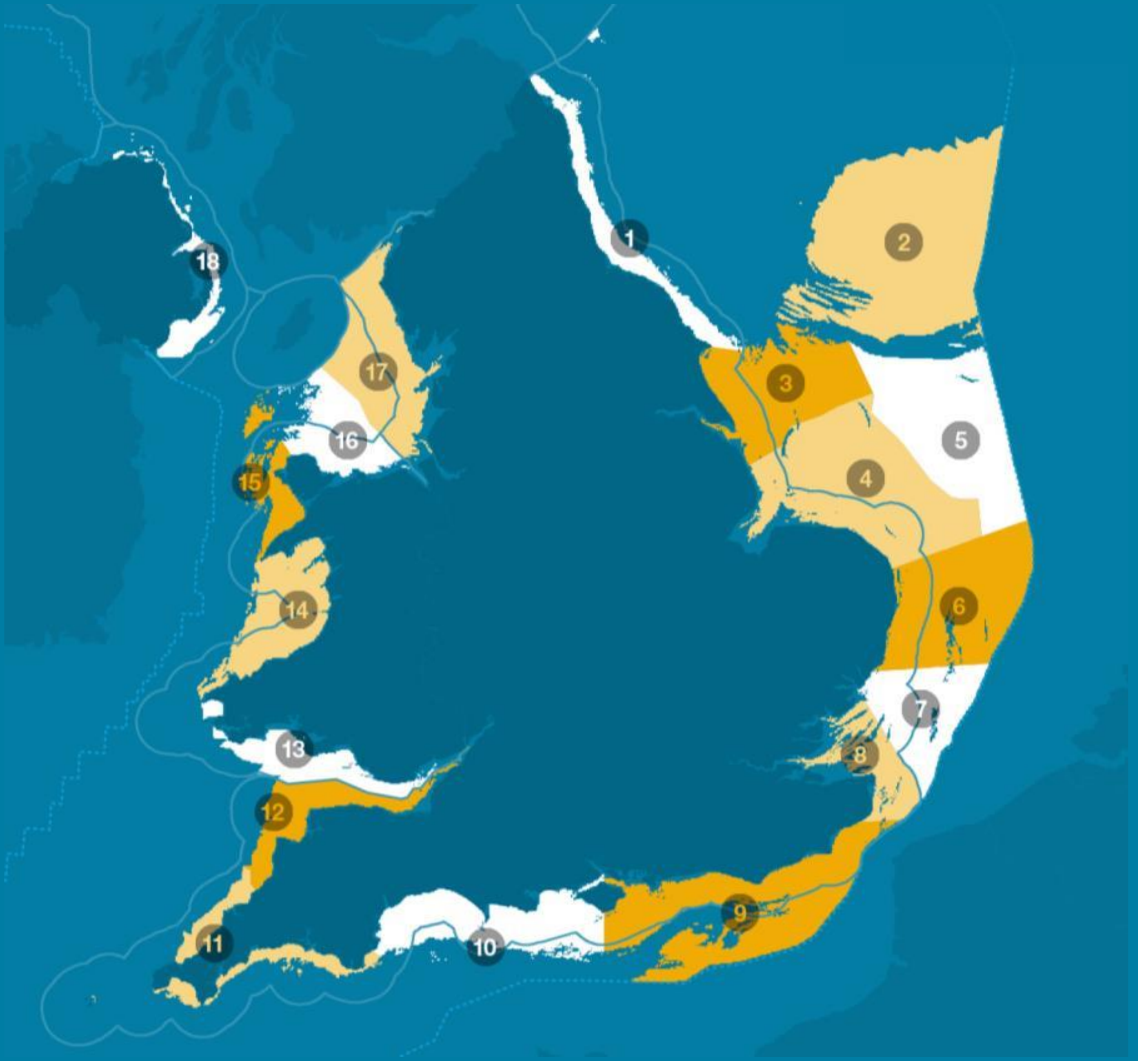
Regional approach to tender proposed

18 potential regions identified

Market feedback generally promoted release of as much seabed as possible

Statutory stakeholders generally emphasised the high levels of constraint outside Characterisation Areas



Balancing market and stakeholder feedback

Regions have been categorised as follows:

1. Excluded: regions not taken forward as part of Round 4

2. Remaining:

    2a. Propose to include: region included at this stage and likely to be offered in the tender process

    2b. Under consideration: region included at this stage but awaiting evidence through additional projects being commissioned and wider stakeholder feedback before we reach our decision

The forthcoming slides on region refinement represent current thinking and are subject to change

Constraints that have determined the exclusion of regions so far:

Defence

DIO feedback

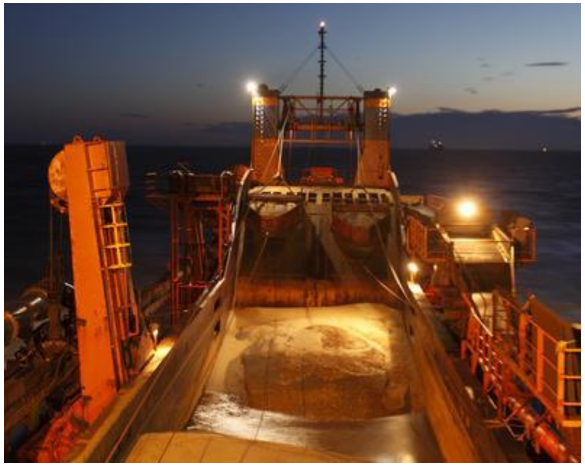
Certain range and exercise areas have been removed as hard constraints.

Visual Sensitivity

Visual sensitivity

Region excluded in circumstances where the majority of the Characterisation Area lies within 13km from shore

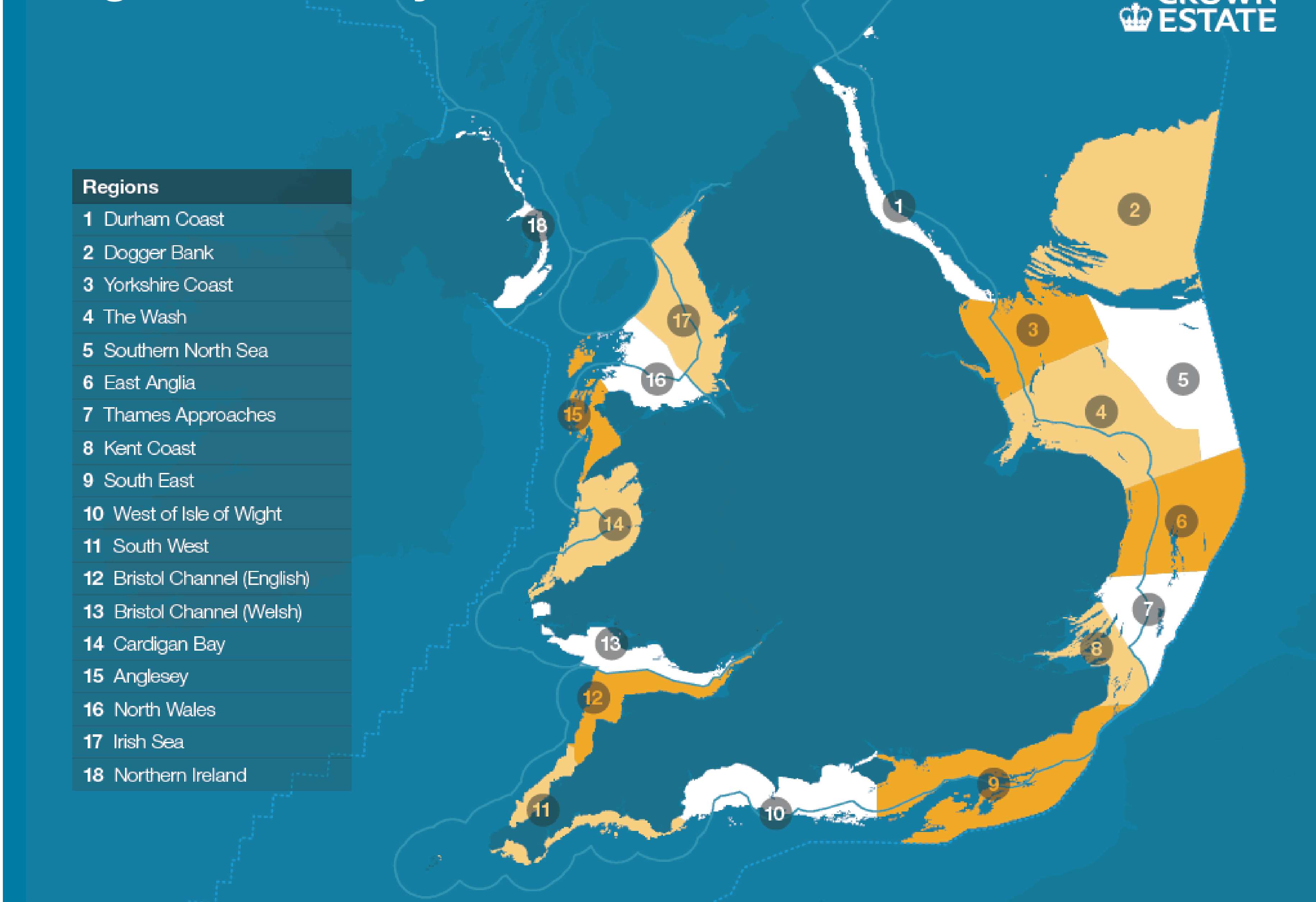
Navigation



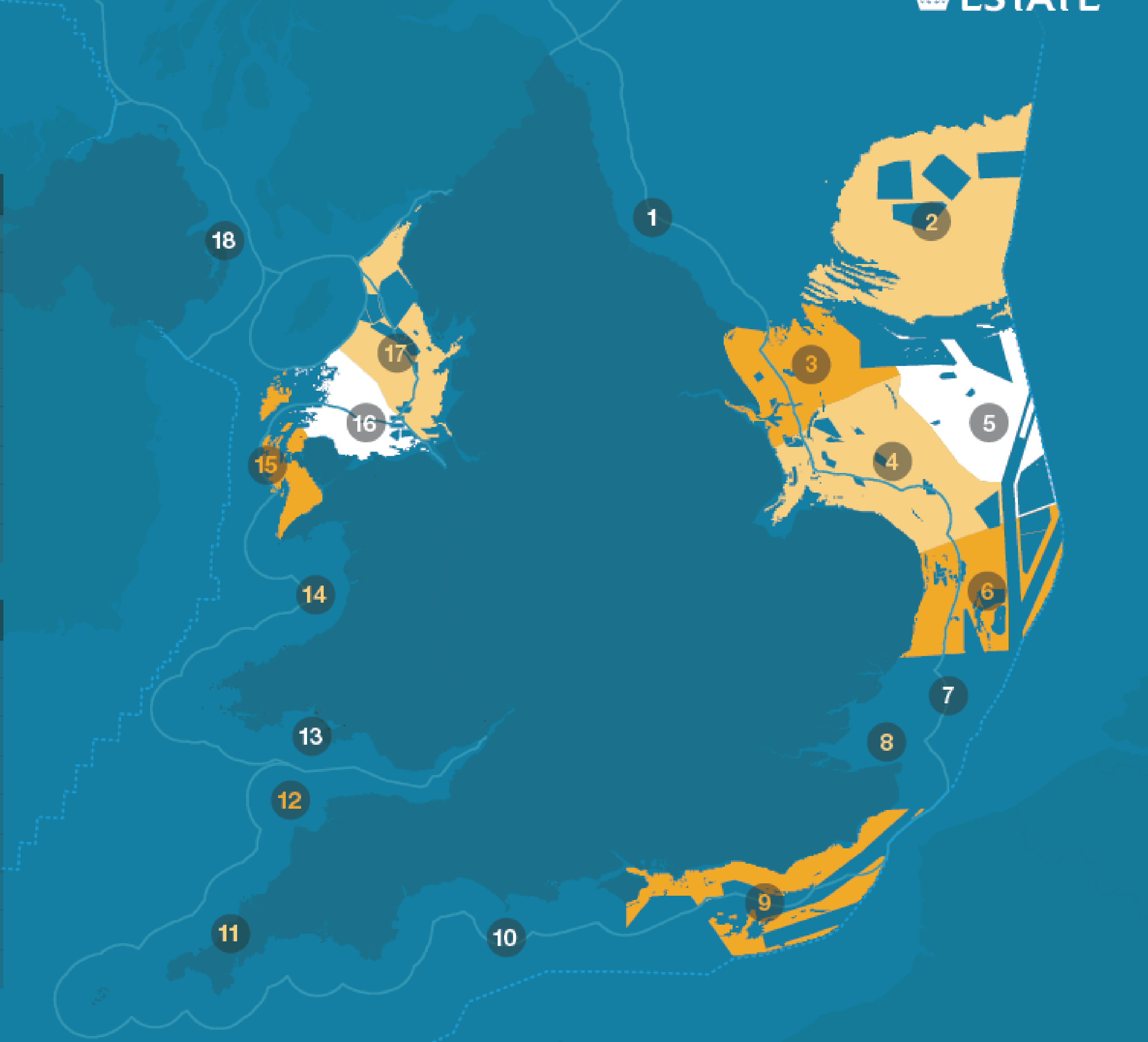
Navigation

Region excluded where the majority of the Characterisation Area overlaps with shipping density of over 1,000 ships per year

Regions initially identified



Region refinement



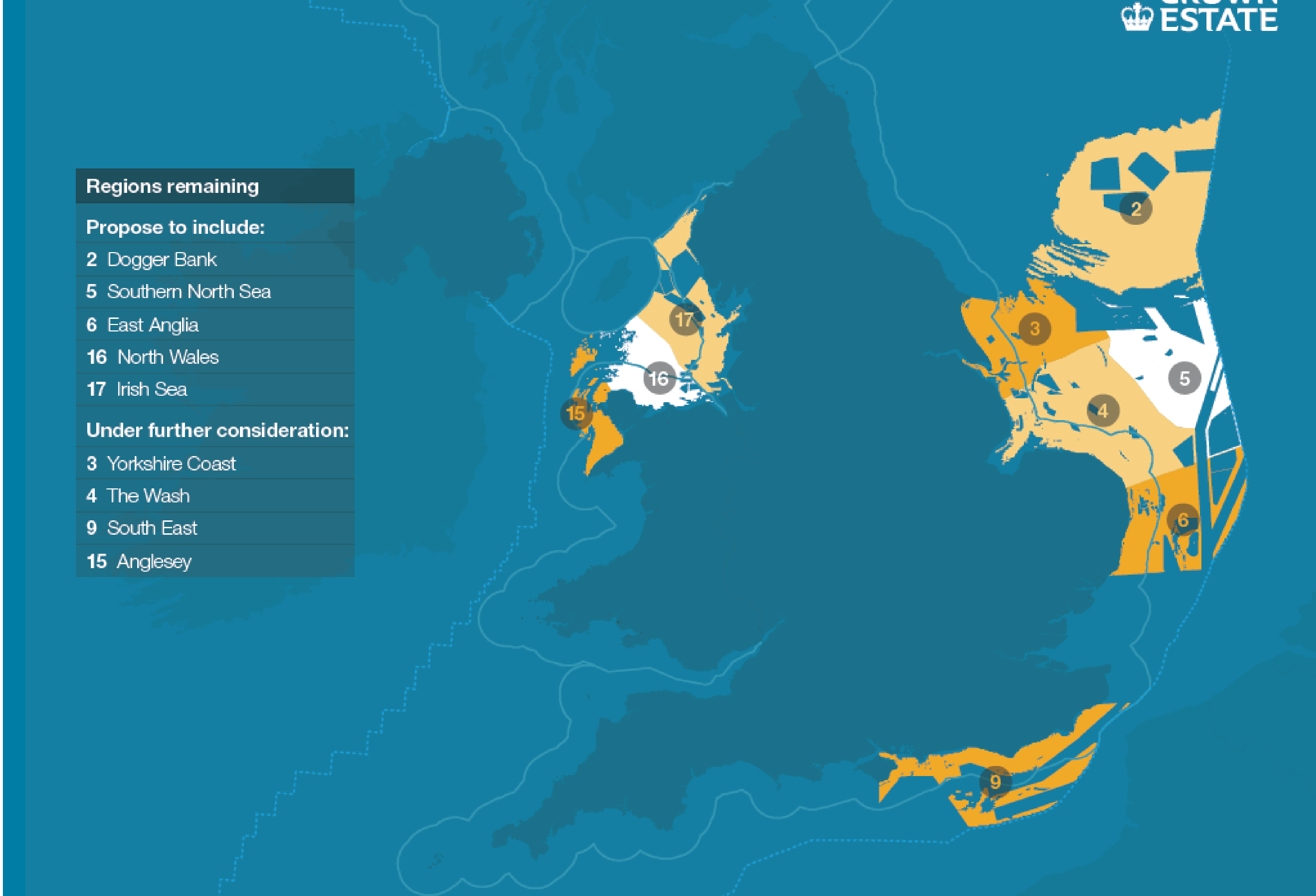
Regions excluded

1 Durham Coast
7 Thames Approaches
8 Kent Coast
10 West of Isle of Wight
11 South West
12 Bristol Channel (English)
13 Bristol Channel (Welsh)
14 Cardigan Bay
18 Northern Ireland

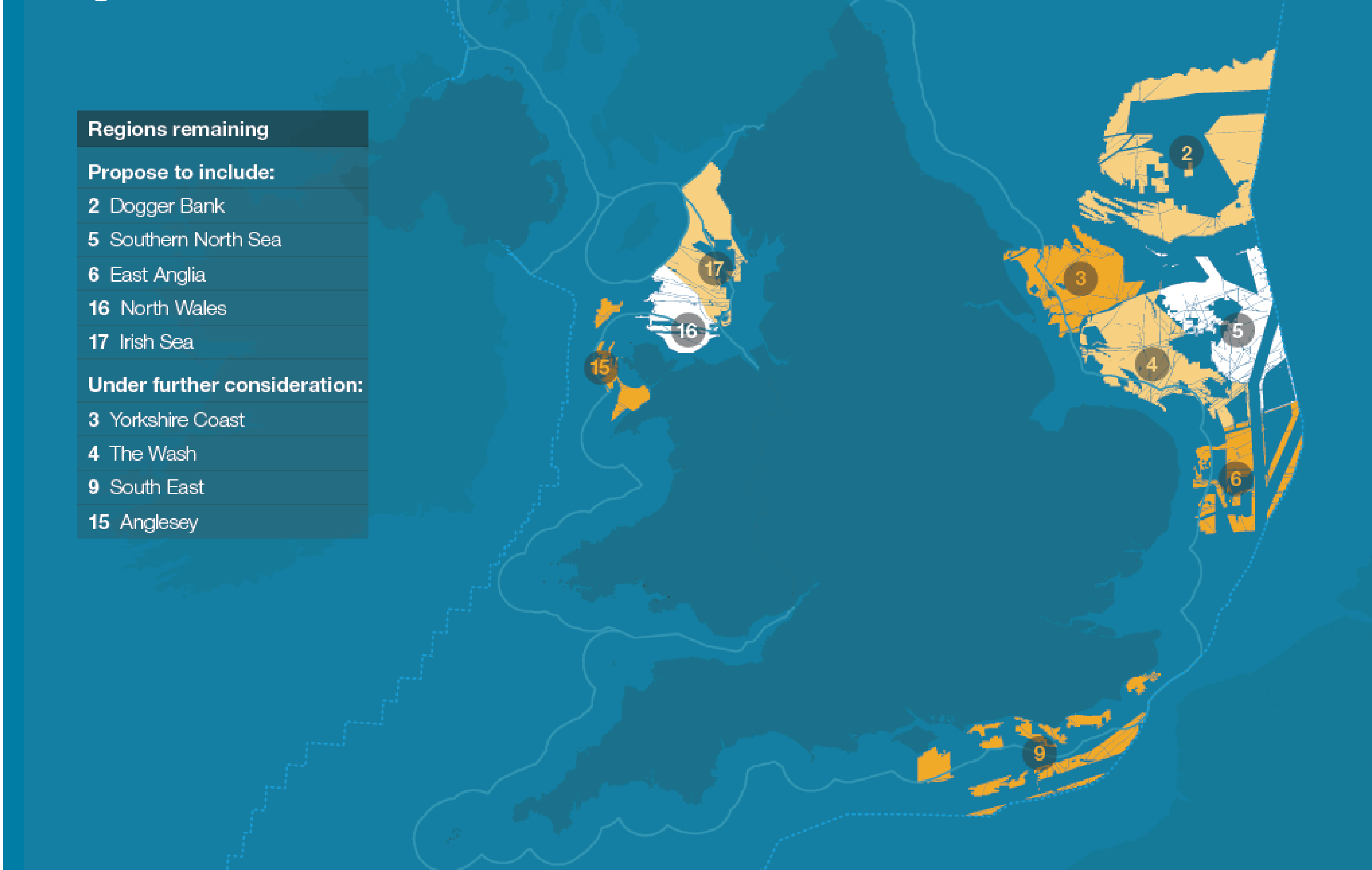
Regions remaining

2 Dogger Bank
3 Yorkshire Coast
4 The Wash
5 Southern North Sea
6 East Anglia
9 South East
15 Anglesey
16 North Wales
17 Irish Sea

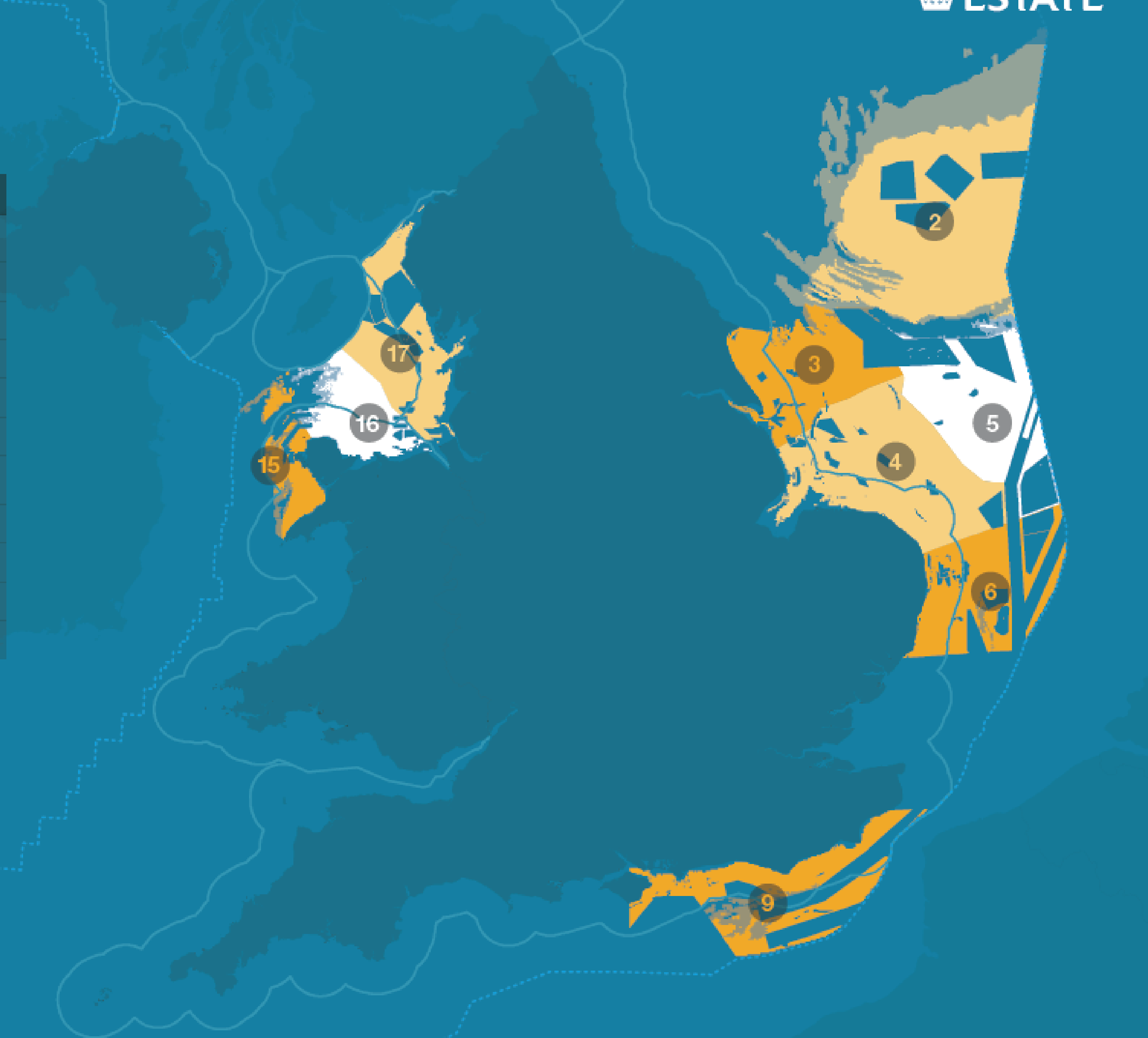
Regions refinement continued



Characterisation areas within remaining regions



Remaining regions out to 60 metres



Regions remaining

Propose to include:

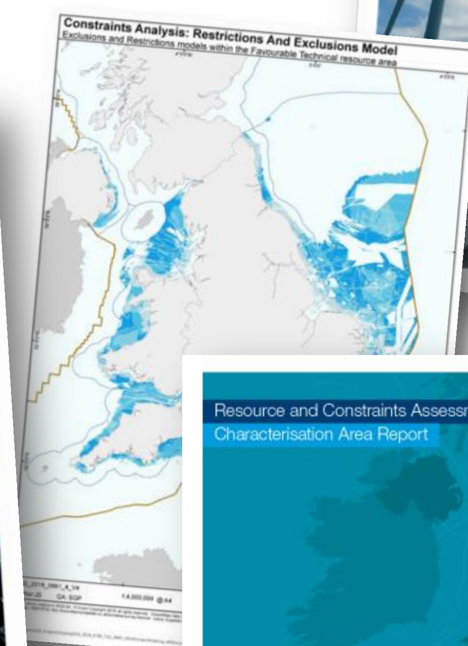
- **2** Dogger Bank
- **5** Southern North Sea
- **6** East Anglia
- **16** North Wales
- **17** Irish Sea

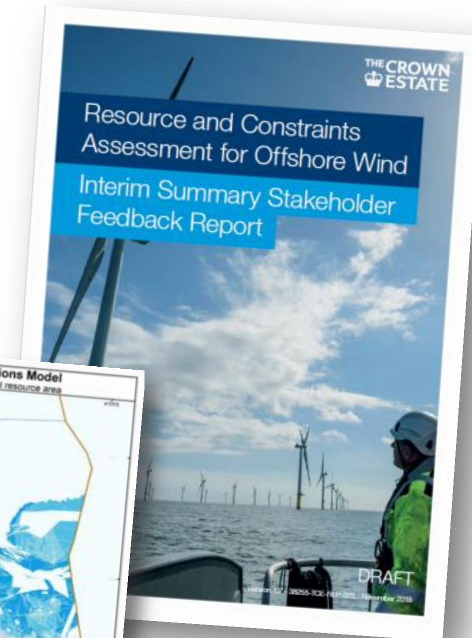
Under further consideration:

- **3** Yorkshire Coast
- **4** The Wash
- **9** South East
- **15** Anglesey

Deliverables of the analysis

- Revised draft Methodology Report
- 9 Individual revised draft Characterisation Area Reports
- Draft Region Refinement Report – Annexed 9 regions
- Interim Summary Stakeholder Feedback Report
- Further Projects





Refinement and engagement continues….

- Initial assessment concluded - nine seabed regions identified that will not be included in Round 4
- Nine regions remain at this stage, of which four appear to have significant levels of constraint
- We are building our evidence base to continue refining regions, including commissioning additional work – final decision on regions to be taken forward prior to launch
- In parallel, we are preparing for Plan-level HRA
- Our request of Stakeholders: provide feedback on the nine regions proposed for inclusion – feedback will be passed to developers to inform site selection

Summary & next steps

Olivia Thomas

Summary

- Work continues to design a new leasing round, and we are grateful for your input
- Our vision is to design and run a process that is fair, transparent and that balances a range of different interests
- We have received constructive feedback on our initial proposals and welcome input to shape our refined proposals
- We are planning to make our draft constraint analysis available
- We propose that final constraint analysis would be published alongside stakeholder feedback by the launch of a new leasing process

The engagement journey continues

November 2017
Announcement by The Crown Estate that we are considering potential new leasing

February 2018
Update provided to Offshore Wind Industry Council and on our website

July 2018
Initial engagement with market and statutory stakeholders

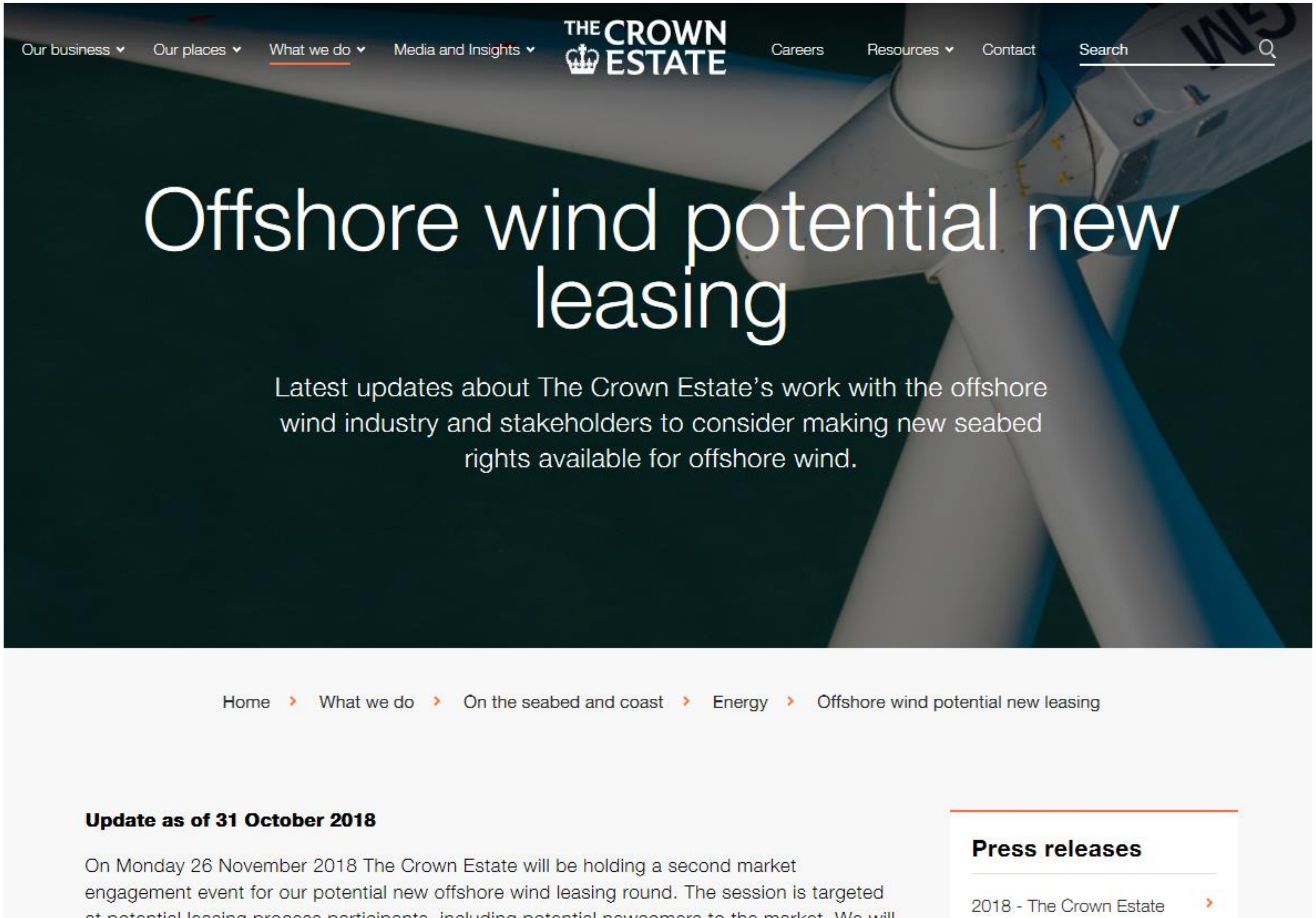
November 2018
Further engagement prior to any tender process

Spring 2019
Potential launch

2020
Potential award of rights

Timings are subject to change and will be confirmed in due course

Stay informed



To stay informed please visit our website: thecrownestate.co.uk/potentialnewleasing

Join our mailing list at: offshorestakeholder@thecrownestate.co.uk

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