INTOG Conference

The Decarbonisation and Innovation Challenges

15th May 2023

DeepWind
North of Scotland Offshore Wind Cluster

Image source – SSE Renewables

Today's programme

10.30am - Registration and refreshments
11.00am - Paul O'Brien, DeepWind introduction
11.10am - Carlo Procaccini and Bill Cattanach, NSTA update and intro to TOG round
11.20am - TOG Round projects

1) **Keith Johnston**, Floatation Energy – 20 minutes
2) **Mark Dixon**, Cerulean Winds – 20 minutes
3) **Simon Johnson**, TotalEnergies – 10 minutes

Q&A panel session – 15 minutes

12.30 - Networking Lunch
13.30 - Andy Rodden, Energy Transition Zone update and intro to Innovation round
13.45- Innovation Round Projects

1) **Kirsty Adams**, BlueFloat Energy and Renantis – 20 minutes
2) **Huw Bell**, Simply Blue Energy – Salamander project – 15 minutes
3) **Adele Brownlie**, bp Alternative Investments – 15 minutes
4) **Paul McElvanna**, ESB Asset Development – 15 minutes

Q&A Panel session - 15 minutes

15.05 - Closing remarks: Paul O'Brien, DeepWind
15.15 - End of event

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North Sea Transition Authority

ETZ
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Carlo Procaccini

North Sea Transition Authority

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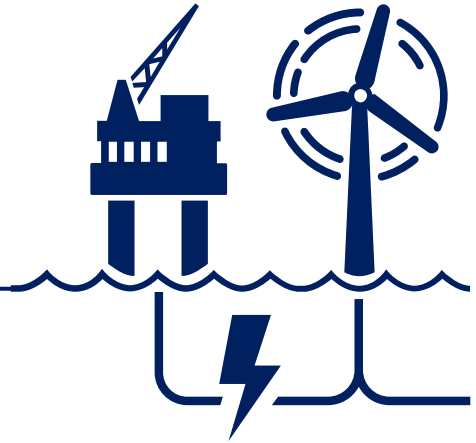
Offshore Electrification



INTOG Conference, Aberdeen 15.05.2023

Carlo Procaccini

Chief Technical Officer, NSTA

NSTA – What we do

North Sea Transition Authority

We regulate and influence the oil, gas and carbon storage industries. We help **drive North Sea energy transition**, realising the significant potential of the UK Continental Shelf as a critical energy and carbon abatement resource.

We hold industry to account on their commitment to
reducing upstream emissions by a minimum of 50% by 2030.

ENERGY SECURITY

Helping meet UK energy demand

Oil and gas licensing and stewardship

EMISSIONS REDUCTION

Regulating for emissions reductions

Driving electrification and ensuring zero routine flaring

ACCELERATING THE TRANSITION

Carbon storage licensing and stewardship

Promoting energy integration

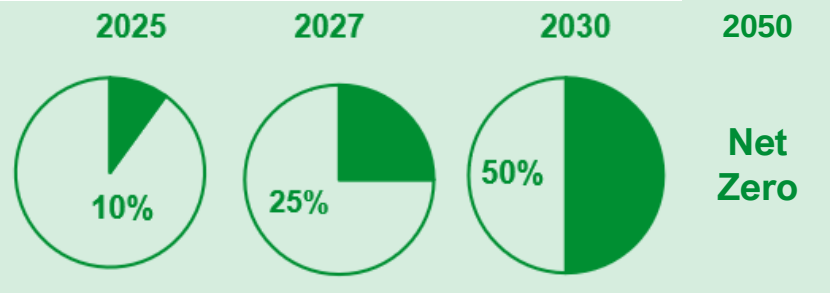
Providing open data access

We aim to be an **integrating force in the UKCS,** helping realise its **full economic potential**.
We champion **the supply chain** and **job creation** across the UK.

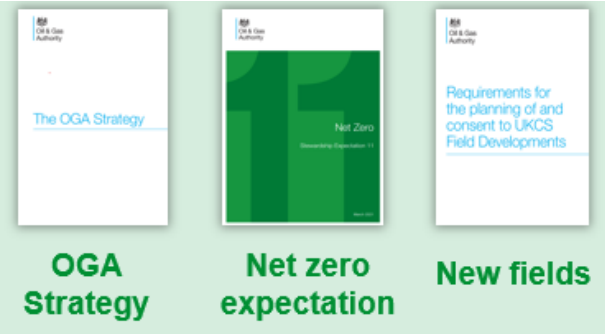
UK upstream O&G emissions

North Sea Transition Authority

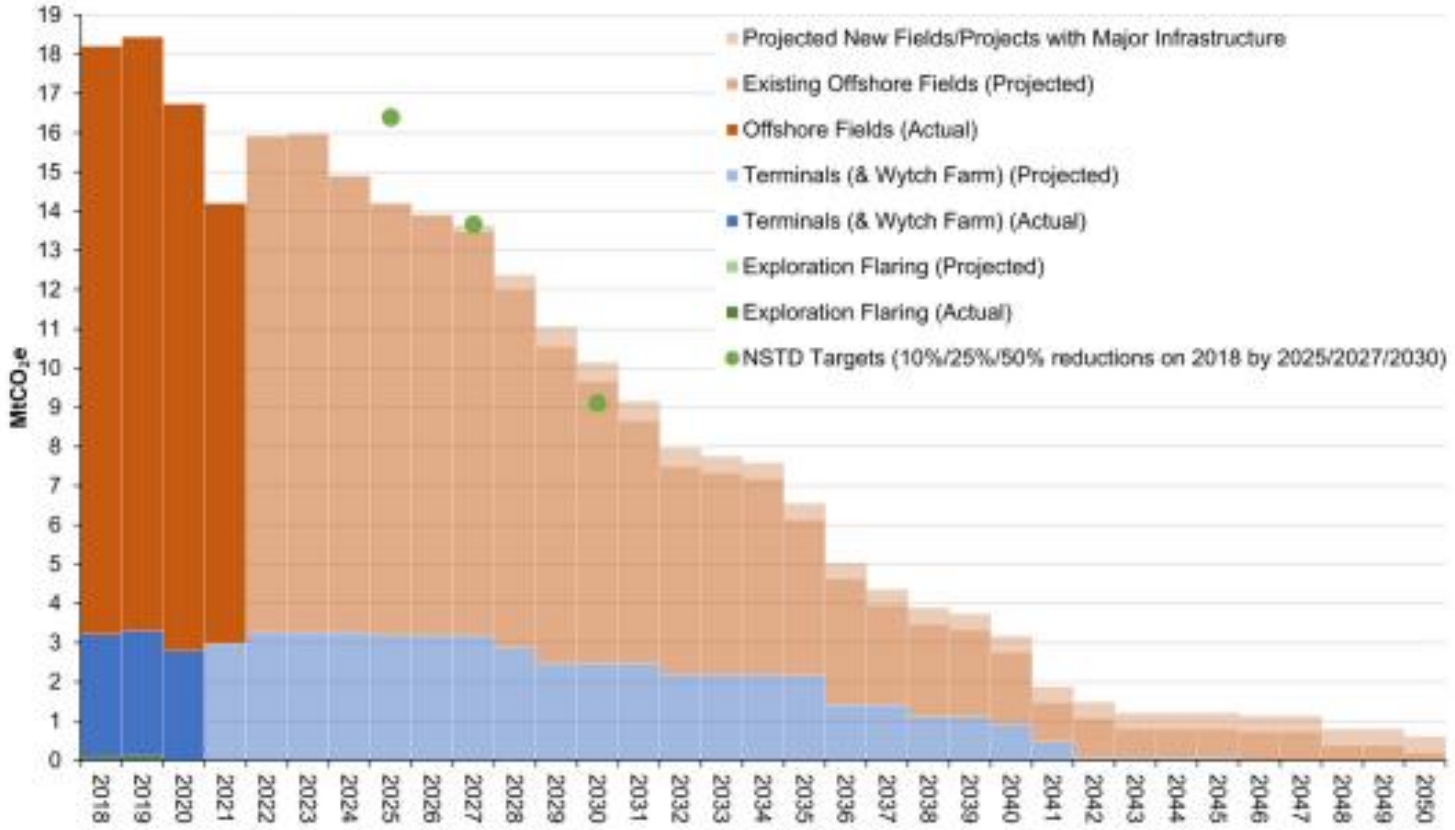
North Sea Transition Deal - Targets



NSTA Net Zero Guidance

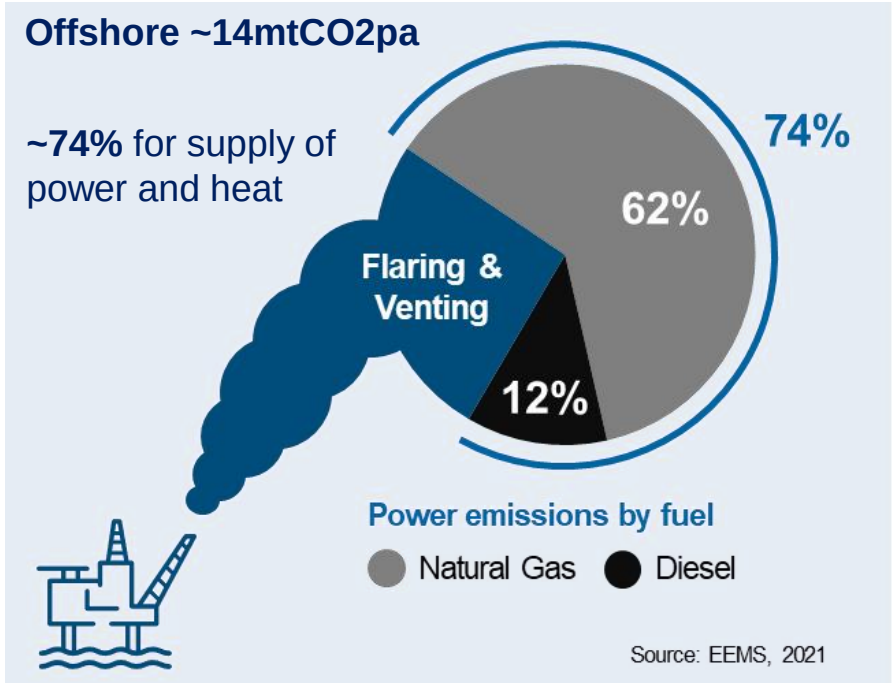


Early success – but much to do



Offshore emissions & power

North Sea Transition Authority



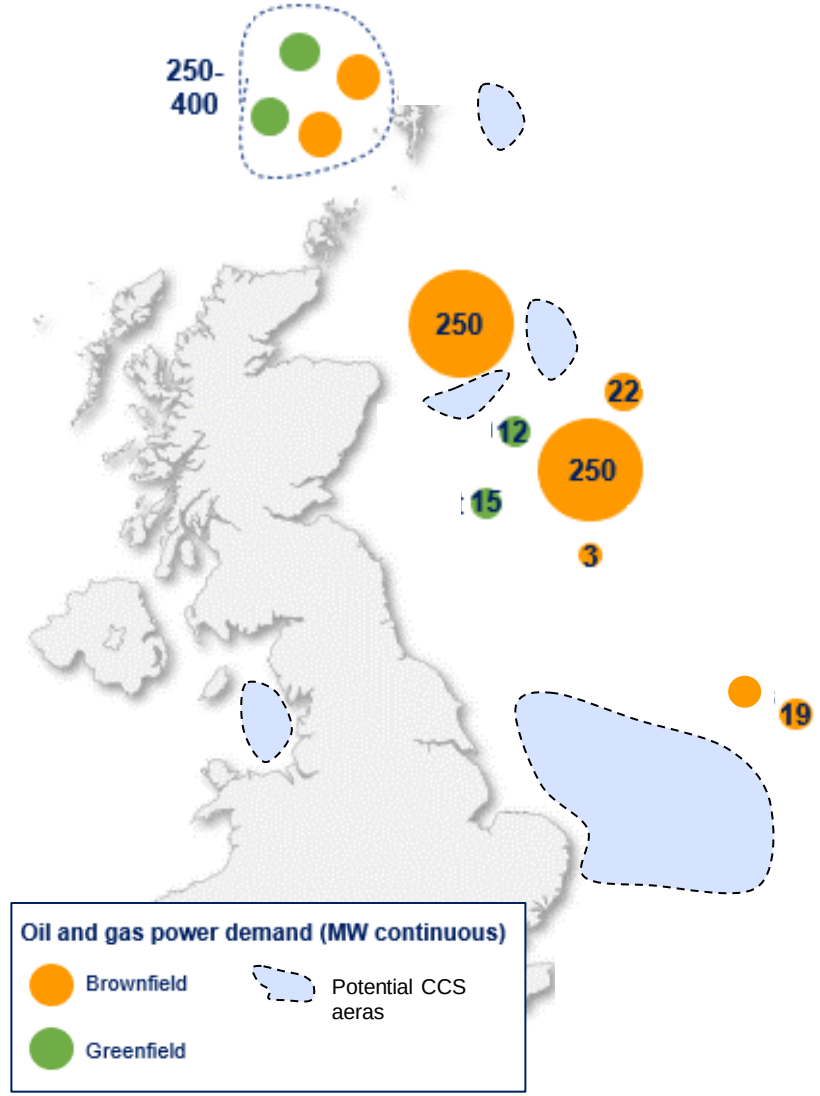
>2 GW total offshore O&G **power demand**

~1 GW from assets with **significant lifetime** (map)

Carbon storage needs to be considered too

Big opportunity to use **Windpower**

Offshore electrification potential (MW demand)

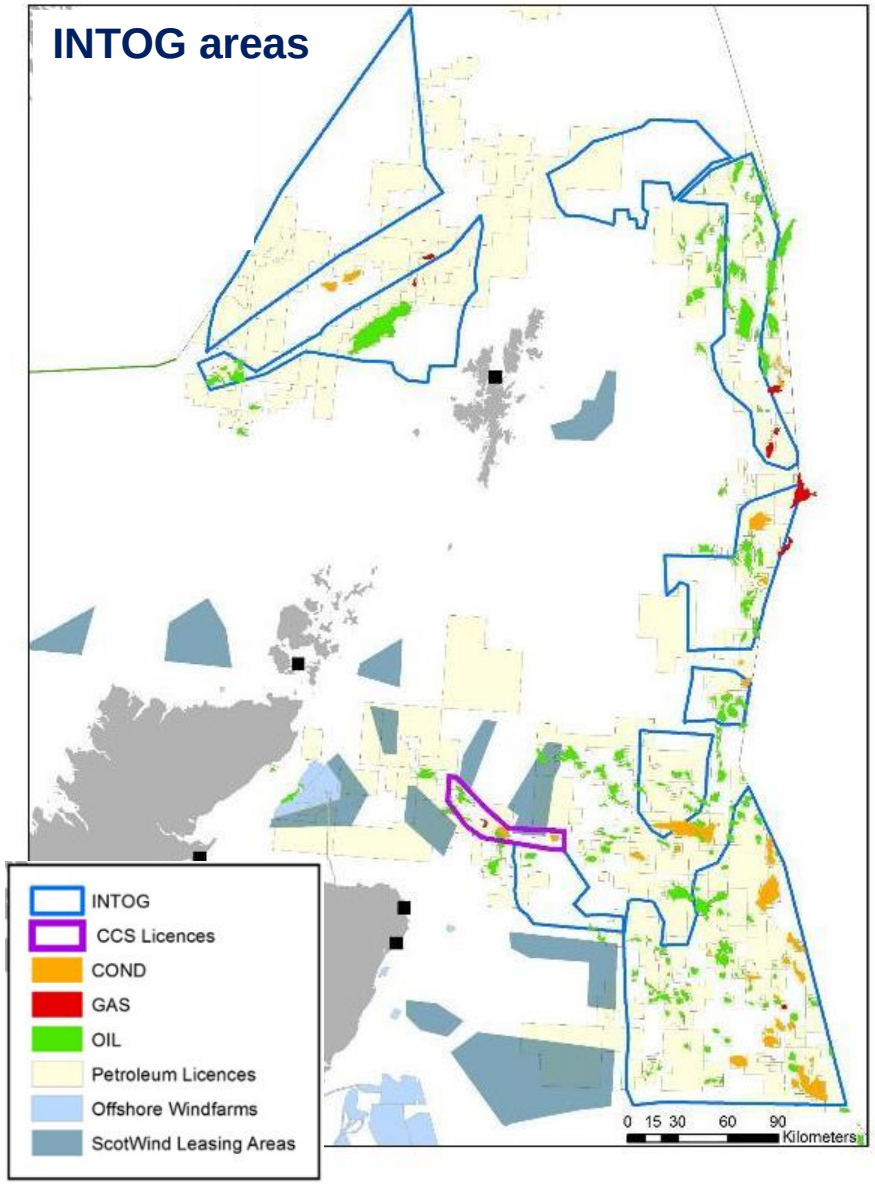


Power emissions need to be tackled

The INTOG opportunity

North Sea Transition Authority

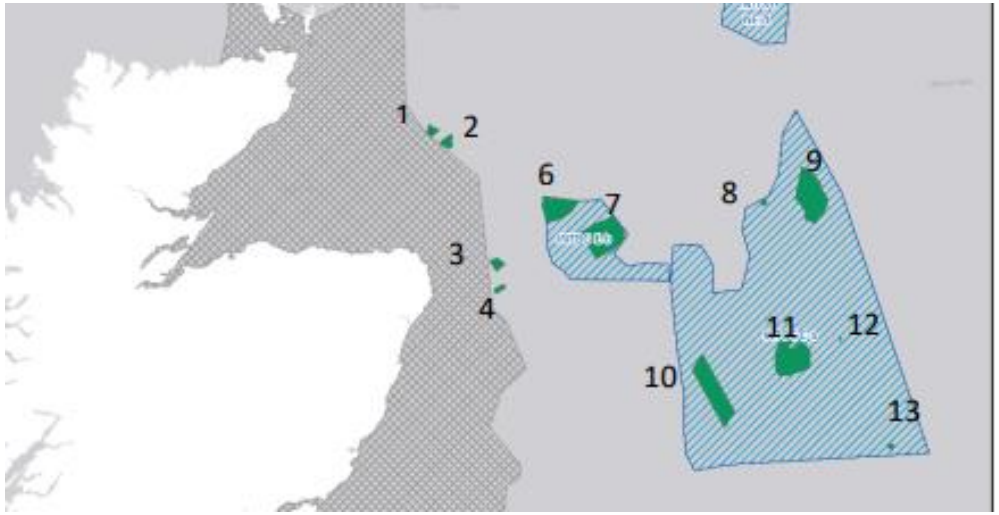
- Electrification from renewables to tackle power emissions
- Large areas on offer for regional schemes targeting 2-3mtCO2pa reductions
- Enables synergies with windpower
    - Supplies O&G demand for a period of at least 5 years (10-25 year typical)
    - Allows over-investment (5x) in longer-life windfarms and cable infrastructure
    - Power overcapacity sold to the shore market
    - Sizeable offshore renewables schemes – actually deliverable by supply chain
- Supply chain -- supports expansion & technology maturation, a stepping stone for Scotwind
- Skills – concrete opportunity to leverage O&G knowhow and transfer skills to FOW



INTOG enables Windpower collaboration

INTOG timeline

North Sea Transition Authority



- 8 (#5 to #13) are for Targeted Oil and Gas (TOG) projects, all in the Central North Sea area
- Account for 4.9GW capacity

TOG exclusivity agreement offers

				MW
6	Flotation Energy	Targeted Oil & Gas		560
7	Cerulean Winds	Targeted Oil & Gas		1,008
8	Harbour Energy	Targeted Oil & Gas		15
9	Cerulean Winds	Targeted Oil & Gas		1,008
10	Cerulean Winds	Targeted Oil & Gas		1,008
11	Flotation Energy	Targeted Oil & Gas		1,350
12	TotalEnergies	Targeted Oil & Gas		3
13	Harbour Energy	Targeted Oil & Gas		15

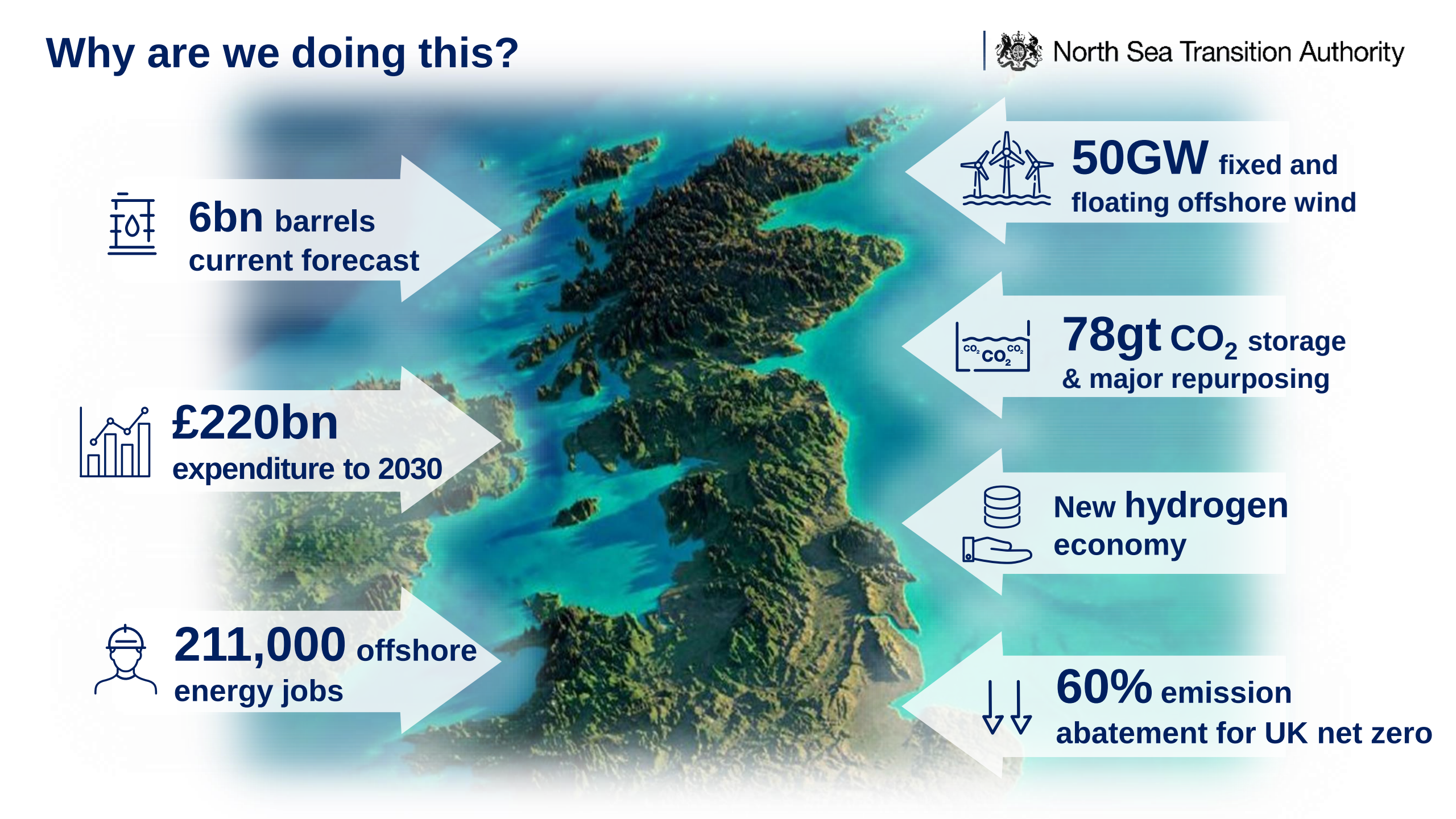
Next steps:

- Signing of Exclusivity Agreements with CES
- Developers & Operators engagement towards power contract Heads of Terms
- Supply chain engagement
- Further lease milestones (Option agreements, CfDs)
- Operators to define oil & gas project scope (topsides modifications, connections)

INTOG – a tight timeline to deliver electrification before Scotwind

Why are we doing this?

North Sea Transition Authority



6bn barrels
current forecast

£220bn
expenditure to 2030

211,000 offshore
energy jobs

50GW fixed and
floating offshore wind

78gt CO_2 storage
& major repurposing

New hydrogen
economy

60% emission
abatement for UK net zero

DeepWind
North of Scotland Offshore Wind Cluster

Keith Johnston

Flotation Energy

North Sea Transition Authority

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INTOG Conference
15 May 2023

INTOG

The challenge

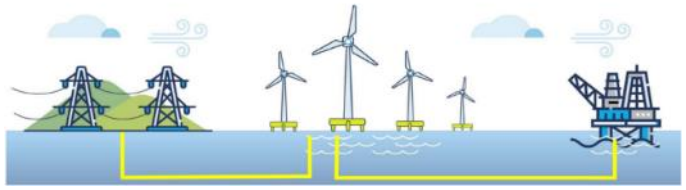
- North Sea Transition Deal 50% emission reduction by 2030 – electrification of assets expects high-impact to meeting targets
- Application made to Crown Estate Scotland November 2022
- Exclusivity announcement made March 2023

Our INTOG partnership

FLOTATION ENERGY

- Founded in 2018 following development of the Kincardine 50MW offshore floating wind development and Beatrice demonstrator
- 13GW portfolio, including two leased projects in the UK including White Cross Floating Demonstrator
- We have pioneered the oil and gas decarbonisation agenda
- We have a deep understanding of oil and gas requirement

- **An exceptionally strong partnership, leveraging collective strengths**
- **Developing truly credible decarbonisation projects that address a real challenge**



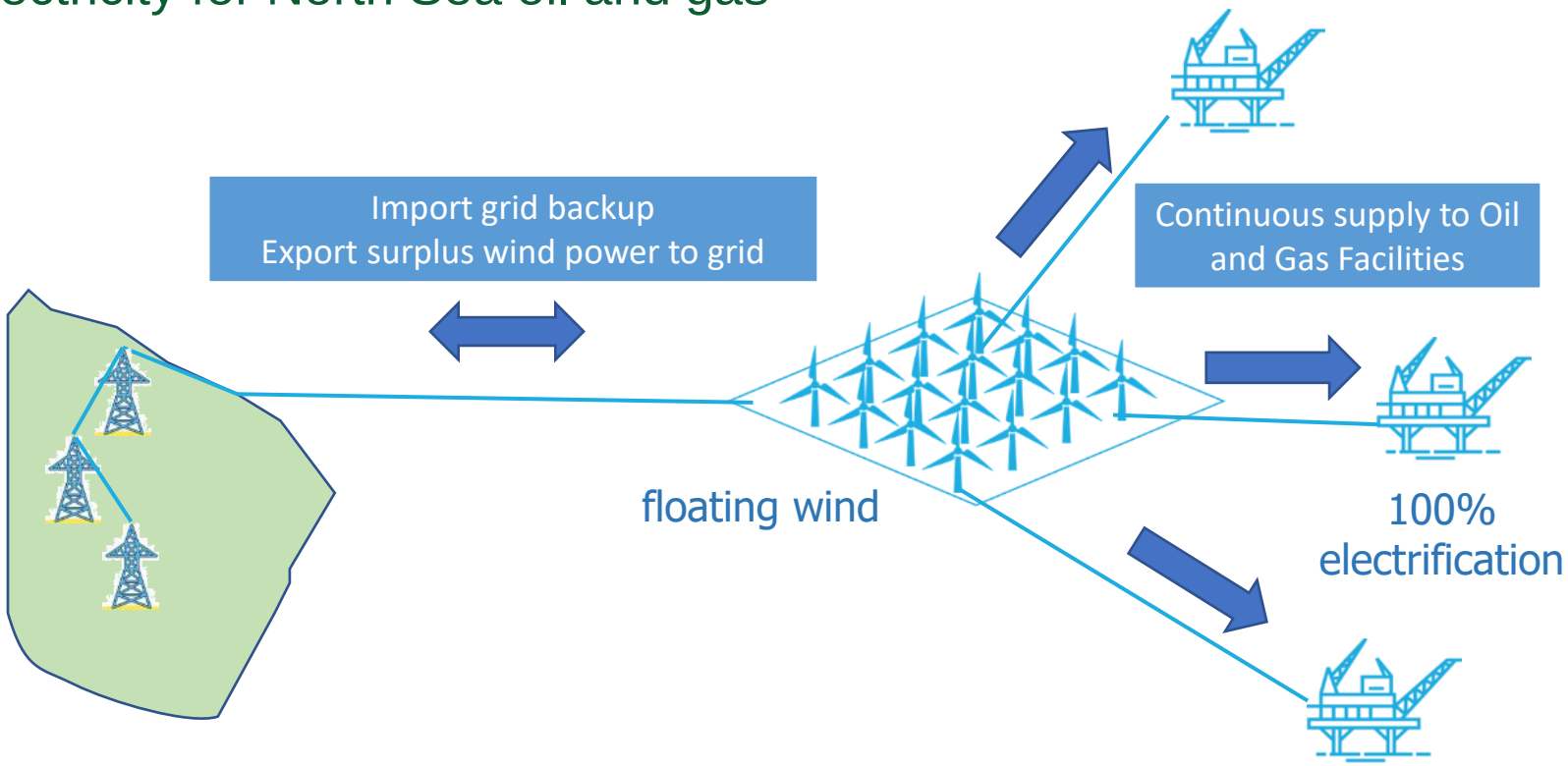
vårgrønn

- Vårgrønn is an agile, Norway-based offshore wind company owned by Plenitude (Eni) and HitecVision
- A strong team highly experienced in North Sea offshore developments
- Shareholder backing to execute large-scale offshore wind developments
- Equipped with governance and systems to accommodate large offshore projects.
- 5GW target by 2030

Electrification

Our concept challenge

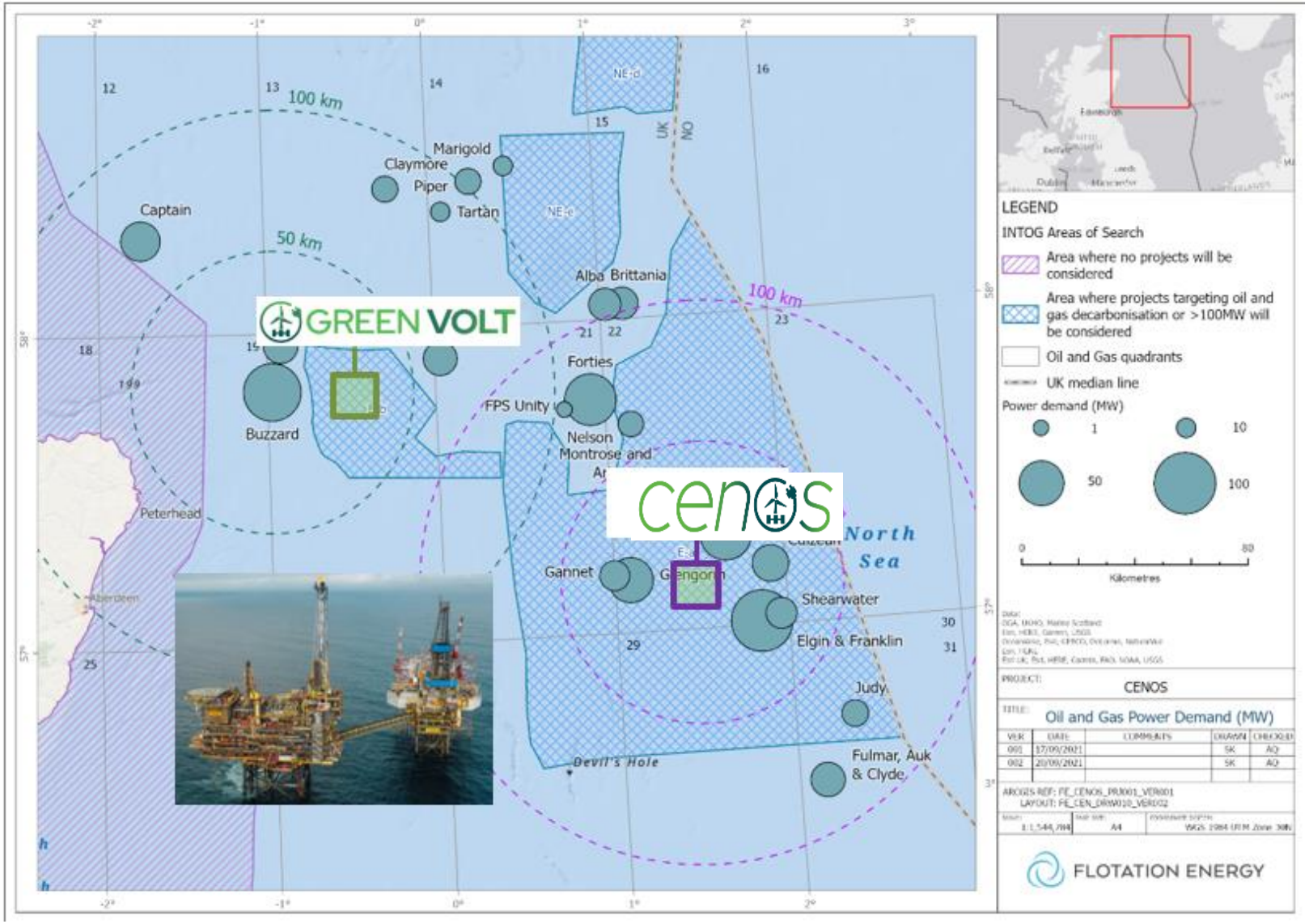
- Grid connected floating offshore wind farm to power UKCS O&G
- Green field components (wind farm, export transmission and export cable) retained by the wind farm
- Leverage offshore demand and CfD to provide affordable, renewable electricity for North Sea oil and gas



- ✓ 100% electrification
- ✓ Rapid deployment
- ✓ Maximum decarbonisation
- ✓ Grid availability / reliability to meet O&G requirements
- ✓ Optimal CapEx – retained by the wind farm
- ✓ UK offshore wind growth targets

Our projects

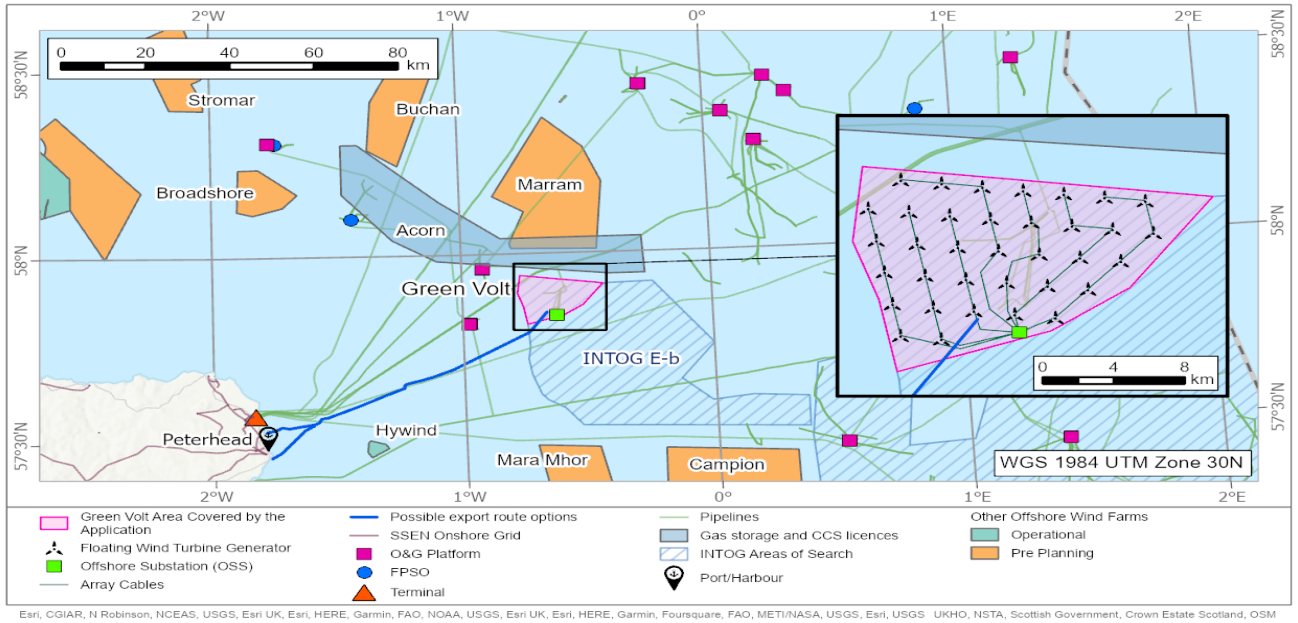
- Significant economic impact of both projects is estimated to be £6.2bn with £2.4bn expected to be retained in Scotland.
- The project, over its 35-year operational lifetime, is expected to create approx. 10,600 FTE years of work in Scotland



Floating Windfarm

Parameter	Value for assessment
Windfarm area	Approx 110 km^2
Water depth	100-115 m
Windfarm Rating	330-560MW
Distance to shore	80 km
No. of WTG	Up to 35 turbines
WTG capacity	Up to 16 MW each
Substructure	Semi-submersible or tension leg platform
Anchors	3 – 6 per turbine, drag embedment or suction pile

Parameter	Value for assessment
Substation Platform	One x 4-legged jacket Inc transformers
Voltage	220-275 kV HVAC
Export cables	To O&G platforms: To Grid: 1 or 2 parallel cables
Inter-array cables	Up to 42 total



NB: All maps & parameters are indicative

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- ✓ Lease Exclusivity Agreement offered by CES
- ✓ Offshore
  - ✓ Environmental surveys completed
  - ✓ Offshore EIA application (MS-LOT) January 2023
- ✓ Onshore
  - ✓ Surveys completed
  - ✓ Pre-application consultation completed for onshore assets
- ✓ Grid access confirmed
- ✓ First power 2027
  - ✓ Early risk taking (pre-INTOG) enables a highly ambitious startup schedule
  - ✓ Enabling Scotwind projects

up to
560 MW
nominal capacity

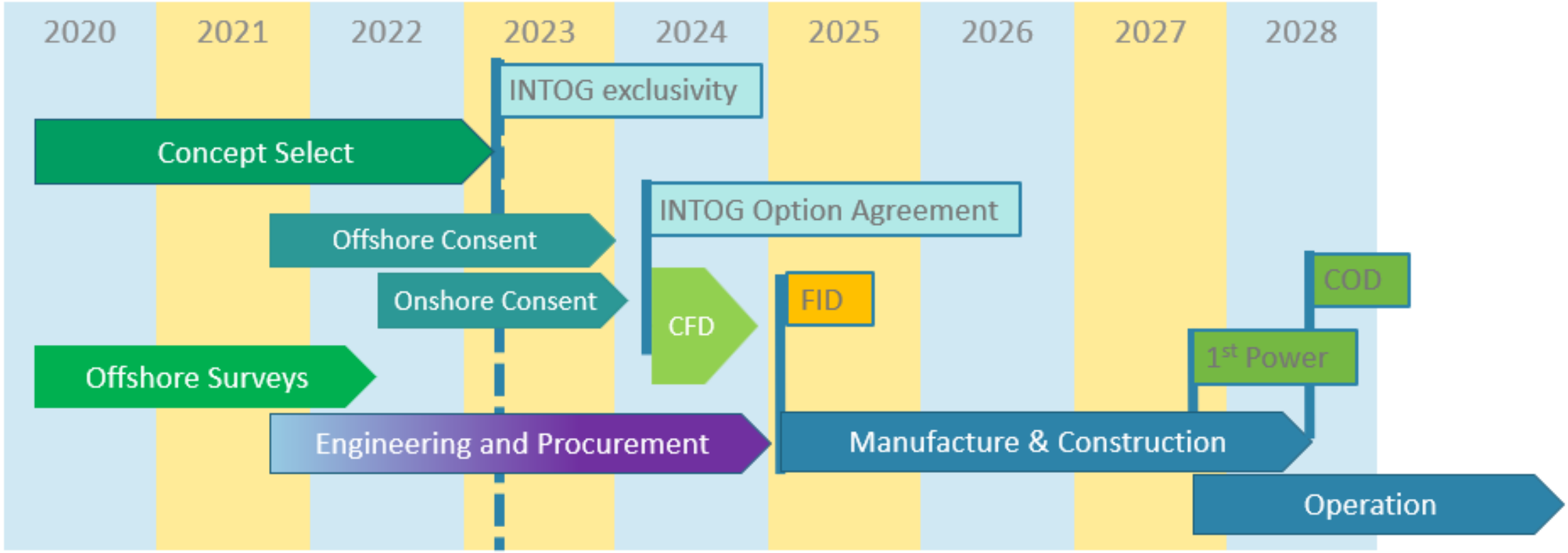
around
1 million
tonnes of CO_2, each year

Up to
35
floating wind turbines.

1.5TWh
renewable power annually to the UK Grid

GREEN VOLT

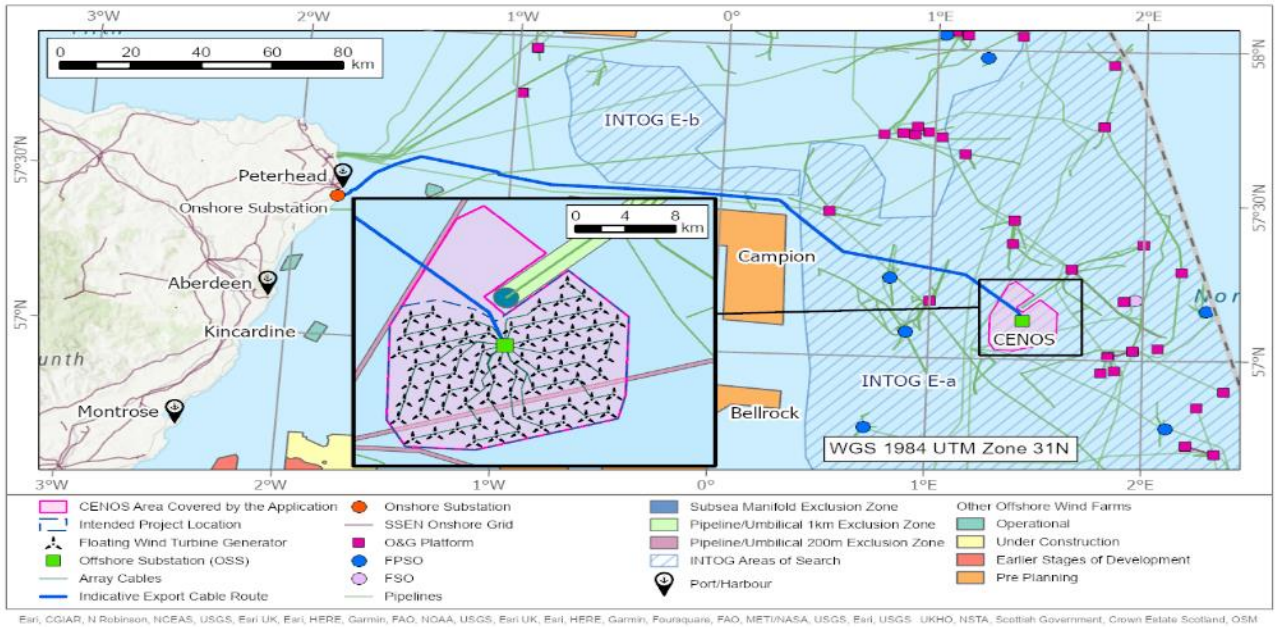
Timeline



Floating Windfarm

Parameter	Value for assessment
Windfarm area	Approx 333 km^2
Water depth	100-115 m
Windfarm Rating	1.4GW
Distance to shore	220 km
No. of WTG	Up to 95 turbines
WTG capacity	Up to 16 MW each
Substructure	Semi-submersible or tension leg platform
Anchors	3 – 6 per turbine, drag embedment or suction pile

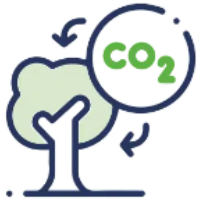
Parameter	Value for assessment
Substation Platform	One x 4-legged jacket Inc transformers
Voltage	320 kV HVDC
Export cables	To O&G platforms: To Grid: 1 circuit, 2x HVDC cables
Inter-array cables	Up to 100 total



NB: All maps & parameters are indicative

- ✓ Lease Exclusivity Agreement offered by CES
- ✓ ~200km offshore
  - ✓ Excellent wind resource
  - ✓ Large cluster of O&G assets
- ✓ 50-year lease brings true commercial scale
- ✓ Offshore
  - ✓ Key environmental surveys complete
  - ✓ EIA Scoping Report to MS-LOT completed February 2023
- ✓ Onshore
  - ✓ Key works ongoing
- ✓ First power 2028 enabled by extensive work Pre-INTOG

Up to
1400MW
capacity



Decarbonising
8 Oil & Gas
platforms

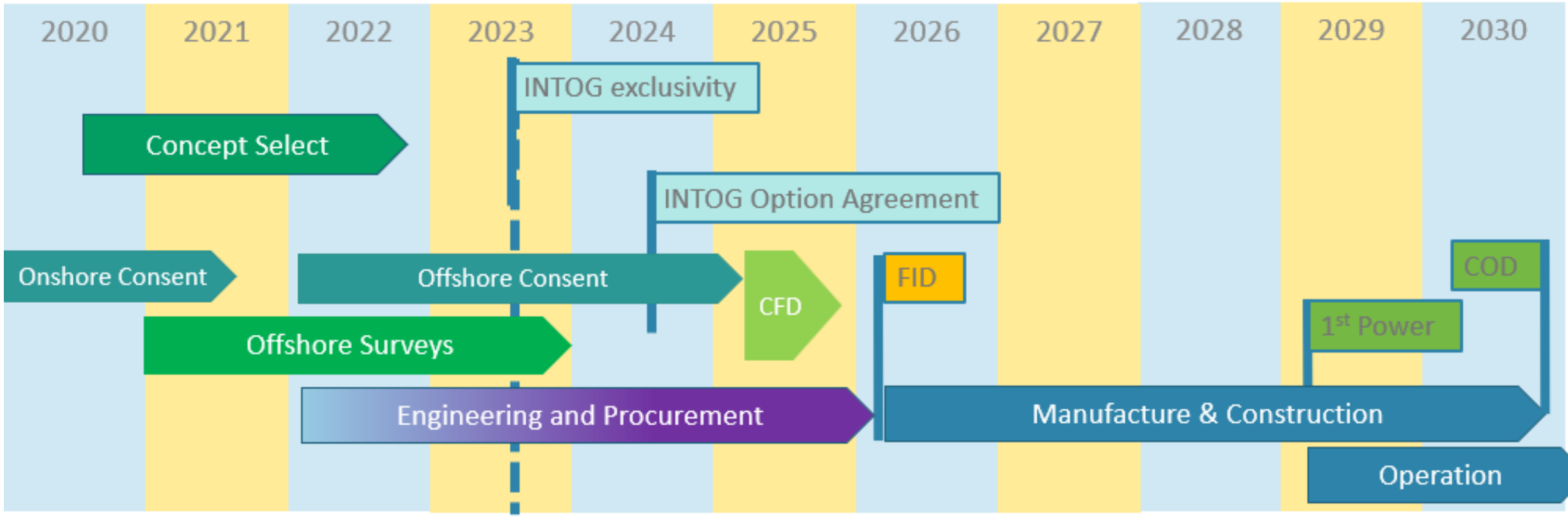
5.5TWh+
renewable power
annually to the UK grid

70-100
Floating Turbines

14-20MW
Turbines

area of
~ 333km²

Timeline


2020
2021
2022
2023
2024
2025
2026
2027
2028
2029
2030
INTOG exclusivity
Concept Select
INTOG Option Agreement
Onshore Consent
Offshore Consent
CFD
FID
COD
1st Power
Offshore Surveys
Engineering and Procurement
Manufacture & Construction
Operation

Supply chain delivery model

GREEN VOLT ceno S

Our approach:

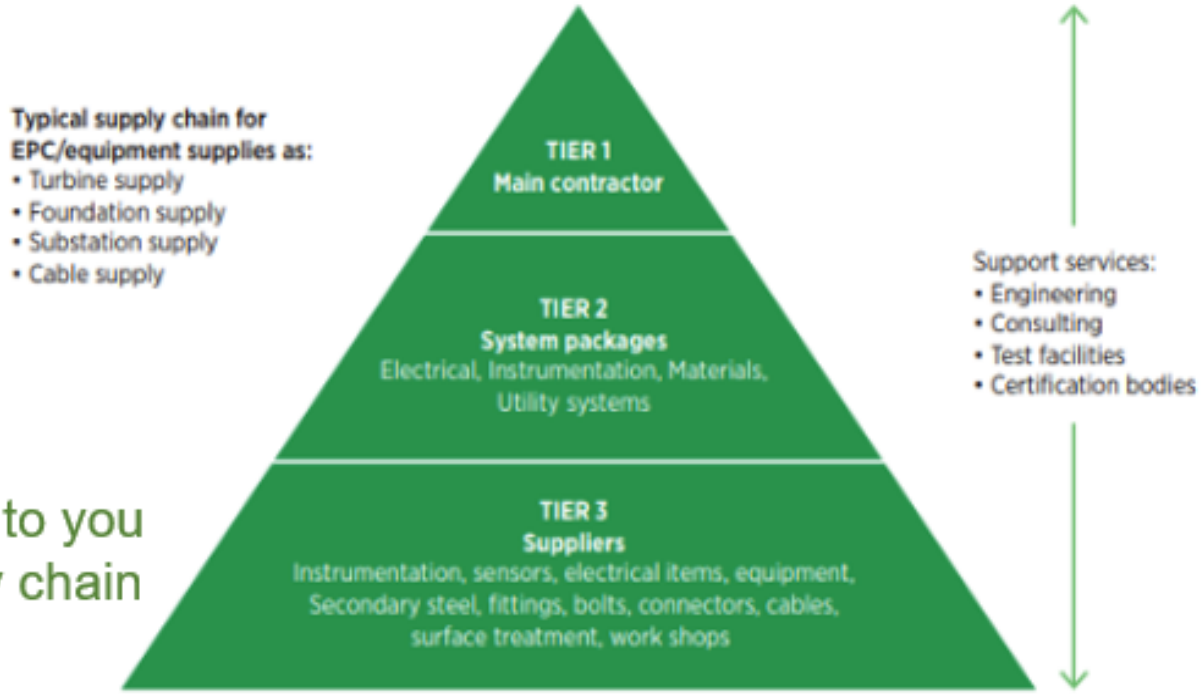
- Lean integrated project team
- Supplier led solutions
- Extensive use of local suppliers
- Use of multi-contracts – a strategy of 5-9 larger contracts

Recommendations for suppliers:

- Understand the tiers of the supply chain relevant to you
- Engage with the supplier above you in the supply chain
- Energy Pathfinder / NSTA

Examples of Scottish opportunities:

- Port and Harbour Services
- Fabrication / Turbine Integration
- Operations and Maintenance Support
- Onshore Civils
- Hospitality



Source: Norsk Industri – Delivery models for offshore wind – supply chain

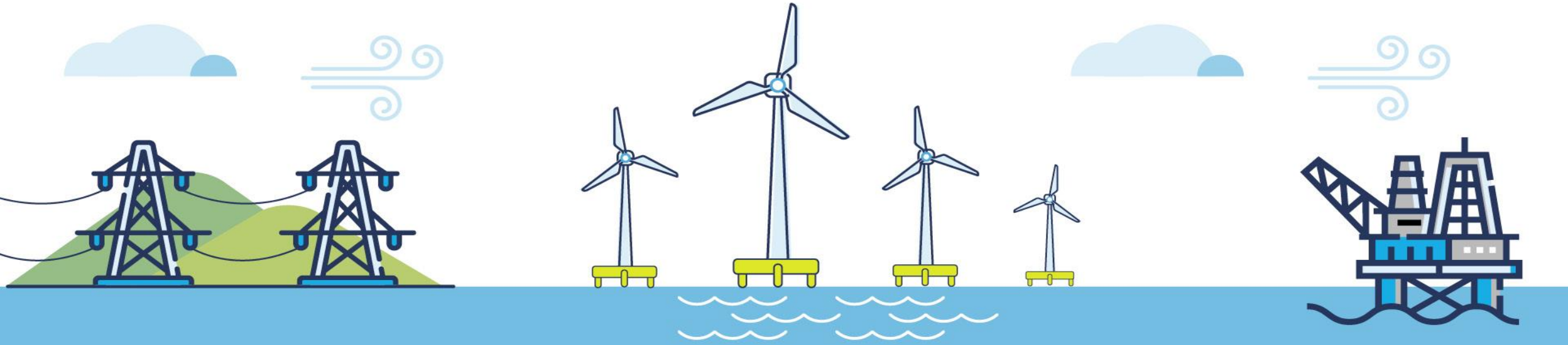
Near Term Focus

Increased definition

- WTG Package Engagement
- Substructure shortlist and pre-FEED
- Export Cables Engagement
- Mature O&G modelling and integration
- Update focus on Ports
  - Integration and O&M facilities
  - Increased engagement
- Market Engagement / Testing Contract Strategies

Package
WTG
Substructure Floater
Inter Array Cables
Marine Works
Onshore and Offshore HVDC substations
Export Cable HVDC
Onshore Enabling Works
Offshore Substation HVAC
Onshore substation HVAC
Export Cable Offshore HVAC 85km x 2 = 170,000m
Export Cable Onshore HVAC 35km
Marshalling & Assy port & harbour
Onshore land (route and substation)

Green Volt & Cenos
Cenos
Green Volt



cenos

GREEN VOLT

For more information:

https://greenvoltoffshorewind.com

https://cenosoffshorewind.com

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Cerulean Winds

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CERULEAN WINDS

FrontierPower

UKCS Oil & Gas Electrification Vision to reality

INTOG, the Decarbonisation and Innovation Challenges
Aberdeen

15th May 2023

Vision to reality

1. Cerulean Introduction

2. North Sea Operators' Perspective

3. The Developers' Perspective

4. The Cerulean Winds' North Sea Renewables Grid

5. Partnerships & Local Delivery

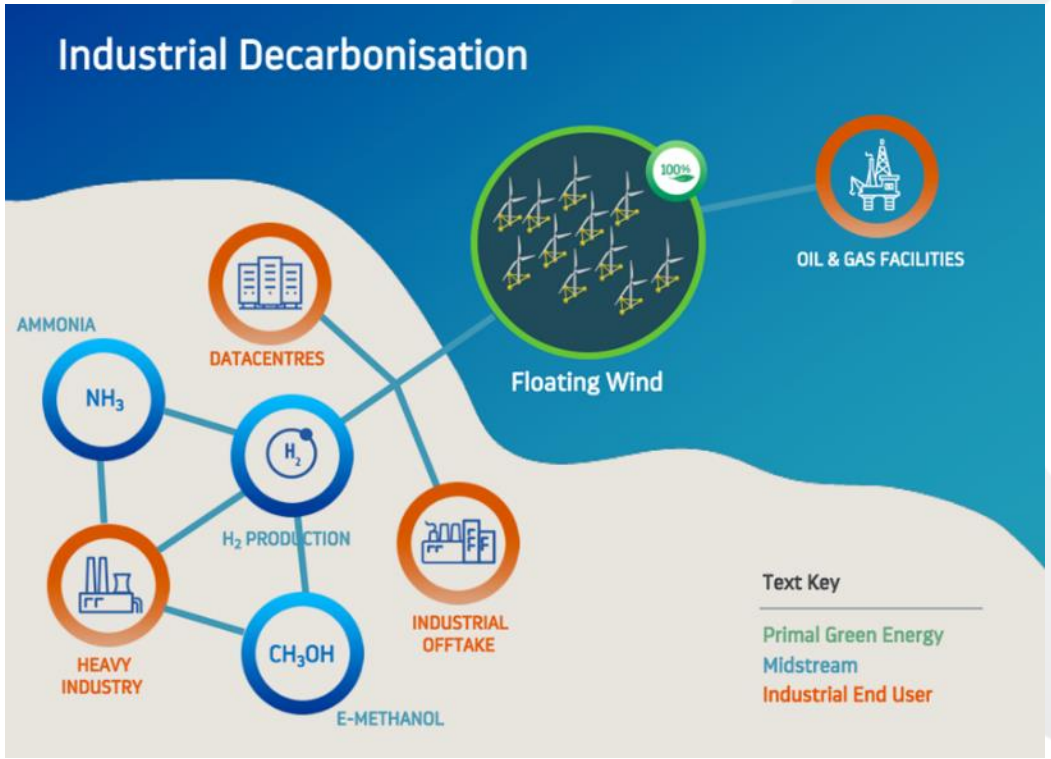
Introduction to Cerulean Winds

Cerulean Winds generate green electrons and green molecules and deliver them directly to the industrial user to eliminate carbon emissions

ORIGINATOR | DEVELOPER | PRODUCER

Green Energy for Industrial Decarbonisation

- Aviation
- Oil & Gas
- Shipping
- Steel
- Transport
- Data Centres



North Sea Operators' Perspective

To have access to green power on the following terms:

- Flexibility (timing, tenure, demand)
- Reliable (100% with back up and back up on the back up)
- No conditionality (just plug and play)
- Competitive (equal to or less than grid-supplied electricity?)
- Price certainty (one price?)
- Future proof (33rd round?)

Developer's Perspective

Ideally Operators aligned on a schedule, technical solution and committed offtake:

Tenor **Price** **Quantum**

All somehow intertwined with joint counterparty risk supporting the Developer – HIGHLY UNLIKELY!

The Cerulean scheme meets realistic and practical Oil & Gas requirements

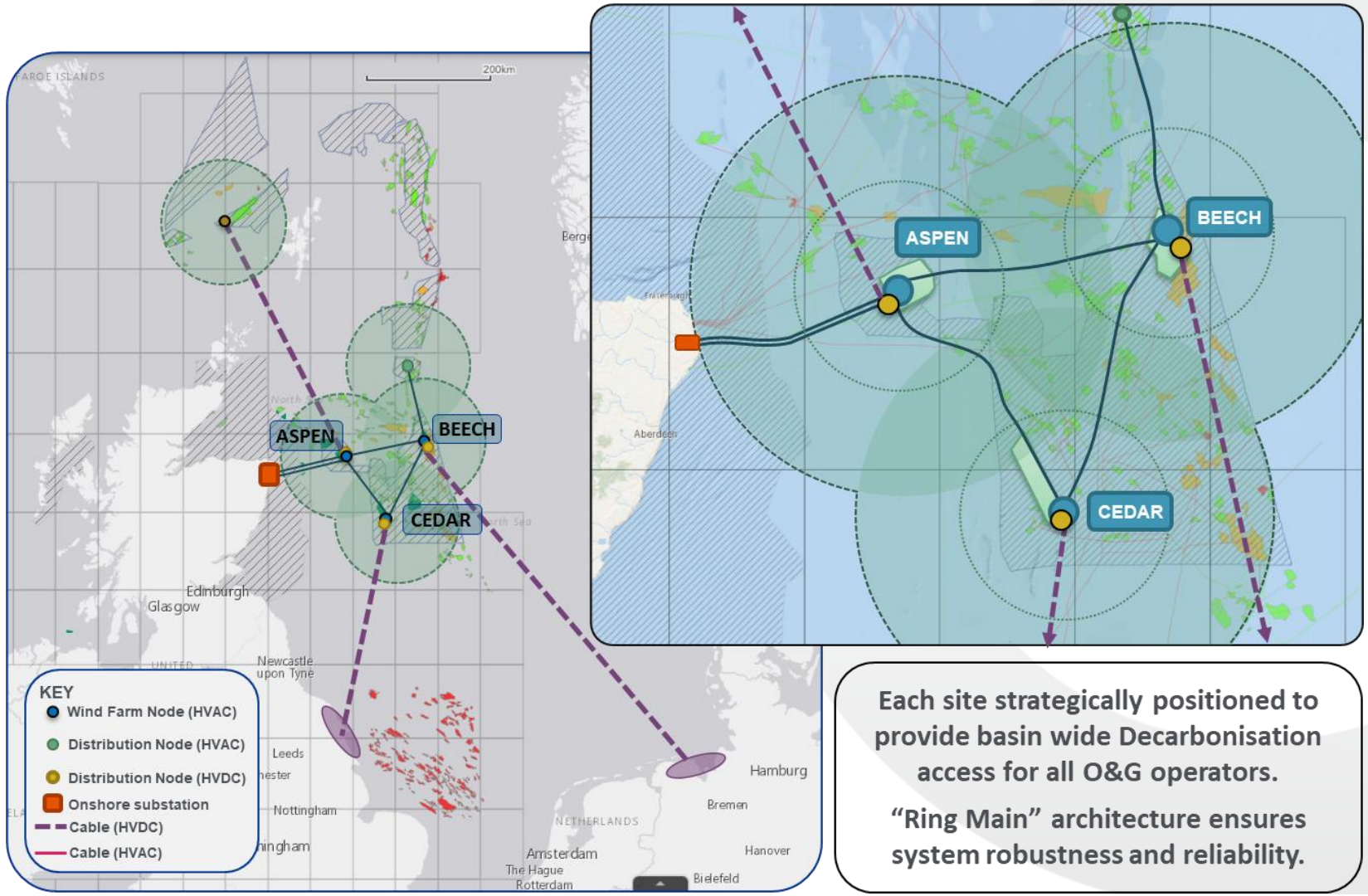
The Cerulean Winds' North Sea Renewables Grid

Basin-wide approach

- Current users
- Planned developments
- Future developments

Delivery

- Low-cost power through scale
- Independent business model
- Completely flexible for O&G
- Aligned with NSTD targets
- Aligned with Just Transition



Each site strategically positioned to provide basin wide Decarbonisation access for all O&G operators.

"Ring Main" architecture ensures system robustness and reliability.

North Sea Renewables Grid – USPs

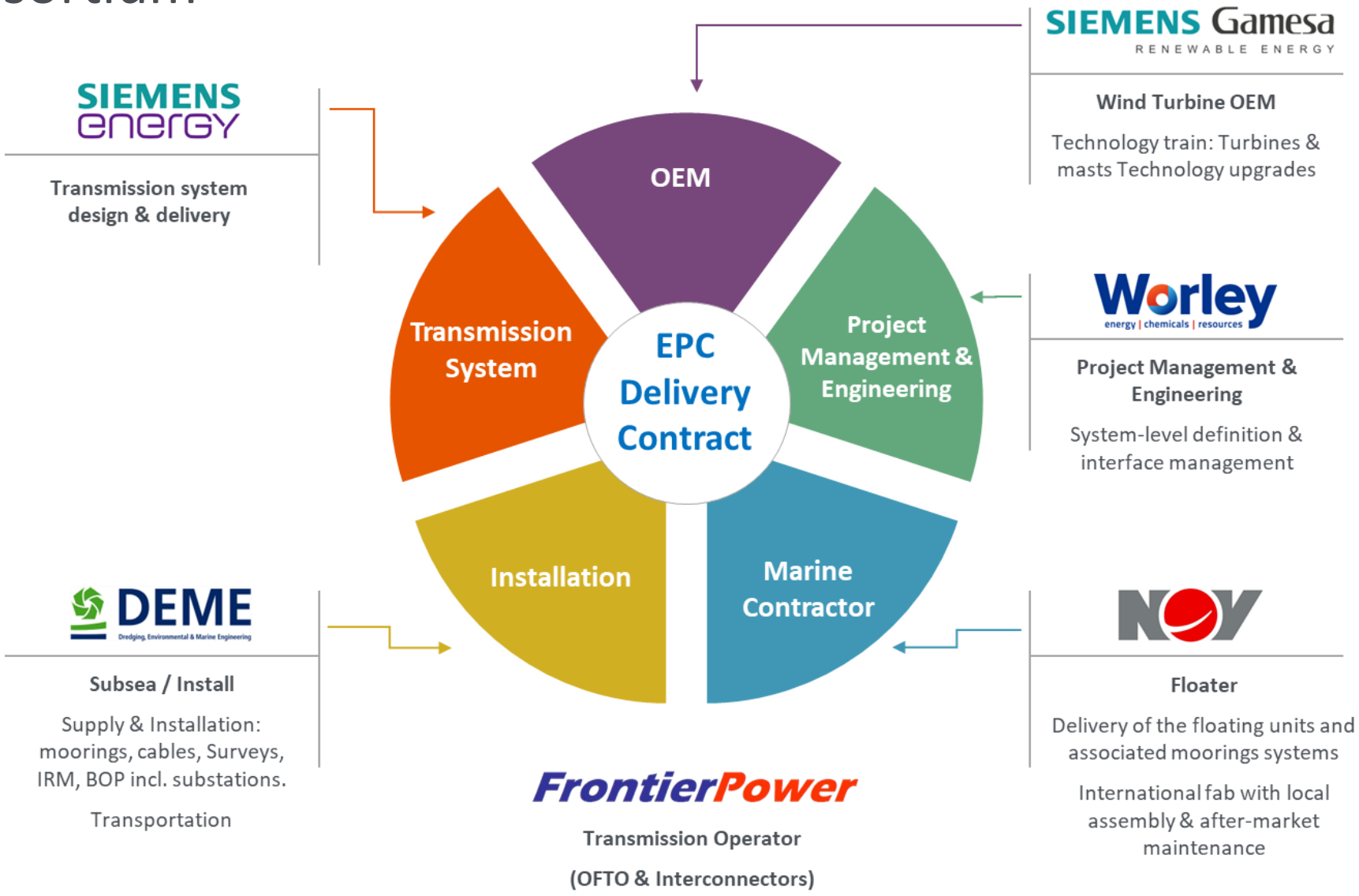
An Integrated Energy Scheme – Power Generation and Transmission

Prime Contractors have been down-selected:

- Deliverability, Schedule & Price Certainty
- Well progressed on critical path engineering
- Bankable business model using market Infrastructure Finance

Deeply engaged with Scotland supply chain – we want the project build-out ahead of ScotWind

Delivery Consortium



Local Content Example – Assembly Works

INTOG, the Decarbonisation and Innovation Challenges

Mark Dixon

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E djackson@ceruleanwinds.com
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Green Energy for Industrial Decarbonisation

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Simon Johnson

TotalEnergies

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TotalEnergies Floating Wind Pilot Project

INTOG Conference – INTOG, the Decarbonisation and Innovation Challenges

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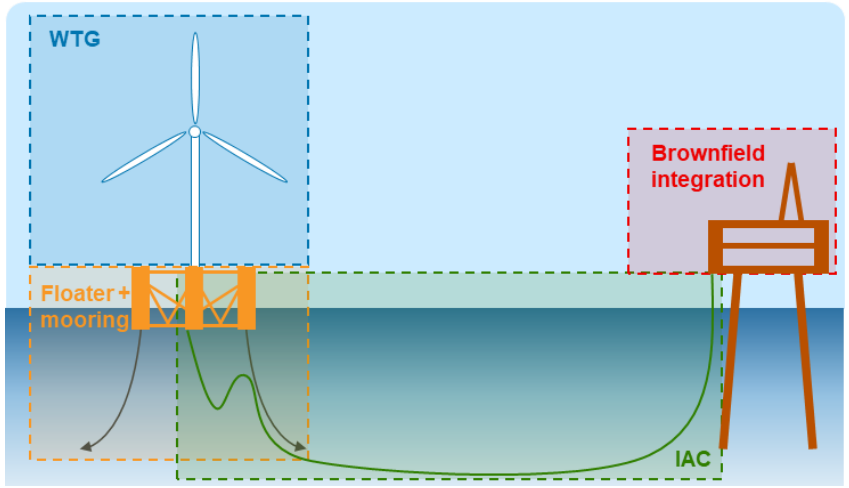
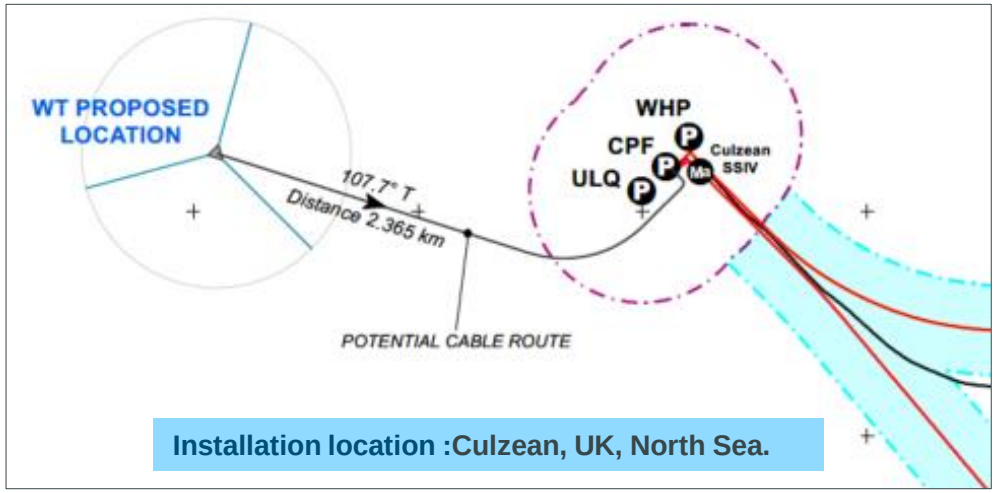
TotalEnergies Floating Wind Pilot Project





Drivers

- Decarbonisation, Power hybridisation
- Proof of new floater design → low cost / industrialisation opportunities

Culzean Facilities

- Fast track (SU end 2024) CO_2 abatement opportunity

Project Concept - 4 components

- Wind Turbine Generator - A Vestas V112 (3MW) with associated tower
- Floater + Mooring - Ocergy designed floater
- Export Cable - 2.5km 11Kv export cable
- Brownfield Integration - modification works on the Culzean facilities

Project Status

Technical

- Vestas 3MW wind turbine generator and new built tower purchased.
- FEED for Floating Wind Pilot & Brownfield Integration works complete this month
- Export Cable and Floater + Mooring scopes – contracts to be placed following FID

Commercial / Consenting / Permitting / Stakeholders

- **INTOG** - Key milestone achieved with the offer of an exclusivity agreement
- Commercial discussions ongoing with the Culzean JV partners
- Environmental Impact Assessment (EIA) surveys commenced, good progress
- Consenting / Permitting timeline challenges identified

Supply Chain Opportunities

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Q&A Session 1

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Image source – SSE Renewables

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Andy Rodden

Energy Transition Zone

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Deepwind INTOG Seminar

May 2023

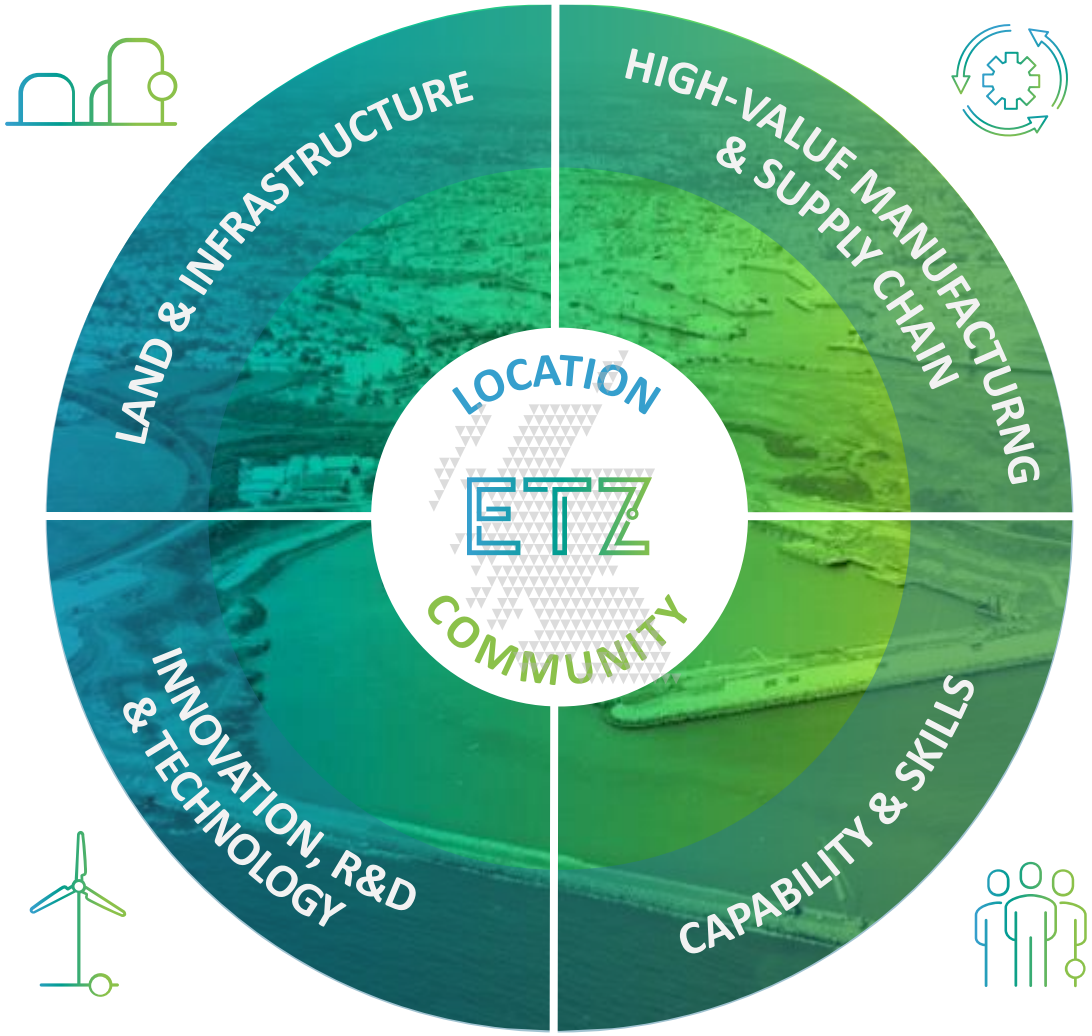
ENERGY TRANSITION ZONE

REGIONAL IN FOCUS, GLOBAL IN OUTLOOK

ETZ Ltd will reposition the North East of Scotland as a **globally recognised integrated energy cluster focussed on the delivery of net zero**, and develop a long-term international industry base that delivers sustainable jobs and growth for Scotland and UK.

ETZ Focus areas

- Leverage the £400M Aberdeen South Harbour (ASH) Investment
- Enable offshore wind and hydrogen high value manufacturing
- Deliver green space enhancements and community facilities



- Attract inward investment for high value manufacturing
- Supporting infrastructure for emerging hydrogen production, storage and distribution business
- Supply chain pathway & ET challenge fund
- Internationalisation of offshore engineering, manufactured products

- Home of National Floating Wind Innovation Centre (FLOWIC)
- Site of proposed Green Hydrogen Test and Demonstration Facilities (GHTDF)
- Energy Incubator & Scale-up Hub to support green start-ups and scale-ups (EISH)

- Work with the local community to deliver inclusive job opportunities
- Establish the National Energy Skills Accelerator (NESA)
- Deliver NEERSF re-skilling programmes
- Scotland's first Energy Transition Skills Academy (ETSA)

ETZ Supply Chain Pathway and Challenge Fund Support

Pathway

F4OR

Green Energy Masterclasses

Strategy Shift workshops

Accelerating Digital Adoption

International Knowledge Exchanges

Facilitated Innovation Challenges

Capital Challenge Fund Grants

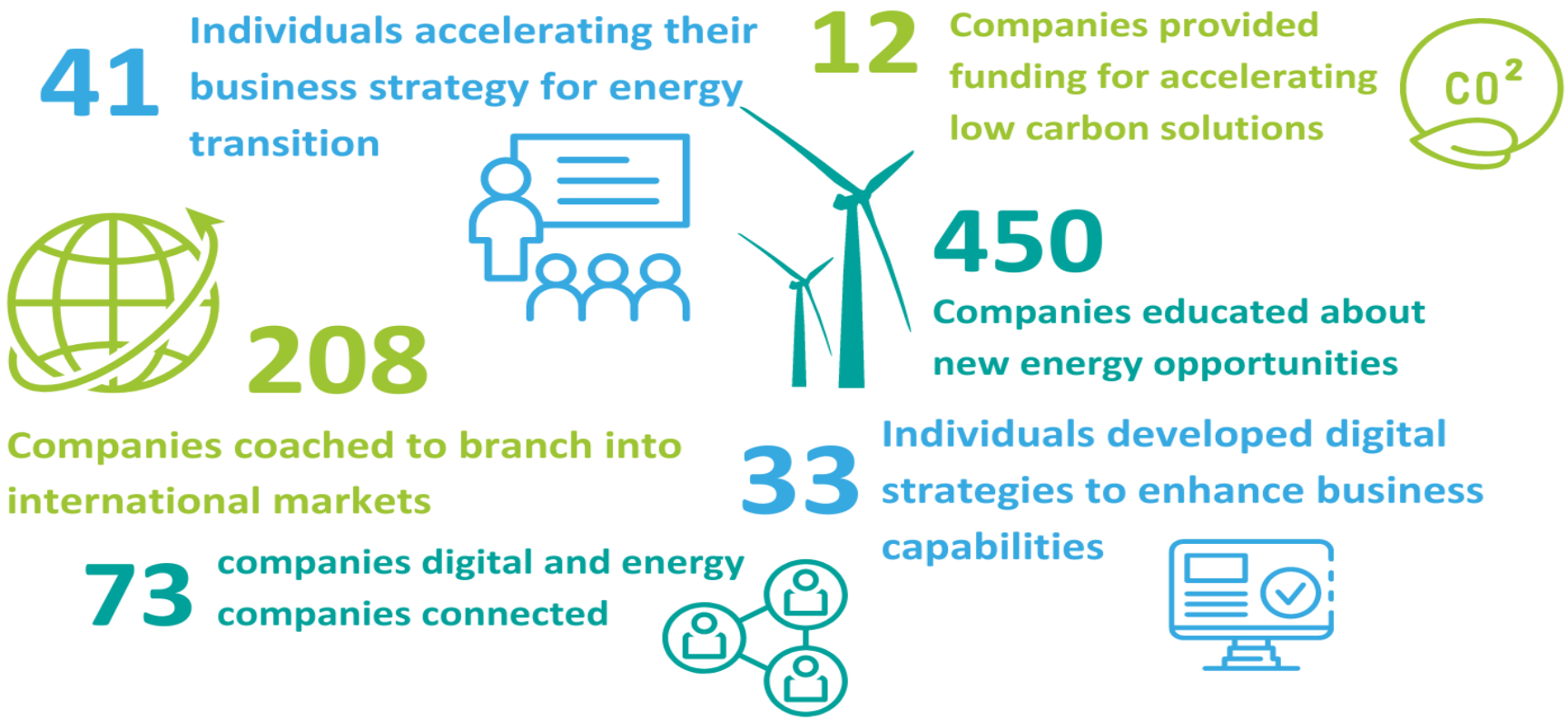
Infrastructure Upgrades

Capital Equipment

Up to £250k / 50%

Round open Apr - Jun 2023

Regional Catalyst
Supporting the supply chain

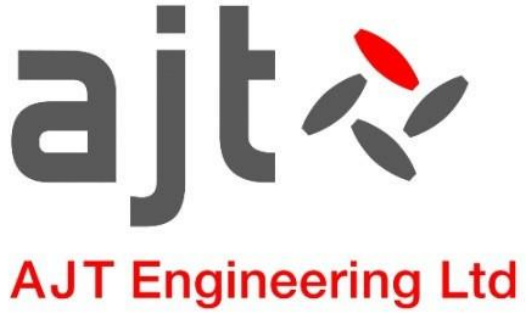


Capital Challenge Fund

Grant funding between £50k and £250k aimed at supporting growth and realisation of North East Scotland energy supply chain SME low carbon sector market growth opportunities

- Potential 50% grant funding available to SMEs and 15% to larger companies
- Capital grant funding available for new equipment and existing infrastructure upgrades including digital infrastructure to accelerate innovation and low carbon market entry
- Impact targeted at safeguarding, creating new jobs, increasing turnover, decarbonising of emissions in the energy transition low carbon market
- 2022/23 Pilot programme completed and grant offers awarded
- 2023/24 application process live - deadline **12 noon 5 June 2023**

2022/23 Just Transition Challenge Fund Pilot Recipients



DeepWind
North of Scotland Offshore Wind Cluster

Kirsty Adams

BlueFloat Energy and Renantis

North Sea Transition Authority

ETZ
ENERGY TRANSITION ZONE

THE INTOG CONFERENCE: THE DECARBONISATION AND INNOVATION CHALLENGES

KIRSTY ADAMS

HEAD OF SUPPLY CHAIN

MAY 2023

ABERDEEN

BLUEFLOAT ENERGY | RENANTIS PARTNERSHIP BACKGROUND

- BlueFloat Energy is a nimble and fast-growing offshore wind developer, with expertise in floating technology
- 90+ employees across 17 nationalities and a pipeline of 24+ GW of offshore wind globally
- BlueFloat Energy's main shareholder is 547 Energy
- 547 Energy is backed by Quantum Energy Partners, leading provider of capital to the global energy industry

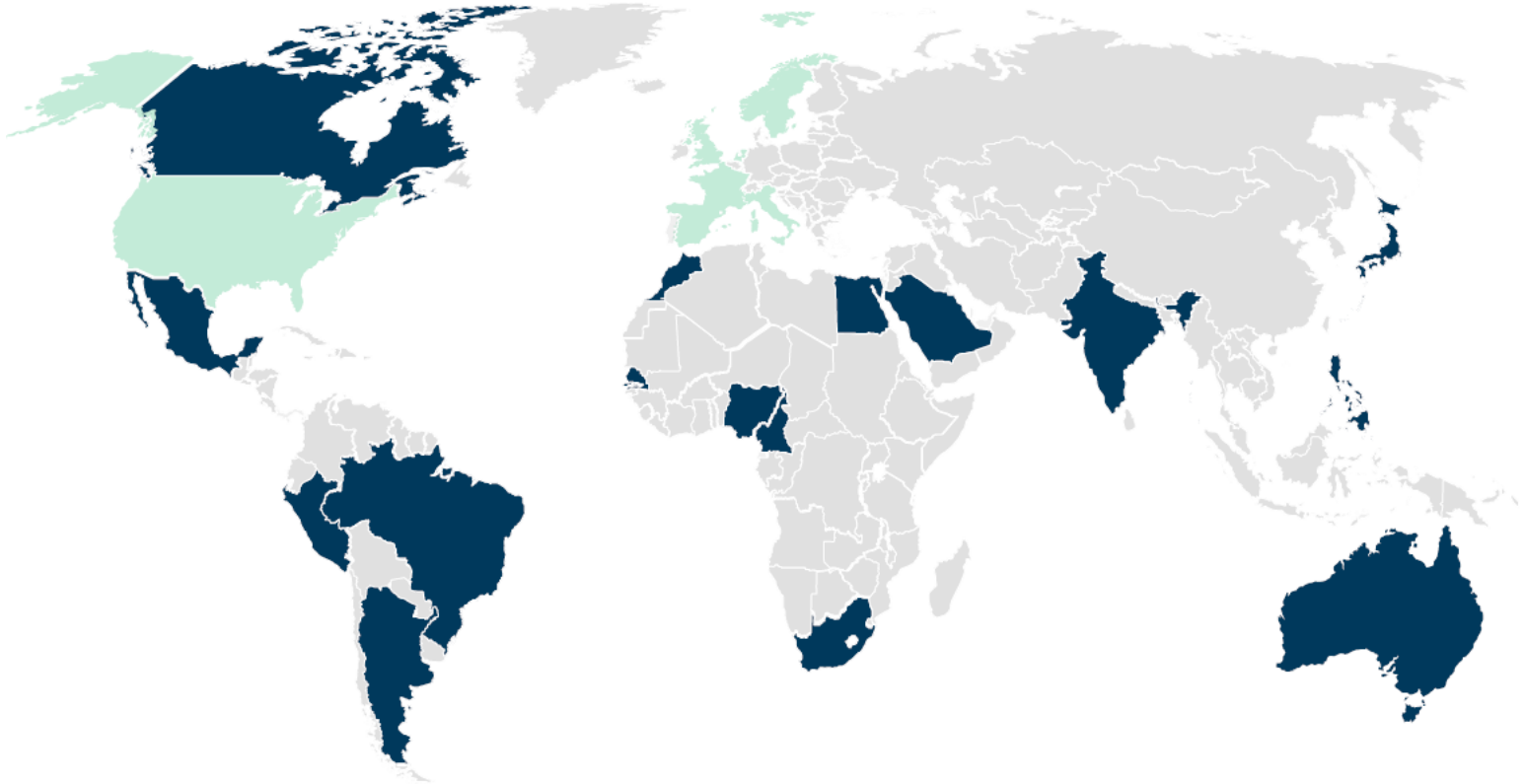
- Renantis is a renewable energy developer with an operational portfolio of 1.4 GW+ of renewable energy projects globally
- 750+ employees globally with assets in seven countries
- Operating in UK wind market since 2005
- Wholly backed by an infrastructure investment fund advised by J.P. Morgan Asset Management

BLUEFLOAT ENERGY'S GLOBAL OFFSHORE WIND PIPELINE

BlueFloat ENERGY
Renantis
PARTNERSHIP

RENANTIS HAS A GLOBAL FOOTPRINT WITH VARYING EXPERTISE

BlueFloat ENERGY
Renantis
PARTNERSHIP



1.4 GW
Own capacity

5.3 GW
Asset Management

100+ GW
Technical Advisory

7.2 GW
Financial advisory

Own assets

1,420 MW own installed capacity

3.2 TWh generated in 2022

Services to +2,000 customers

5.3 GW of asset management

100+ GW of technical advisory

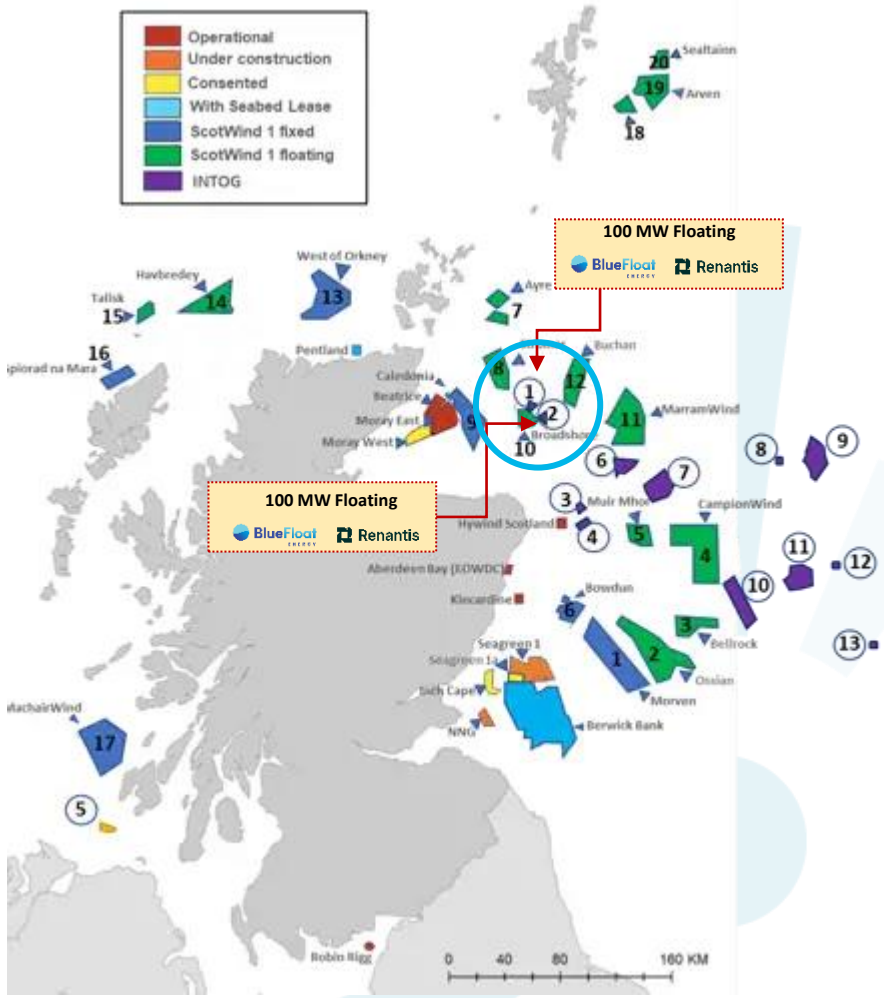
7.2 GW of legal and financial advisory

1.8 TWh of energy dispatched

About 4 TWh of energy traded

Bellrock Broadshore STROMAR Powered by Ørsted, BlueFloat Energy and Falck Renewables INTOG BlueFloat Energy Renantis PARTNERSHIP

- Foundation technologies
- Community benefit model
- Fabrication works
- Supply chain partner collaboration
- Mooring systems
- Local investment

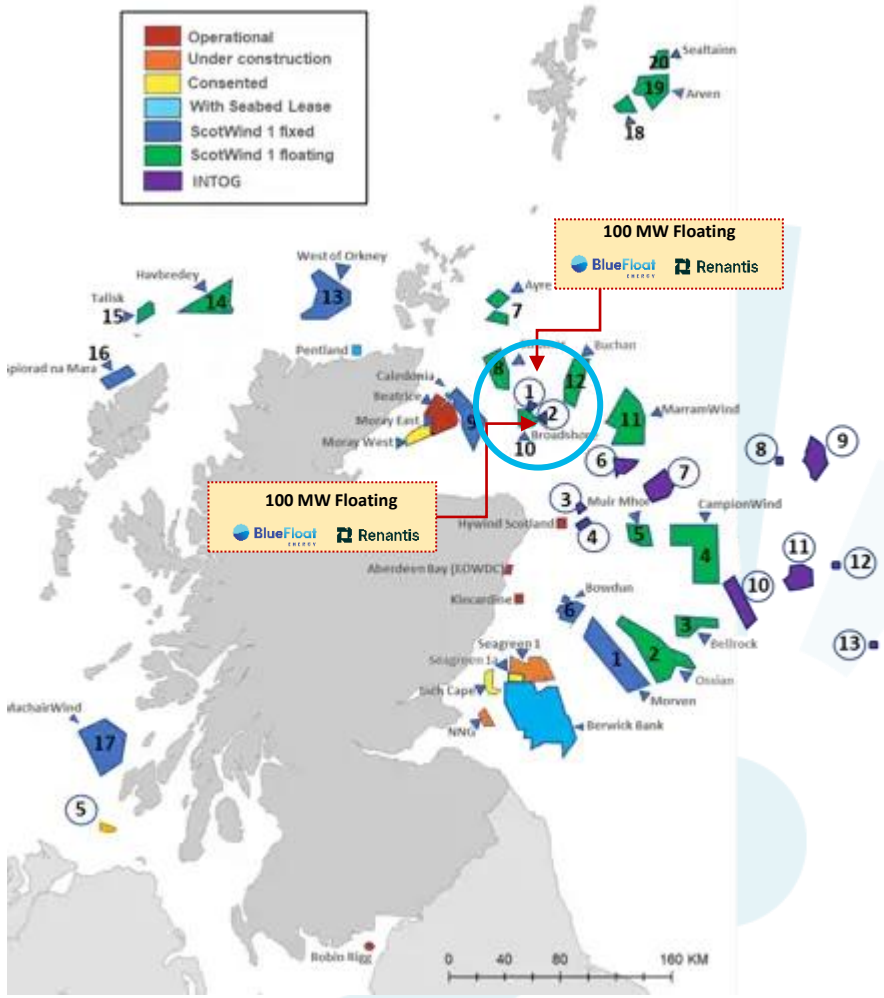


Source: offshorewindscotland.org.uk

BlueFloat Energy Renantis PARTNERSHIP

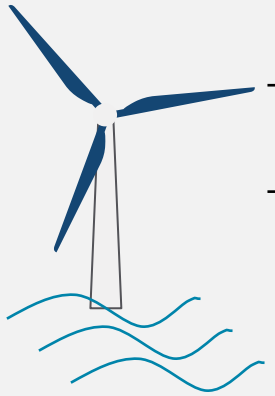
Work is progressing to develop the Sinclair & Scaraben sites

- Ground investigation works and Floating LiDAR underway
- Grid connection offers under review
- Assessing potential for alternative routes to market > e.g. hydrogen
- Bird surveys are ongoing and set to be complete by Q2 2024
- Strategically located to maximise synergies with Broadshore and leverage existing knowledge from experienced delivery team
- Supply chain engagement underway to develop innovative technology offerings



Source: offshorewindscotland.org.uk

ScotWind Projects

Project Information		Bellrock Offshore Wind	Broadshore Offshore Wind
	Ownership	50/50 JV BlueFloat Energy | Renantis	50/50 JV BlueFloat Energy | Renantis
	Capacity	1200 MW	900 MW Broadshore + ~200 MW INTOG = ~1100 MW
	N^{O} WTGS	TBC	TBC
	Foundation type	Floating Steel, Concrete or Hybrid	Floating Steel, Concrete or Hybrid
	Offtake	HVDC – HND 1 collocated offshore connection	HVAC - subject to HND Follow Up Excersise
	Area (KM^2)	280 km^2	134 km^2
	Distance to Shore	120 km	47 km
	Water depth	70-100 m	70-100 m
	Average Wind Speed	10.5 m/s	10.5 m/s

KEY PROGRAMME ACTIVITIES – BELLROCK & BROADSHORE

Details	Bellrock	Broadshore
Total Capacity	1200MW	900MW 199MW (INTOG Sites)
Current Main Activities:		
Recruitment	Ongoing recruitment of the core project team	
Environmental Surveys	Bird and Marine Mammal surveys	
Metocean Campaign	Floating LIDAR and Metocean deployed 08 April	
Site Investigations	Geophysical & Geotechnical Surveys deployed 19 April	
Stakeholder Engagement	Key stakeholder engagement	
Grid Connection	Holistic Network Design & Alternatives	
Supply Chain Engagement	Supply Chain Development Statement Outlook is available on the CES web site.	
Design Envelope for Scoping & Consent Application	• Wind Turbines • Floating Structures • Moorings & Anchors	• Offshore Substations • Subsea Cables • Electrical Systems

Project Development Timing					
Wind Farm Development Area Consent Application: mid-2020's	**Onshore Transmission Development Area Consent Application: TBC**	**Offshore Transmission Development Area Consent Application: TBC**	**FID: late-2020's**	**Construction: late 2020's / early-2030's**	**Commercial operation: early 2030's**

Supply Chain Registration

- Plant & Equipment Hire
- Subsea Inspection
- Specialist Coating Repair
- Floating Foundations
- Waste Management
- Security
- Mooring / Anchoring Systems
- Cable Protection
- Statutory Inspection
- Installation Vessels
- Environmental Surveys
- Catering
- Materials Supply
- Static / Dynamic Cables and Cables Ancillaries
- O&M Logistics (SOV, CTVs, Heavy Lift Vessels)
- Health and Safety Services
- Wind Turbines
- Accommodation
- Electrical Equipment
- Training and Education
- Condition Monitoring
- Civil Works
- Geotech and / or Geophysical Surveys (Onshore or Offshore)
- Professional Advice
- Construction Management Services
- Offshore Piles
- HV Switching and System Management

BlueFloat Energy
Renantis
PARTNERSHIP

Bellrock OFFSHORE WIND

Broadshore OFFSHORE WIND

THANK YOU

QUESTIONS?

Kirsty Adams
kadams@bluefloat.com

BlueFloat ENERGY

Renantis

PARTNERSHIP

DeepWind
North of Scotland Offshore Wind Cluster

Huw Bell

Simply Blue Energy

North Sea Transition Authority

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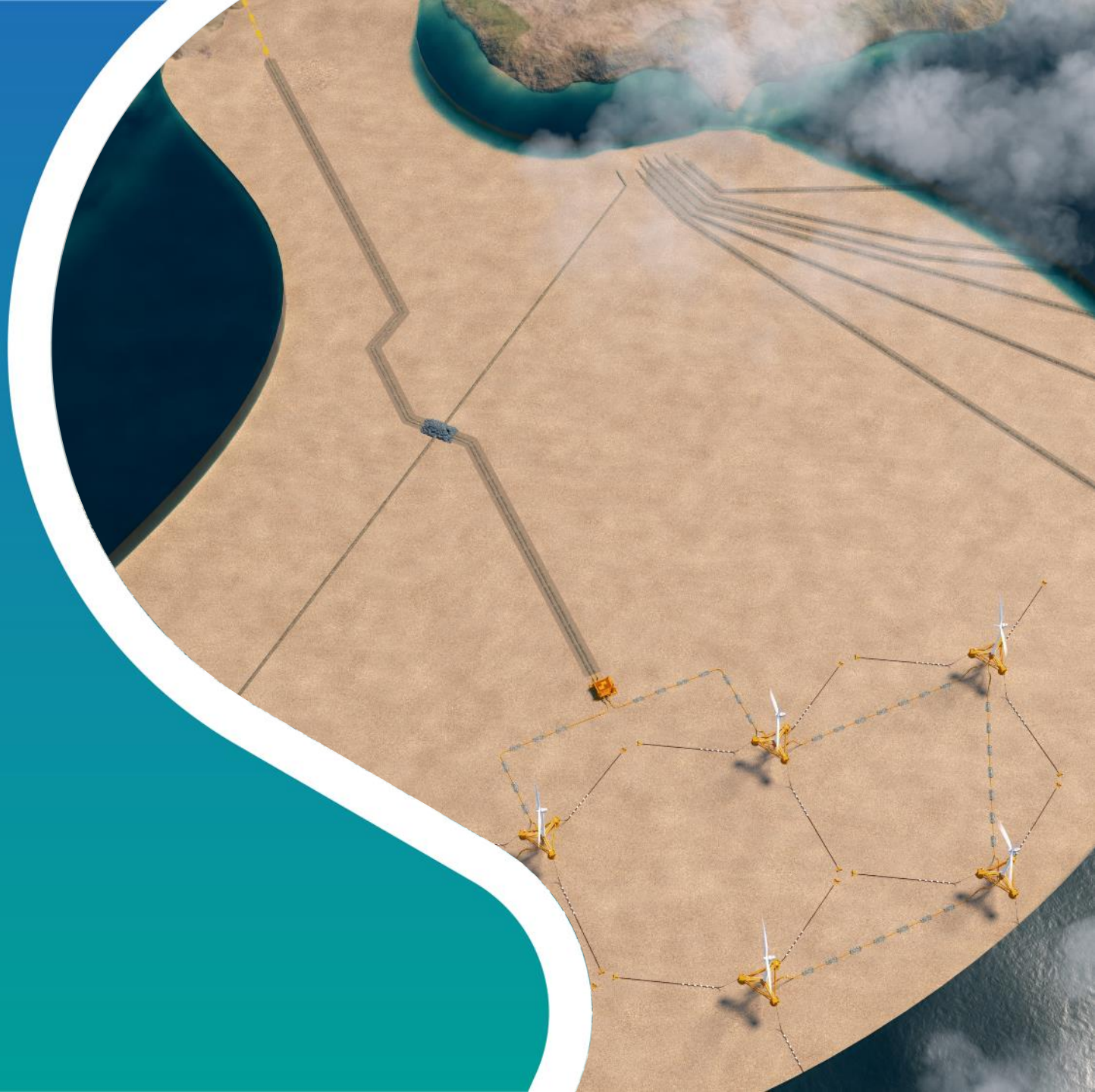
ENERGY TRANSITION ZONE

15th May 2023

Salamander Floating Wind

Huw Bell

Project Director



SALAMANDER

Powered by Ørsted and
Simply Blue Group

Salamander Partners

SALAMANDER
Powered by Ørsted and Simply Blue Group

Ørsted

8.6GW operational
2.5GW in construction
15GW in development
>1000 turbines in UK

Simply Blue Energy

10GW Floating wind pipeline
Consented first FOW stepping stone project this year in the Celtic Sea

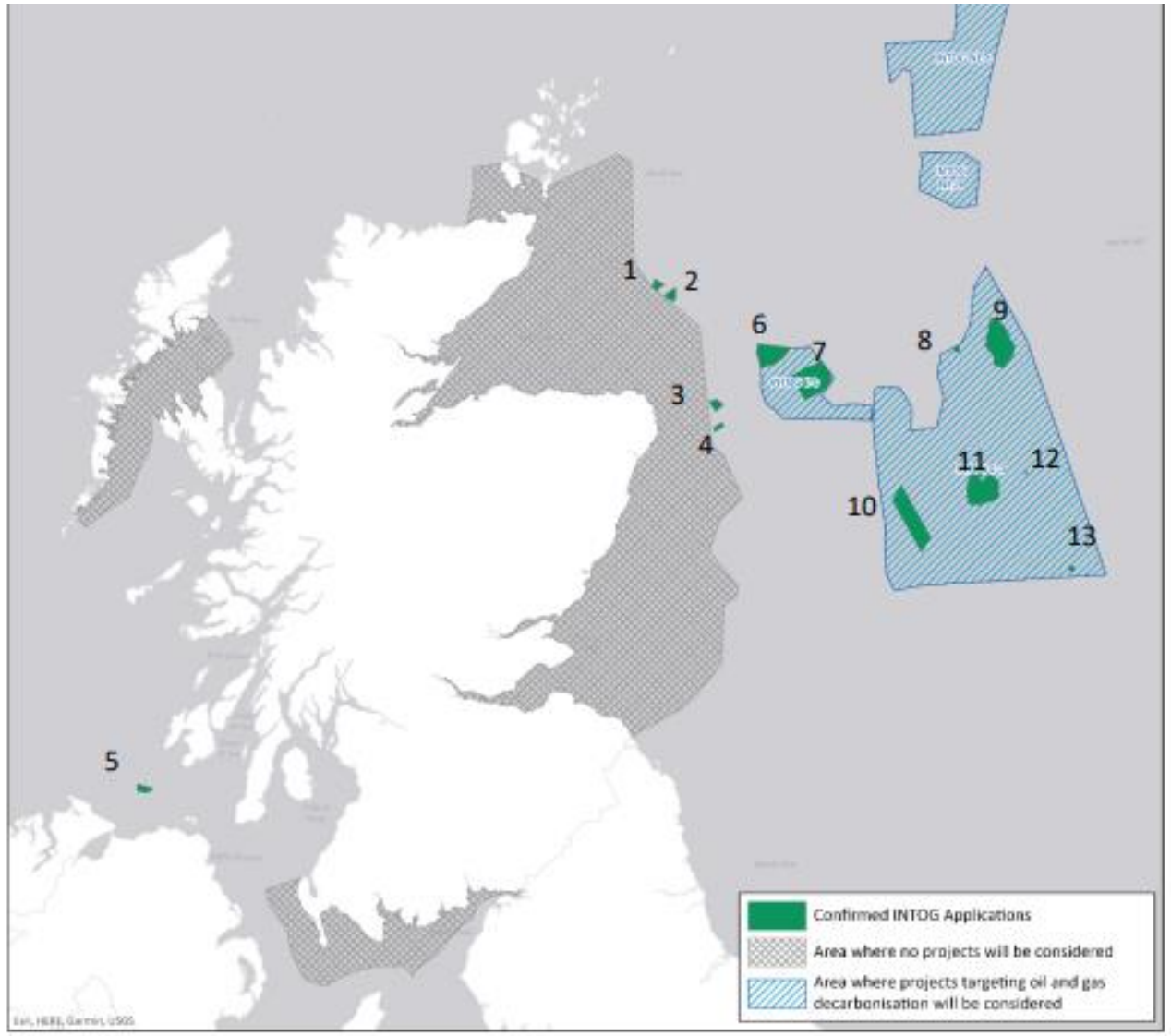
subsea 7

800+ foundations
30+ substations
2500km cables

SALAMANDER

Project Overview

SALAMANDER | Powered by Ørsted and Simply Blue Group



- Capacity - 100 MW
- Location - 35km east of Peterhead (3)
- Route to market – grid connected
- IN Project category – Supply Chain

Source - https://www.crownestatescotland.com/resources/documents/intog-map-and-project-details-march-2023

Some of our innovations

SALAMANDER | Powered by Ørsted and Simply Blue Group

A foundation concept that can be assembled in Scotland

Development of the Get Up Safe System for use in floating wind

Energy balancing infrastructure to support the grid accommodate GW scale build out

An extension to the PREDICT project to understand the impact of floating offshore wind on fish stocks and migration

Quick connect mooring and cable solutions to reduce installation and intervention risks

Salamander's innovations cover a broad range of challenges that floating wind faces

Timeline

SALAMANDER
Powered by Ørsted and Simply Blue Group

Q1 2023
Bird surveys completed
Scoping report issued

Q4 2023
FEED starts
Early works contracts with key suppliers

Q2 2024
Option Agreement
Initial SCDS required!

2029
Power to the grid

Q2 2023
Exclusivity Agreement

TBC early commitments to secure services, ports and materials

Q1 2024
Sectoral Marine Plan
Submit EIA

2026/27
Final Tier One contracts signed

Salamanderfloatingwind.com

SALAMANDER

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DeepWind
North of Scotland Offshore Wind Cluster

Adele Brown

bp Alternative Investments

North Sea Transition Authority

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INTOG project overview

We're developing leading-edge offshore wind farms in the Irish and North Sea, contributing to the UK's 50GW and Scotland's 11GW offshore wind targets for 2030

1 Morgan and Mona

EnBW | bp

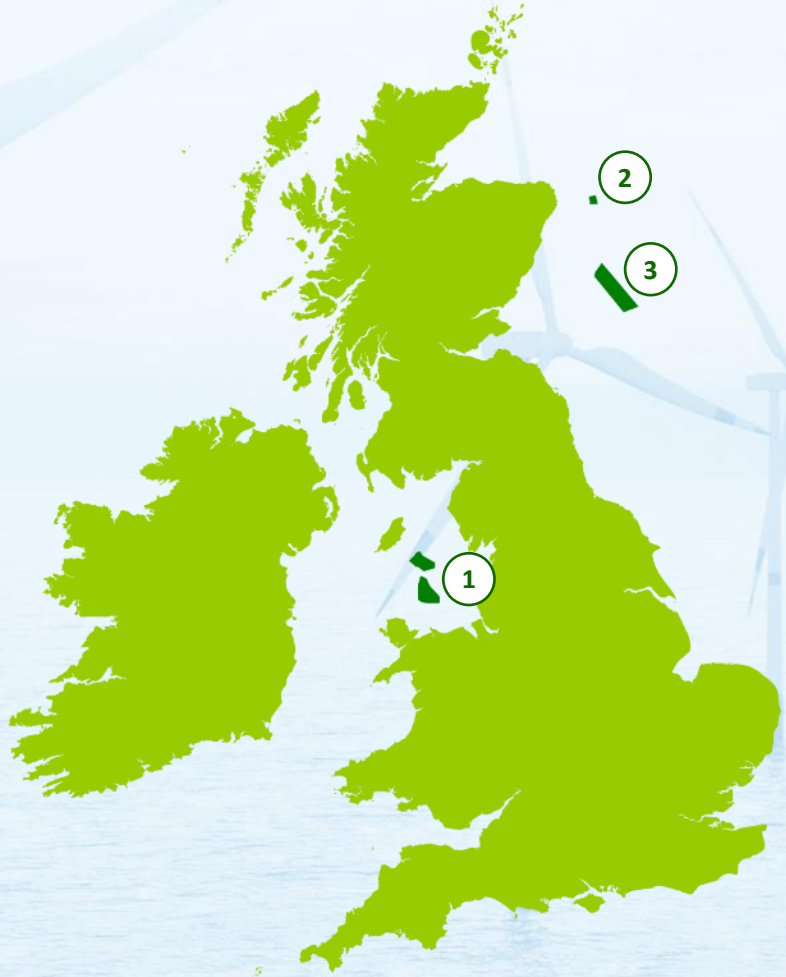
Partners in UK offshore wind

Location: 20 - 30km from the coast

Area: Morgan ~300km^2, Mona ~450km^2
= half the size of Greater London

Generating capacity: ~3GW
= sufficient to power c.3.4m UK homes

Water depth: 35 – 45 metres



2 INTOG project

bp

3 Morven

EnBW | bp

Partners in UK offshore wind

Location: 60km off the coast of Aberdeen

Area: ~860km^2

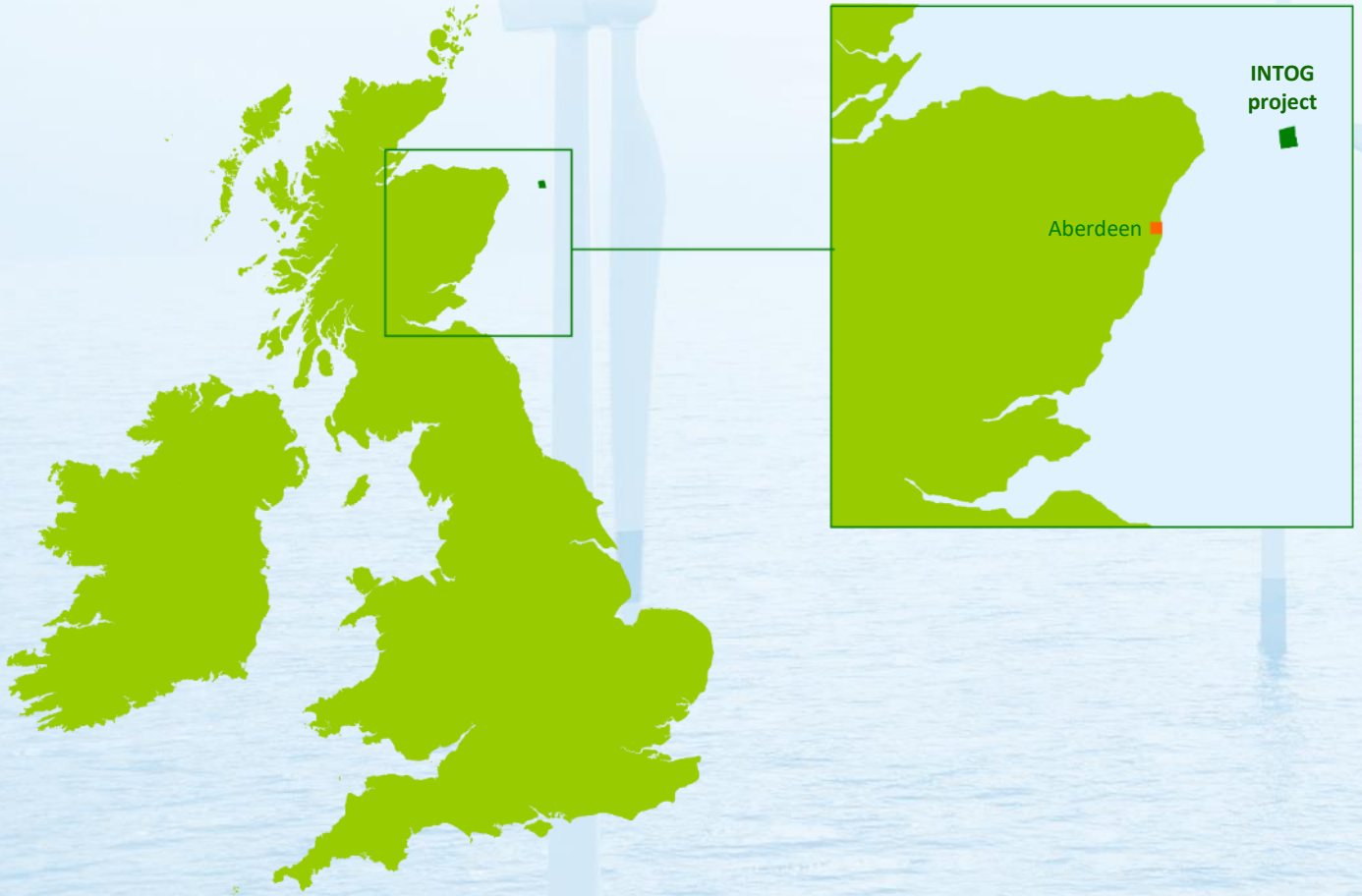
Generating capacity: ~2.9GW
= sufficient to power c.3m UK homes

Water depth: 65 – 75 metres

The combined potential generating capacity of over 5.9GW is sufficient to power the equivalent of around 6 million UK households with clean electricity

INTOG

We have been successful in a bid to develop our innovation demonstrator floating offshore wind project in the North Sea, the first in our portfolio



Location: 32km off the coast of Aberdeenshire

Area: ~16.7km^2

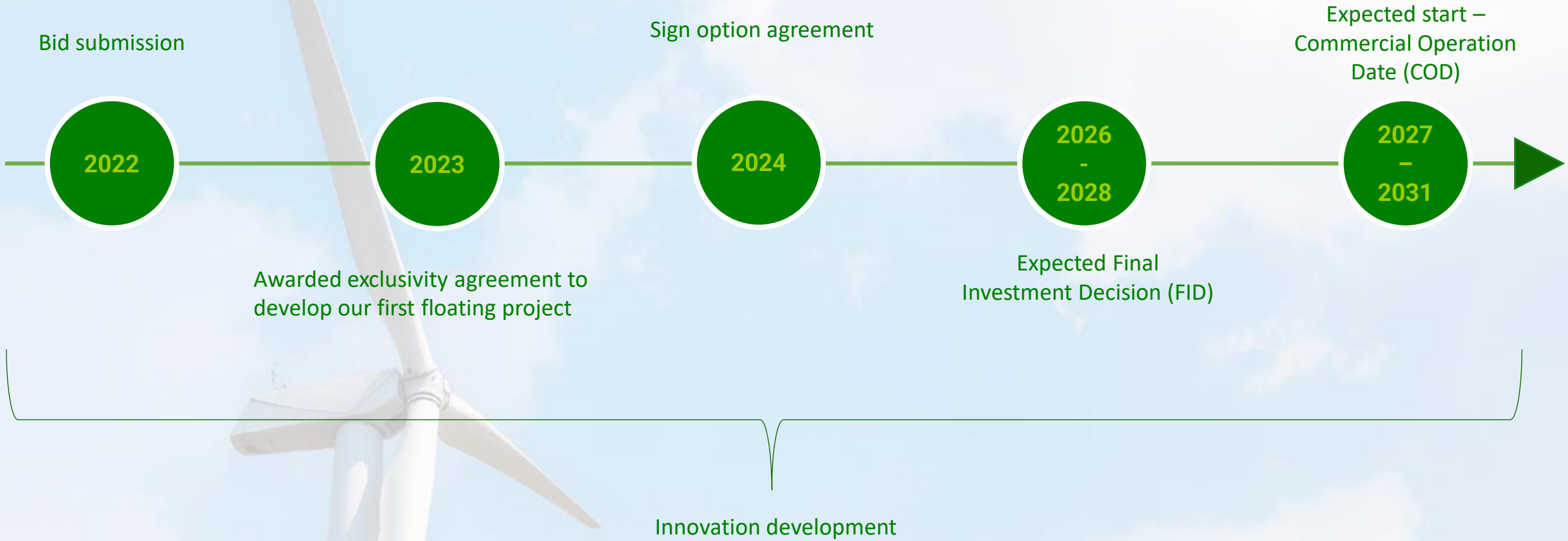
Potential of **50MW** of offshore wind

Potential **integration** with Aberdeen Hydrogen Hub

About the project

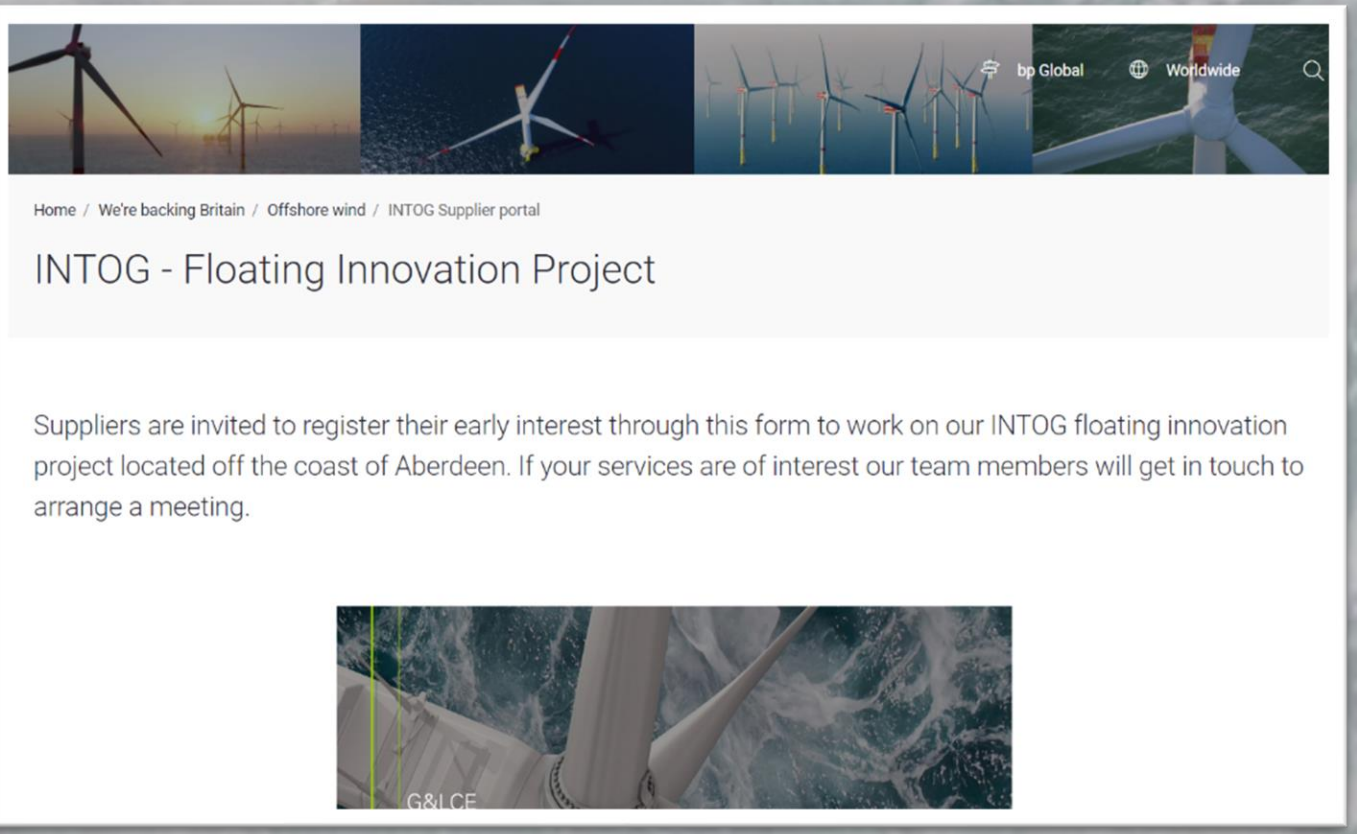
- An exciting step towards building our offshore wind footprint, which we expect to increasingly include floating opportunities
- Unlock the potential of floating options, potentially adding gigawatts to our offshore wind pipeline
- The potential opportunity to supply power to the Aberdeen Hydrogen Hub
- Test and demonstrate floating technology to optimise future projects
- 1 Expected to be the first site to be served by our Aberdeen Operation & Maintenance centre of excellence

Timeline



All dates currently indicative

Suppliers


bp Global
Worldwide
Home / We're backing Britain / Offshore wind / INTOG Supplier portal
INTOG - Floating Innovation Project
Suppliers are invited to register their early interest through this form to work on our INTOG floating innovation project located off the coast of Aberdeen. If your services are of interest our team members will get in touch to arrange a meeting.
G&LCE

Thank you

DeepWind
North of Scotland Offshore Wind Cluster

Paul McElvanna

ESB Asset Development

North Sea Transition Authority

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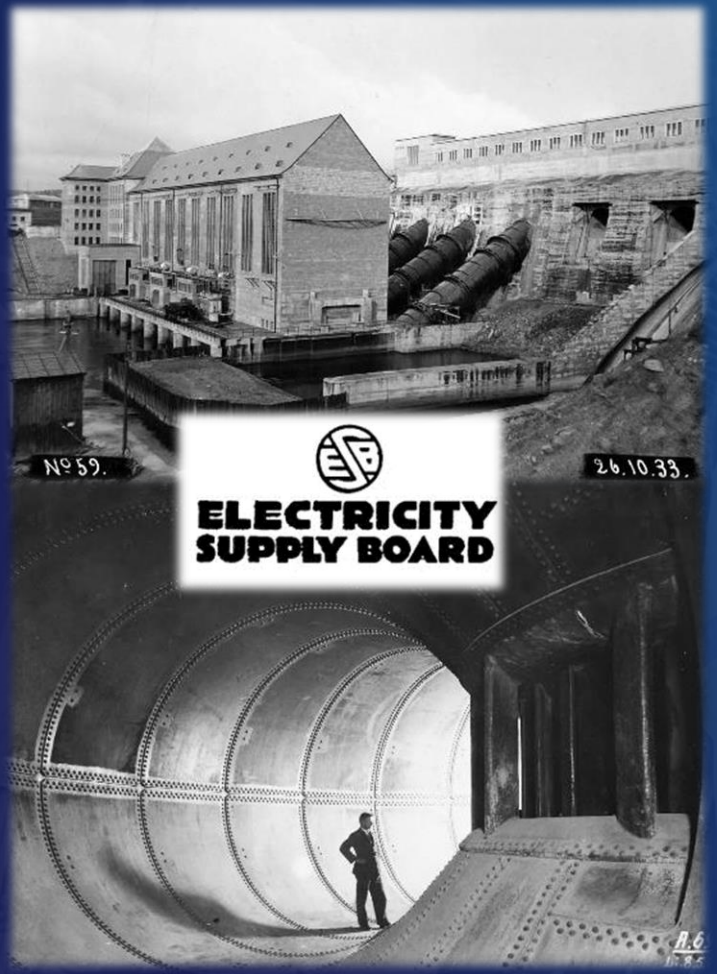
MALIN SEA WIND

May 2023

ESB | ENERGY FOR GENERATIONS

Energy for generations

1927



2023

MALIN SEA WIND

Project Concept

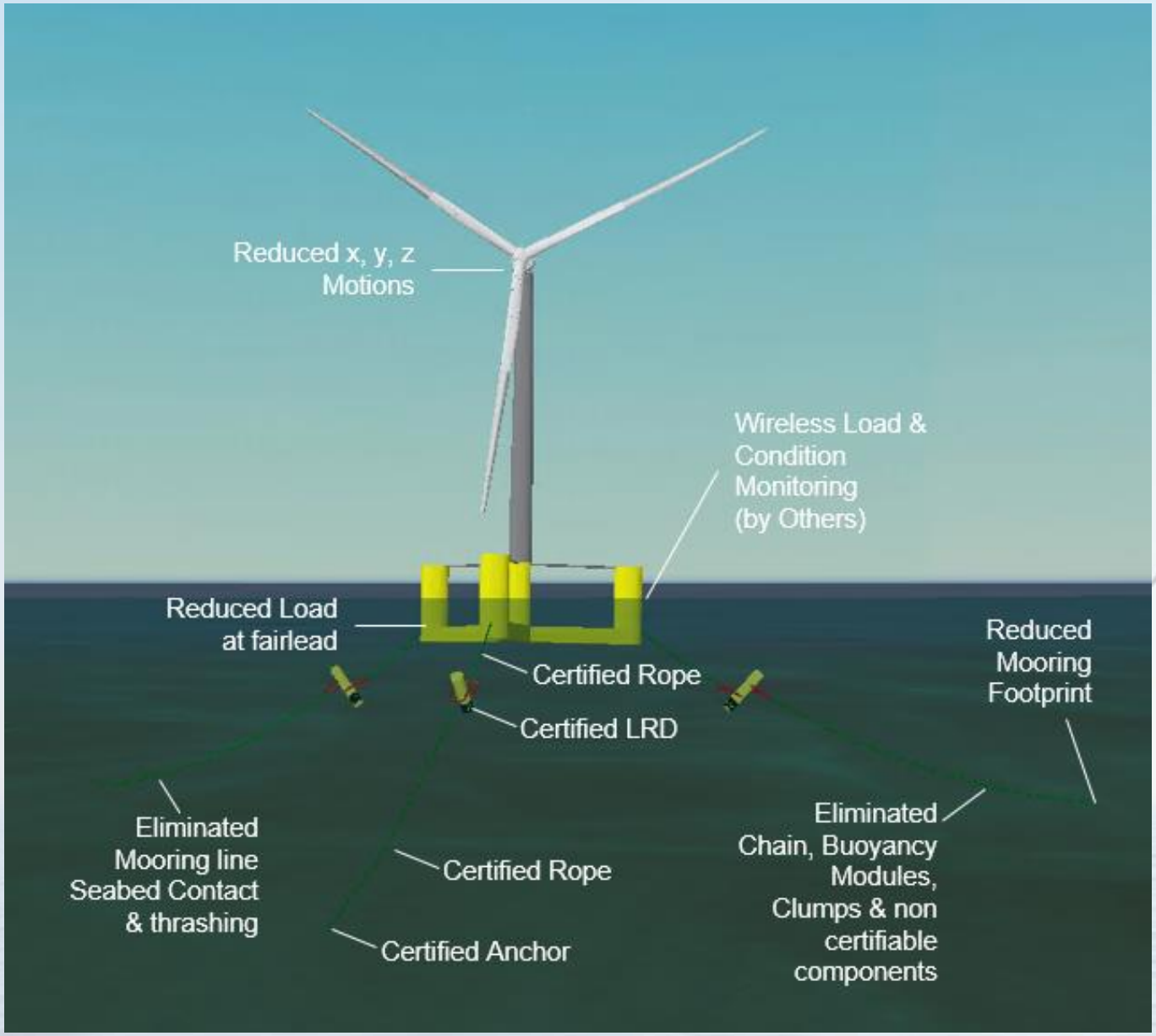
- 96MW Floating Offshore Windfarm
- 6 x 16MW WTGS, platform technology TBC
- Export to Northern Ireland
- Innovation #1: LRD Based Mooring System
- Innovation #2: RES supply for efuel production
- Strong strategic fit for ESB

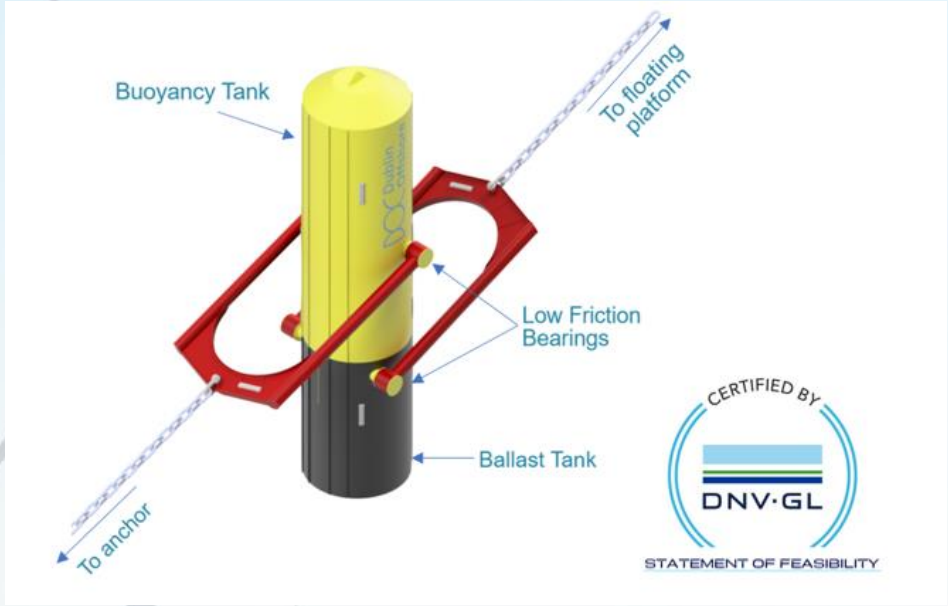
Indicative Delivery Timeline

- Consent Q3 2027
- ITT for key work packages Q2 2028
- FID Q3 2029
- Operational 2031

LRD BASED MOORING SYSTEM

Dublin Offshore Consultants





- Reduced Risk
- Reduced Footprint
- Reduced Cost
- Reduced Motions
- Reduced Loads
- Local Supply Chain

EFUEL PRODUCTION

CATAGEN
beyond now

- Hybrid offtake concept: grid + efuel production
- Pre-commercial scale efuel production, harnessing Catagen's award-winning technology
- Targeting regional Sustainable Aviation Fuel market and drop-in replacement markets

THANK YOU!

DeepWind
North of Scotland Offshore Wind Cluster

Q&A Session 2

North Sea Transition Authority

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