

# DOGGER BANK WIND FARM

## Dogger Bank A

OFTO Tender Round 10



# Introductions

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## OFTO Deal Team



**Isaac Tavares**  
DB OFTO Transactions Manager



**Matthew Seed**  
DBA Asset Disposal Lead



**James Cattell**  
DBA O&M Offer Lead

## JV Structure



- The Dogger Bank offshore wind farm is a joint venture partnership between SSE Renewables (40%), Equinor (40%) and Vårgrønn (20%).

## Delivery

- SSE Renewables is leading the development and construction of Dogger Bank Wind Farm, and Equinor will operate the wind farm on completion for its expected operational life of around 35 years.

## More details @ our website

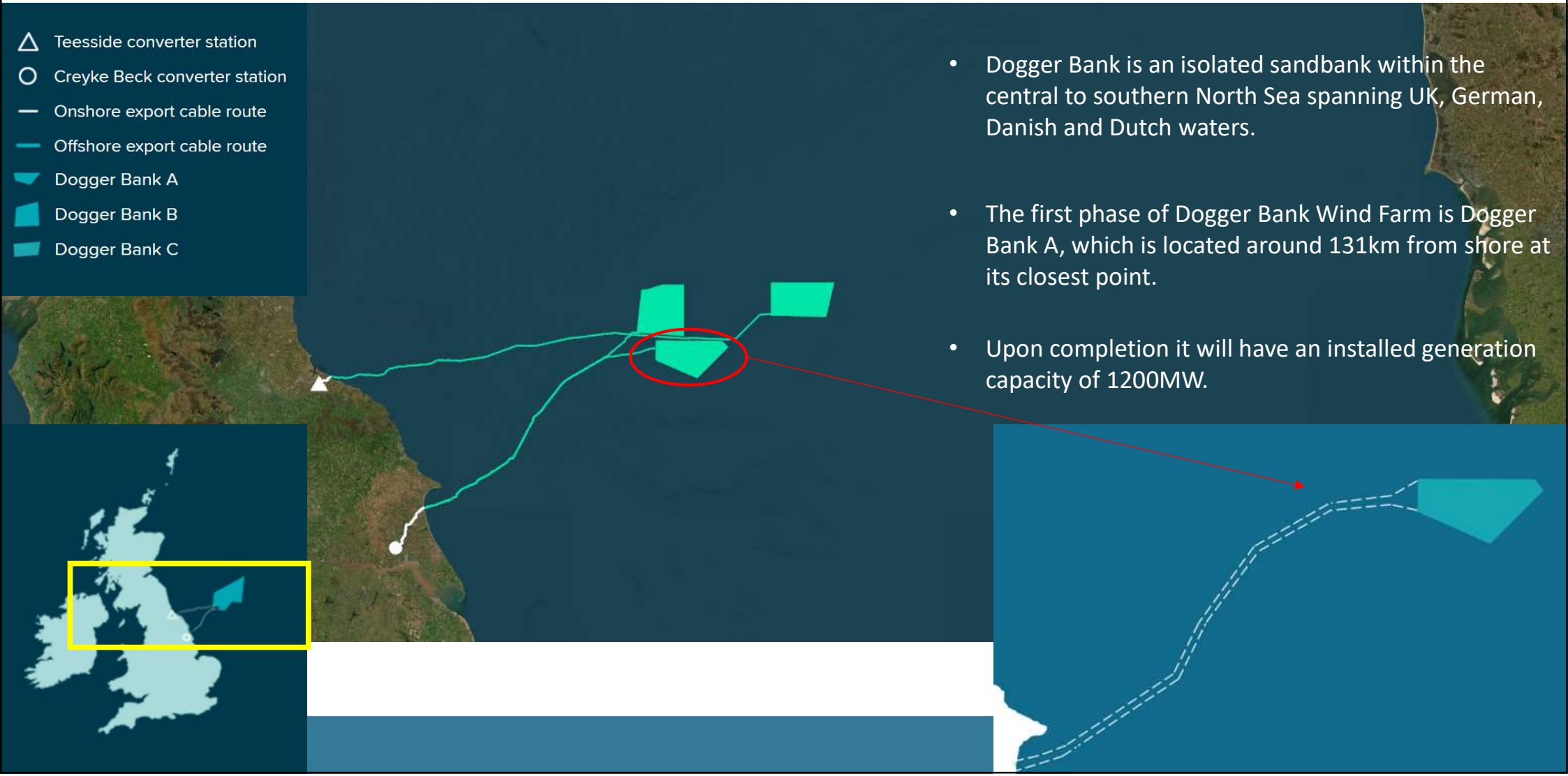
- The World's Largest Offshore Wind Farm - Dogger Bank Wind Farm<sup>1</sup>

<sup>1</sup> <https://doggerbank.com/>

# The Dogger Bank Development

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- △ Teesside converter station
- Creyke Beck converter station
- Onshore export cable route
- Offshore export cable route
- ▽ Dogger Bank A
- Dogger Bank B
- Dogger Bank C



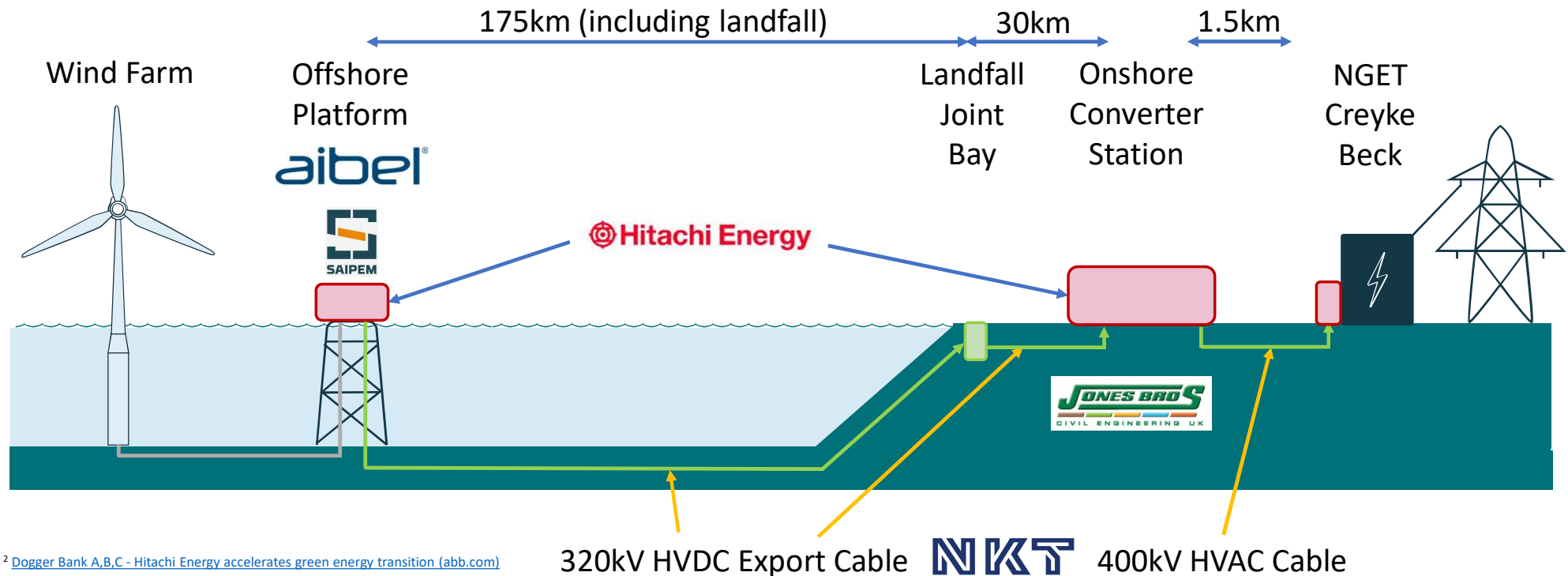
- Dogger Bank is an isolated sandbank within the central to southern North Sea spanning UK, German, Danish and Dutch waters.
- The first phase of Dogger Bank Wind Farm is Dogger Bank A, which is located around 131km from shore at its closest point.
- Upon completion it will have an installed generation capacity of 1200MW.

# Transmission Asset and Contractors

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## Why HVDC?<sup>2</sup>

- Reduced cost, which benefits the consumer and investors;
- Efficiency (low losses compared to AC), which benefits consumers and supports government targets.



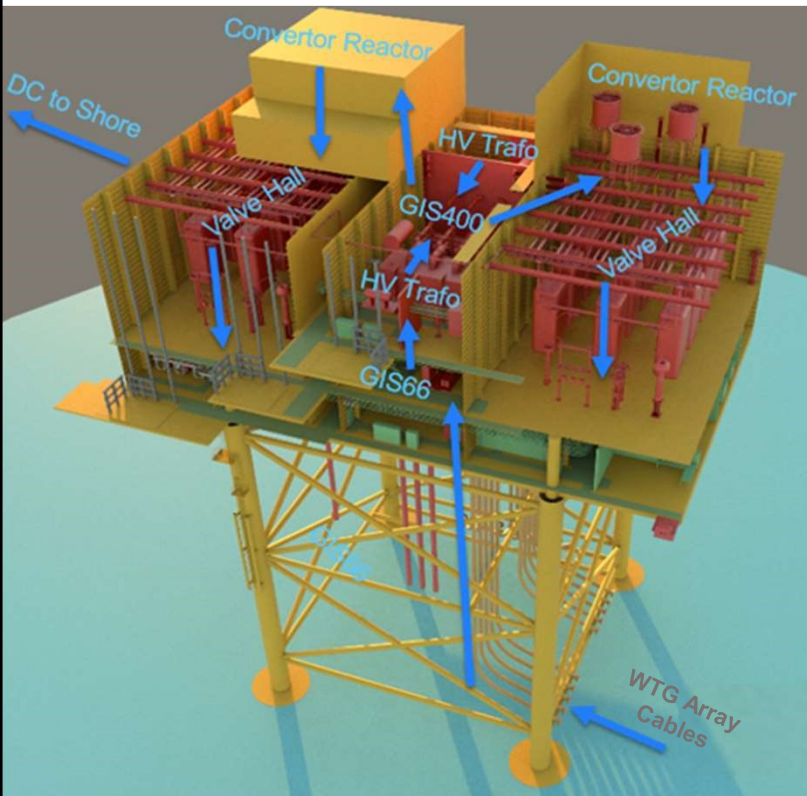
<sup>2</sup> Dogger Bank A,B,C - Hitachi Energy accelerates green energy transition (abb.com)



# Offshore Substation Platform

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- Highly efficient design, based on normally unmanned installation, and reliability by design to ensure availability.
- Tonnes per MW reduced by 70% from benchmarks.
- Includes wind farm power collection and systems.



- Fabrication and equipment fit out in Thailand
- HVDC equipment installation and commissioning in Norway
- Jacket fabrication in Sardinia
- Installation by Saipem



# Export Cable – Subsea and Land

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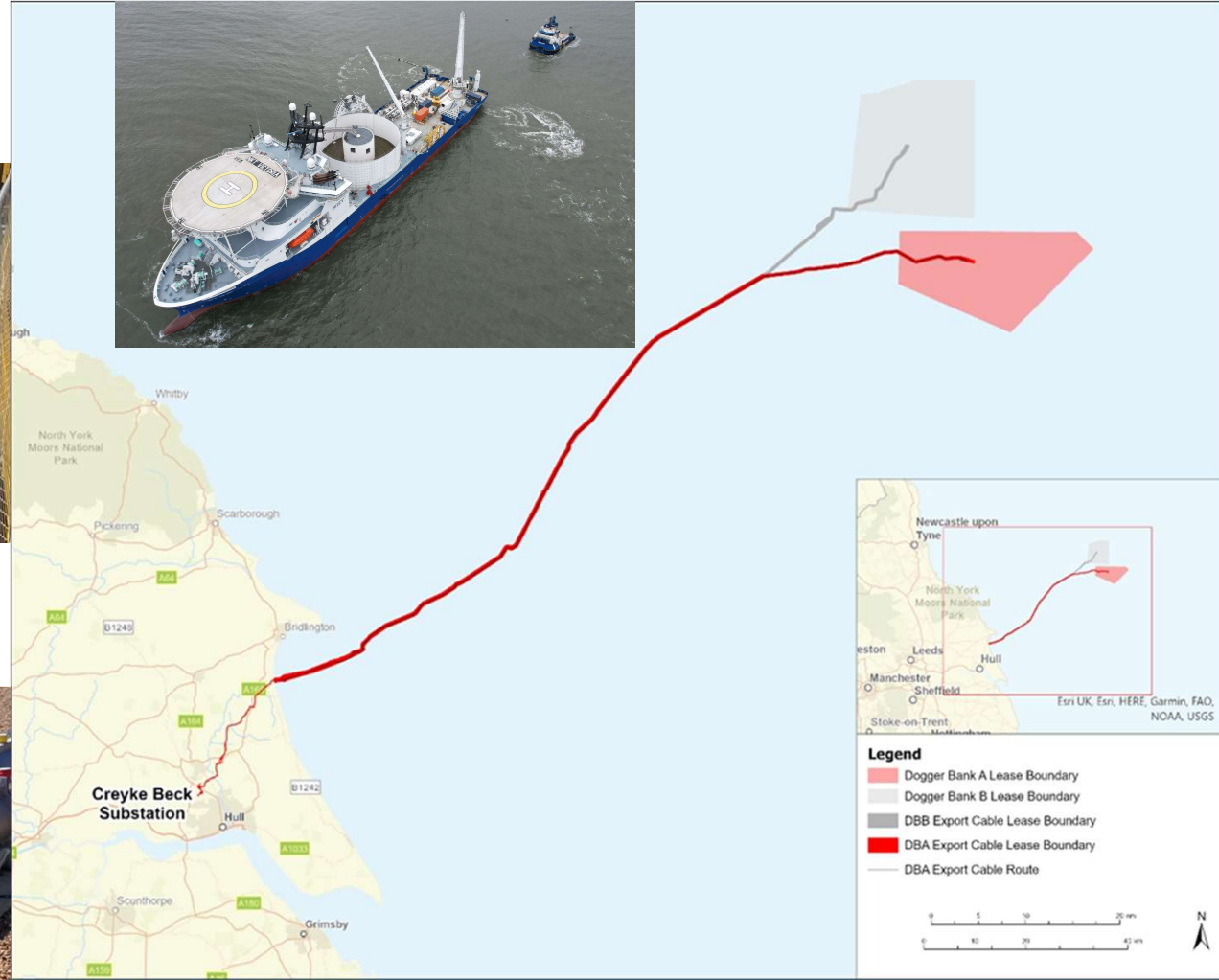
## 320kV HVDC Export Cable

- 175km subsea (including landfall)
- 30km onshore

## 400kV AC to National Grid

- 1.5km

320kV HVDC  
cable joint bay



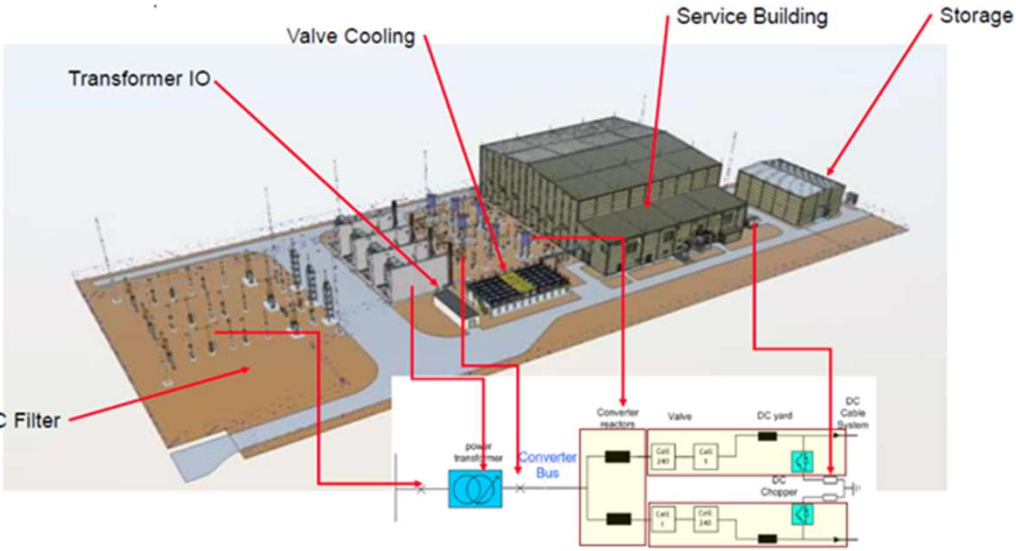
Reinstatement

400kV AC circuit to  
National Grid substation



# Onshore Converter Station

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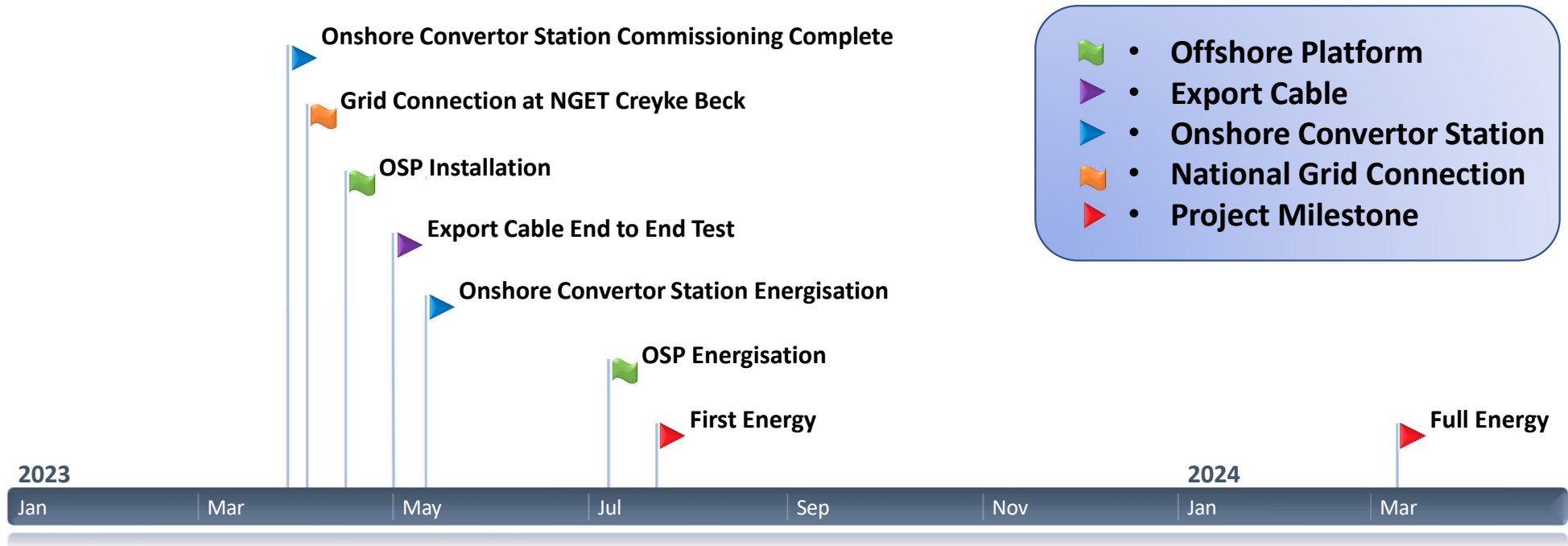


Single-phase Transformers (L)

Reactor Area and  
DC Converter Hall (R)



# Installation & Commissioning Milestones





# O&M Service Agreement

- Key Challenges with the Dogger Bank A OFTO assets:
  - the **first HVDC** transmission link for a UK offshore wind farm
  - **remote** offshore location in **harsh** conditions
- Dogger Bank A will offer all OFTO bidders a comprehensive O&M Service Agreement for **25 years** for consideration of **£1**
- Objective from Dogger Bank side:
  - ensure OFTO **asset lifetime** beyond 25 years,
  - higher **system availability and lower opex** through synergy with the O&M and control of the Dogger Bank Wind Farm
- Benefit for the OFTO:
  - risk reduction towards **availability penalty**
  - O&M **cost certainty**
- Benefit for the Consumer:
  - synergies across Dogger Bank Wind Farm present lower O&M costs
- A detailed draft **O&M Agreement** will be presented during the tender phase, comprising a **comprehensive scope** which typically includes:
  - the operations and maintenance of the assets (**including HVDC and ancillary systems**)
  - control room and operations services

# O&M Service Agreement

- **HVDC experienced operator:**
  - Dogger Bank's operator, Equinor, is an experienced operator of offshore HVDC links since 2005
  - Equinor operates 4 HVDC links supplying the Troll (A) gas installation and 2 HVDC links supplying the Johan Sverdrup installations on the Norwegian Continental Shelf
  - The Dogger Bank team understands the importance of system reliability at the Dogger Bank Wind Farm and the specialist O&M requirements to ensure HVDC (and ancillary) system availability



- Multiple Service Operations Vessels (SOV's) and daughter craft deployed to provide rapid response across the windfarm project phases
- Our SOV's provide significant offshore support providing accommodation to technicians, tool / spares storage and workshop space
- Highly trained wind farm technicians deployed from the SOVs provide 1st line rapid response to emergent issues with further support from in-house HVDC engineers at the O&M base

# Operations & Maintenance

(located at the Port of Tyne)

- Dogger Bank Net Zero Carbon O&M Base
  - Coordination centre for O&M activities
  - Main warehouse and logistics support
  - Engineering support team location (including HVDC engineers)
- Equinor state of the art Central Control Room
  - Located adjacent to Dogger Bank O&M Base facilities
  - Equinor will provide Control Room Services 24 hours a day, 365/366 days a year



# DOGGER BANK WIND FARM



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