

# Hornsea Project One



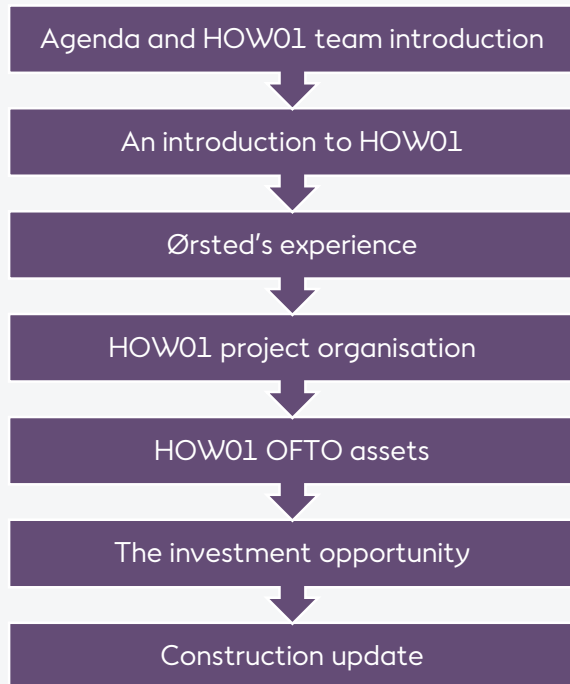
Project Overview

 **Orsted**

**Presentation for Ofgem OFTO  
TR6 Launch Event  
9 October 2018**

# Agenda and Hornsea Project One introduction

## Agenda



## HOW01 OFTO Divestment Team



**Duncan Clark**  
Programme Director  
Joined Ørsted in 2012  
24 yrs in power sector, inc PD WMR



**Richard Bodal Hansen**  
Head of OFTO transactions  
Joined Ørsted in 2012  
M&A and legal background



**Ebba Phillips John**  
Senior OFTO Transaction Manager  
Joined Ørsted in 2010  
Background in electricity market regulation

## Hornsea Project One will be the world's largest offshore wind farm...

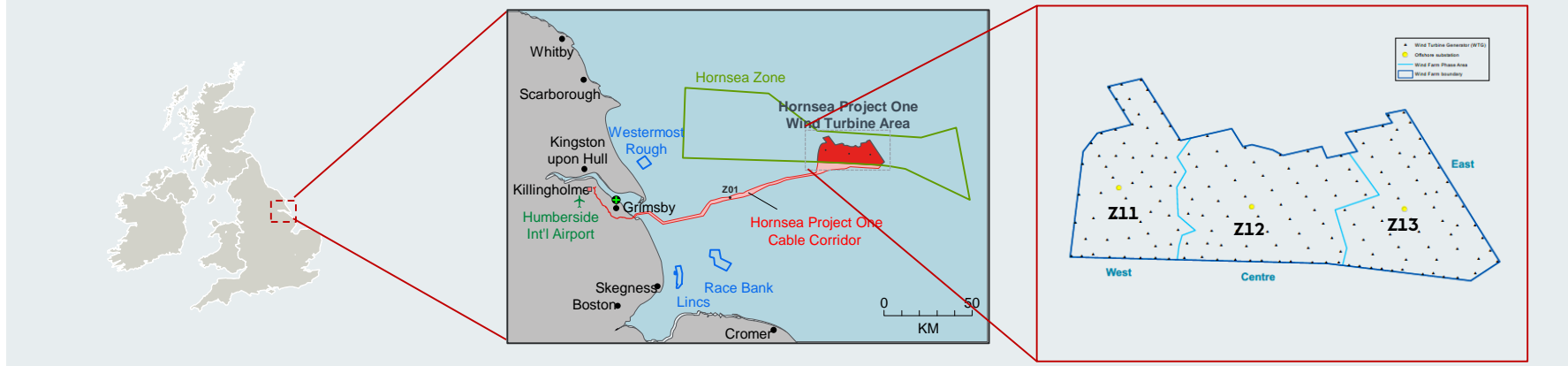


**Situated in the attractive Hornsea Zone leased in Round 3, HOW01 is a record breaking project:**

- Largest MW wind farm in the world
- Furthest from shore
- Largest transmission asset
- Largest M&A transaction

# ...built using proven technology and market leading Ørsted experience

## Location and layout



### Characteristics

Well known operating environment	✓
Well known and proven technology	✓
Well tested and successful construction approach	✓
Well designed with efficient cost and operability	✓

### Parameter

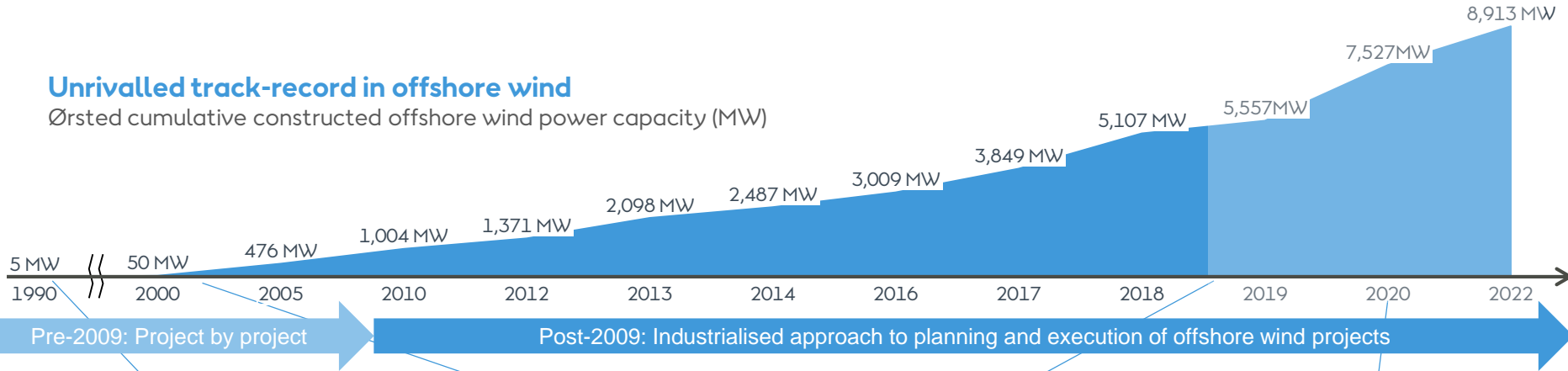
### Summary

Support regime	Contract for Difference
Capacity	1218 MW
Water depth	24-37m LAT
Length of export cable route	~145km offshore and ~38km onshore
Number of WTGs	174 Siemens Gamesa 7 MW

# Ørsted pioneered the offshore wind industry

## Unrivalled track-record in offshore wind

Ørsted cumulative constructed offshore wind power capacity (MW)



### Vindeby

**First offshore wind farm in the world**



Capacity: 5 MW  
Nr. of turbines: 11  
Distance to shore: 1.8 km

### Horns Rev 1

**First large scale offshore wind farm in the world**



Capacity: 160 MW  
Nr. of turbines: 80  
Distance to shore: 18 km

### Walney Extension

**The largest operational offshore wind farm in the world**



Capacity: 659 MW  
Nr. of turbines: 87  
Distance to shore: 19 km

### Hornsea 1

**The world's largest offshore wind farm once constructed**



Capacity: 1218 MW  
Nr. of turbines: 174  
Distance to shore: 145 km

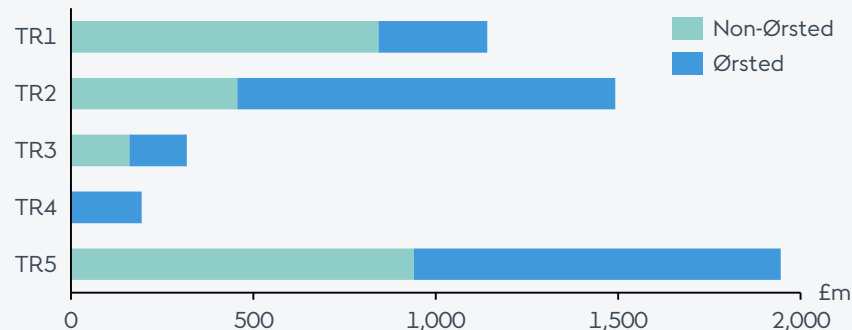


# Our experience of OFTO assets

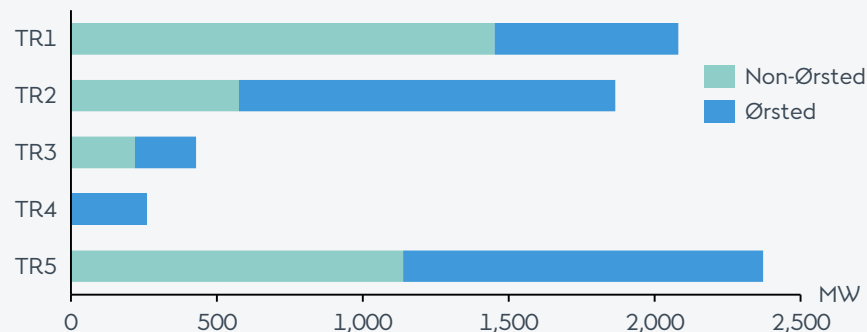
## OFTO transactions overview



## Transfer Value<sup>1</sup>



## Capacity



# Hornsea Project One ownership and project organisation

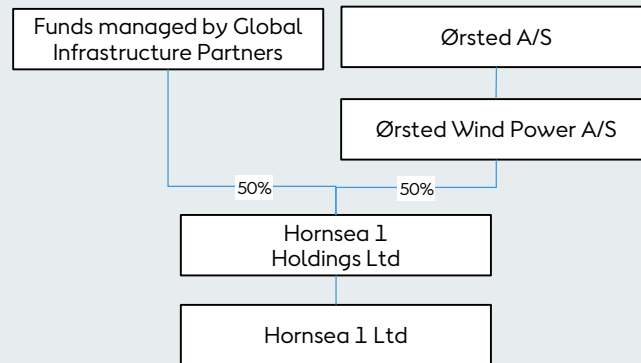
## Ownership overview

- Hornsea 1 Ltd is the **Developer** of the HOW01 wind farm, and **Vendor** for the purposes of the OFTO divestment.
- The Developer currently a wholly owned subsidiary of **Ørsted**.
- Ørsted is in the process of divesting 50% of its interest in Hornsea 1 Ltd to **Global Infrastructure Partners**<sup>1</sup>
- Ørsted acquired 33% of the project from Smart Wind Ltd. in December 2011 and took full ownership in February 2015.
- The wind farm including all transmission assets is being **constructed by Ørsted Wind Power A/S**

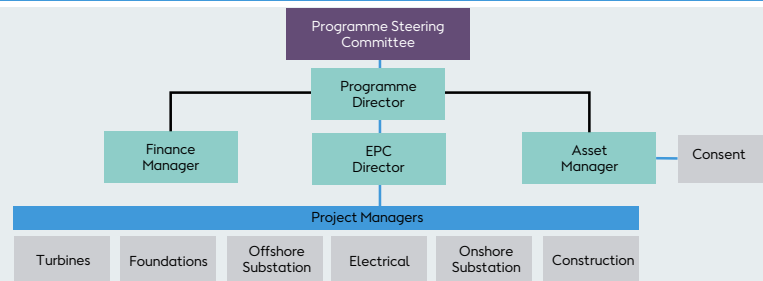
## Experienced project organisation

- Ørsted has an unrivalled track-record in offshore wind with **over 27 years experience, having constructed 28% of global offshore wind capacity**
- **Hornsea 1 leverages this organisational experience**, benefiting from Ørsted's mature and industrialised approach to planning and execution of offshore projects
- **The project team benefits from the significant experience gained** from previous transmission asset construction and divestment processes
- **Safety and environmental impact are key focus areas** for the delivery of the assets

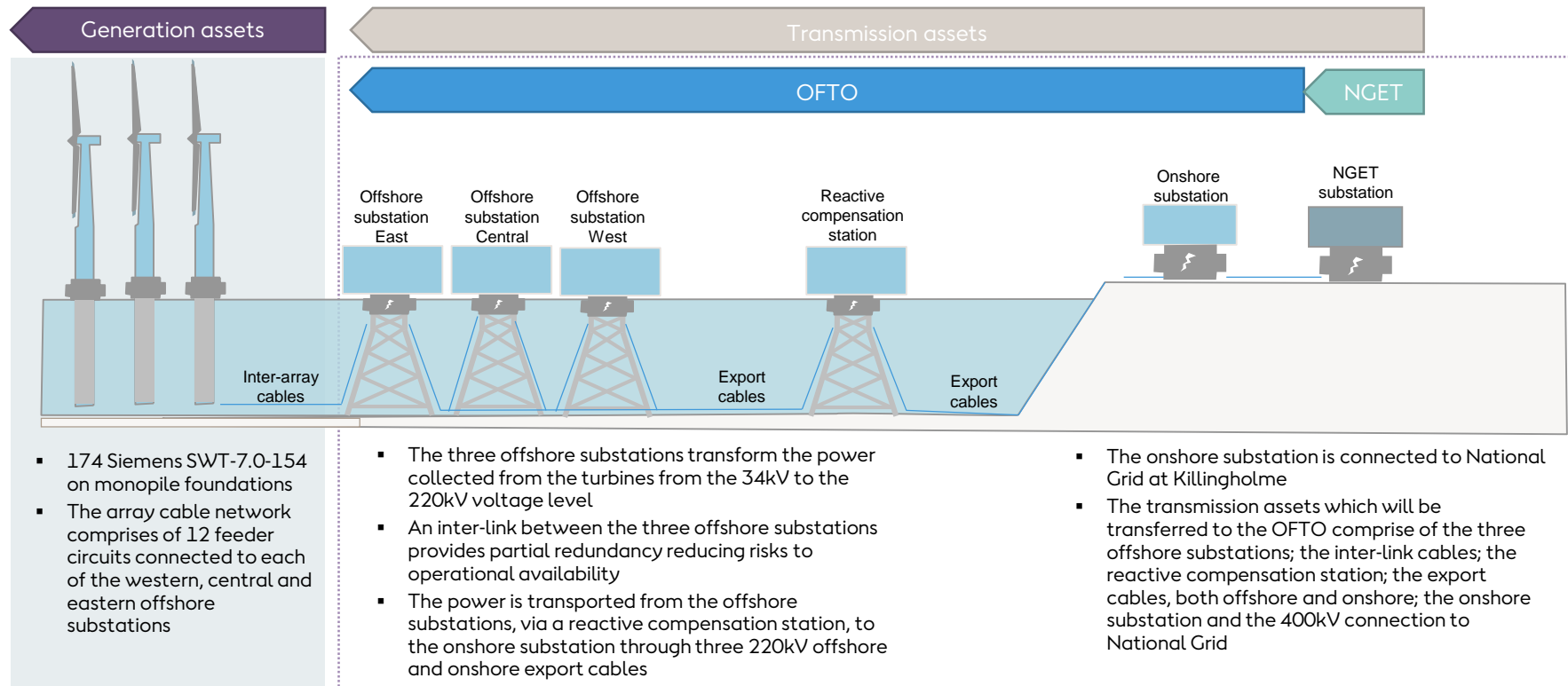
## Ownership structure<sup>1</sup>



## Project organisational structure



# Overview of the infrastructure





# Hornsea Project One: the investment opportunity

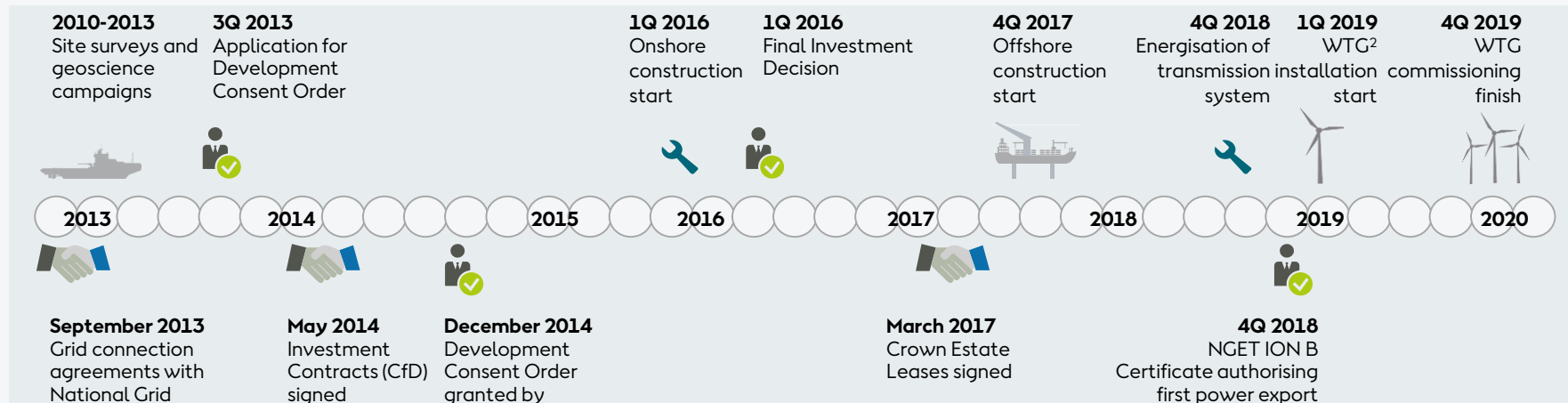
## Project highlights

Highlights	<ul style="list-style-type: none"><li>1218MW generation capacity with transmission assets Initial Transfer Value 1396 GBPm</li><li>All consents in place and transmission asset construction nearing completion</li></ul>
Project	<ul style="list-style-type: none"><li>Favourable site conditions and well known location</li><li>The characteristics of the site enable the project to make use of known technology</li><li>Mature and efficient design based upon previous operational experience, resulting in highly operable and robust assets</li></ul>
Supply chain	<ul style="list-style-type: none"><li>Experienced supply and installation contractors procured by Ørsted</li></ul>
Experienced Developer and EPC Manager	<ul style="list-style-type: none"><li>Ørsted active in the offshore wind sector for more than 20 years</li><li>Ørsted has participated in all of Ofgem's OFTO tender rounds to date</li><li>Competencies in place to deliver the project to the highest industry standard</li></ul>
O&M	<ul style="list-style-type: none"><li>Appropriate interim maintenance arrangements will be in place until asset transfer</li><li>With a track record of operating wind farms in Europe for over 20 years, Ørsted is greatly experienced in managing the long term operation of windfarms and associated transmission assets</li><li>Ørsted plans to offer certain through-life service agreements at the ITT stage</li></ul>
Transaction	<ul style="list-style-type: none"><li>Project specific transfer and interface agreements based on Ofgem guidelines and market developments</li><li>Transfer of OFTO related contracts including benefit of supplier warranties</li><li>Division of responsibilities pre- and post- asset transfer</li><li>Credit support to be procured by the Developer</li></ul>



# An update on the construction progress

## Hornsea Project One installation and construction <sup>1</sup>



### Onshore progress

#### Onshore Substation

- Onshore substation civil works complete and taken over from contractor
- All HV components delivered and installed
- Commissioning well advanced
- On target for energization Q4 2018

#### Onshore Export Cables

- All cables installed and joints complete

### Offshore progress

#### Offshore Substations

- Offshore installation complete for Z01, Z11, Z12, Z13
- Commissioning at advanced stage

#### Offshore Export Cables

- Central circuit cable and interlinks installed
- Installation begun for western and eastern circuit cables, completion expected Q4 2018 and Q2 2019 respectively

## Construction photos



## Construction photos





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