

# 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...

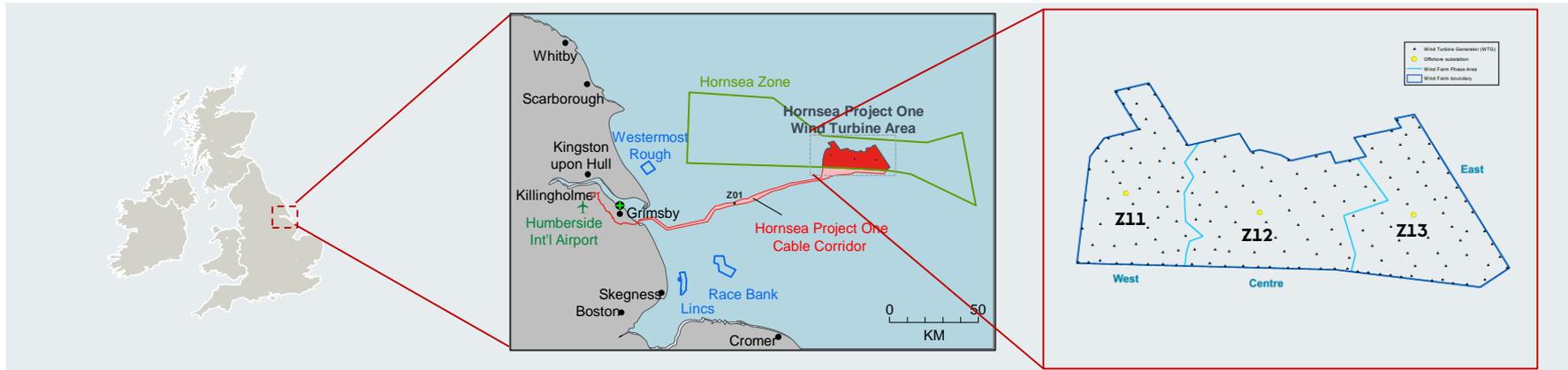


Situated in the attractive Hornsea Zone leased in Round 3, HOW01 is a record breaking project:

- 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

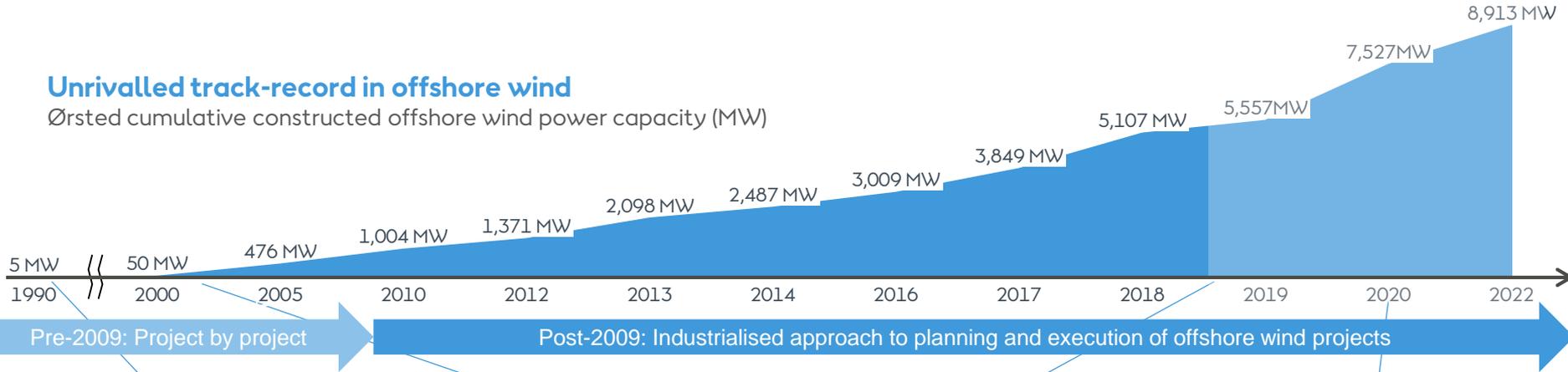
Well designed with efficient cost and operability

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**



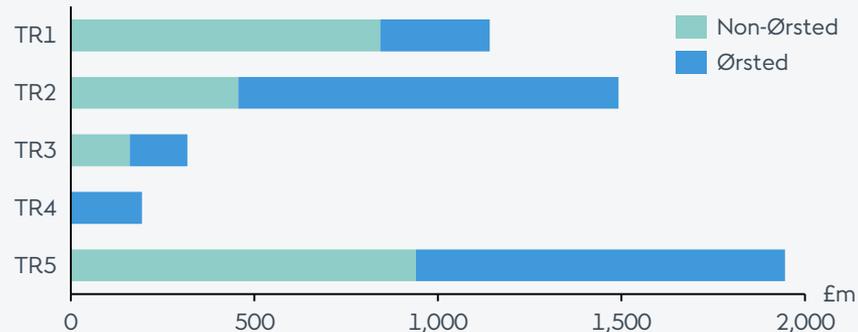
Capacity: 1218 MW  
 Nr. of turbines: 174  
 Distance to shore: 145 km

# Our experience of OFTO assets

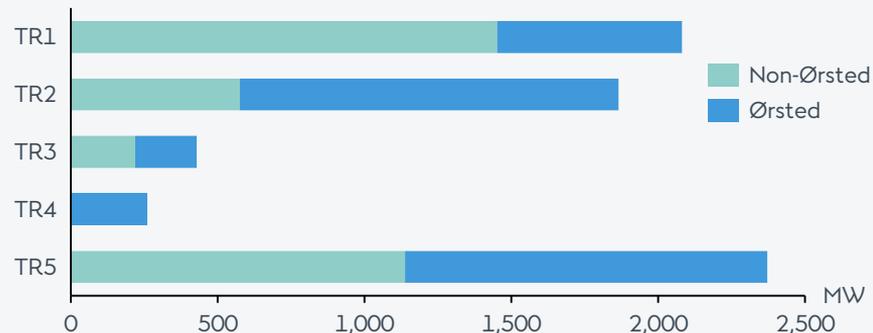
## OFTO transactions overview



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



## Capacity



1. Based on public information  
 2. Centrica was the operating partner for Lincs construction and OFTO divestment

# Hornsea Project One ownership and project organisation

## Ownership overview

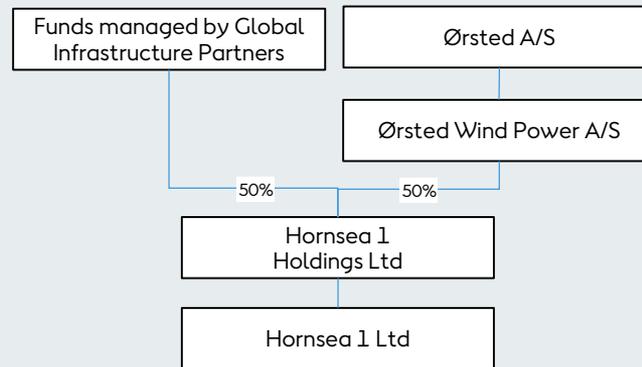
- Hornsea 1 Ltd is the **Developer** of the HOW01 wind farm, and **Vendor** for the purposes of the OFTO divestment.
- The Developer currently a wholly owned subsidiary of **Ørsted**.
- Ørsted is in the process of divesting 50% of its interest in Hornsea 1 Ltd to **Global Infrastructure Partners**<sup>1</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

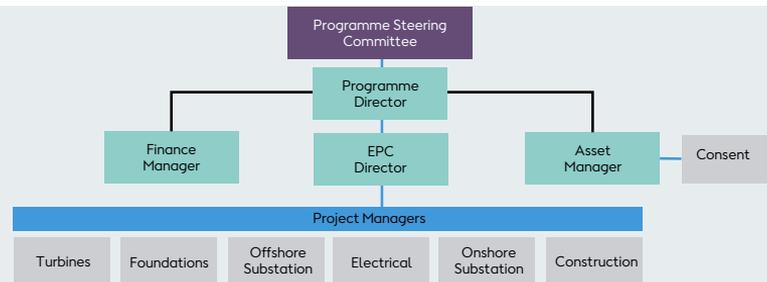
- Ørsted has an unrivalled track-record in offshore wind with **over 27 years experience, having constructed 28% of global offshore wind capacity**
- **Hornsea 1 leverages this organisational experience**, benefiting from Ørsted's mature and industrialised approach to planning and execution of offshore 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



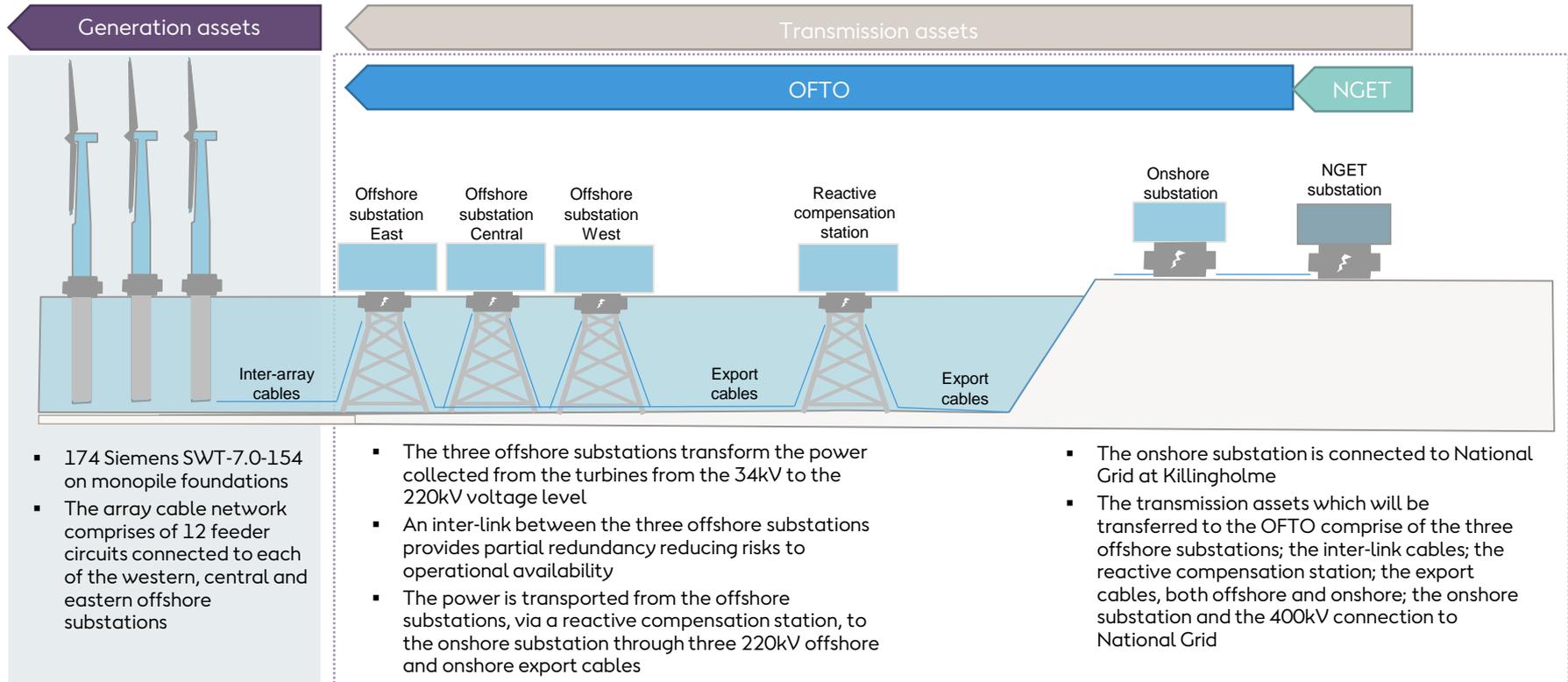
## Ownership structure<sup>1</sup>



## Project organisational structure



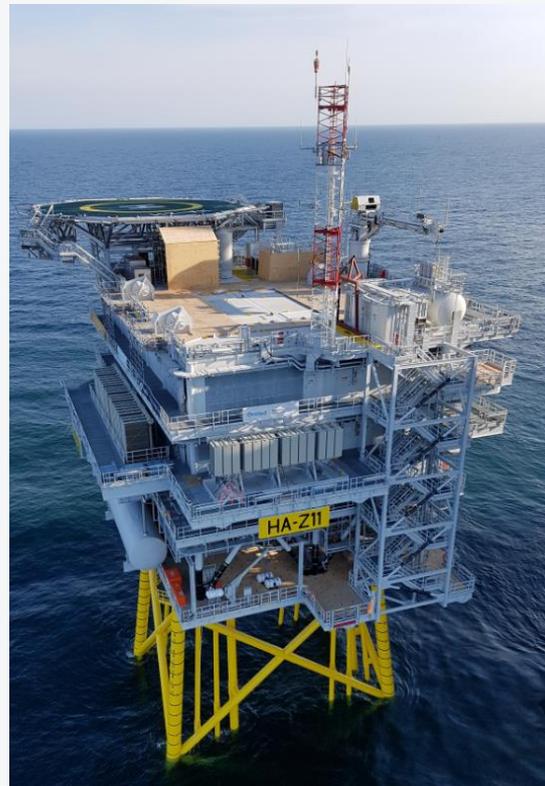
# Overview of the infrastructure



# Hornsea Project One: the investment opportunity

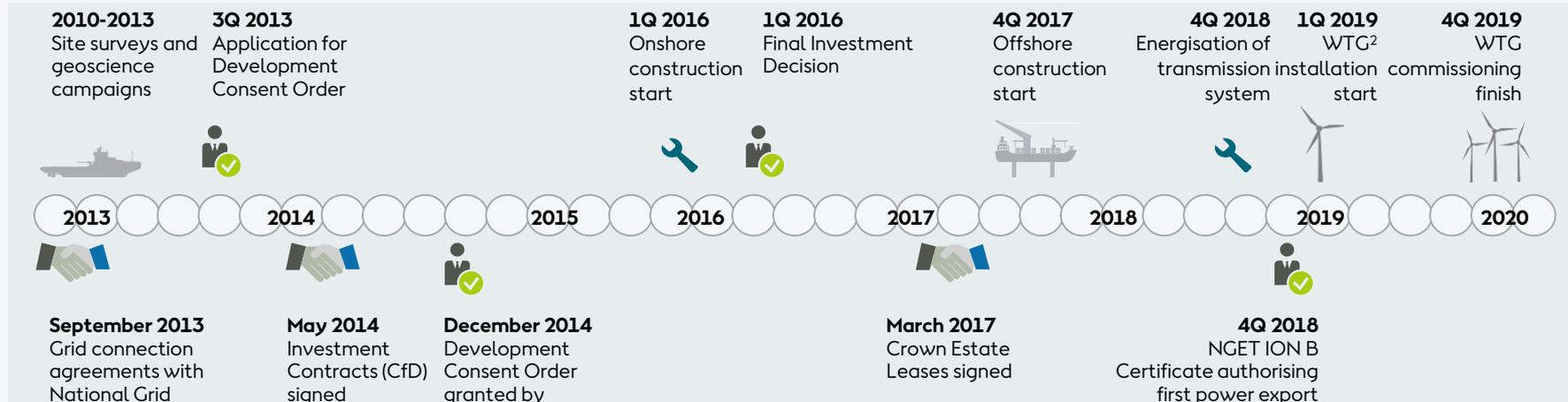
## Project highlights

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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