

# Concrete Substructures for Offshore Wind

3<sup>rd</sup> October 2023



Image source – Johnny Engelsvoll/Equinor

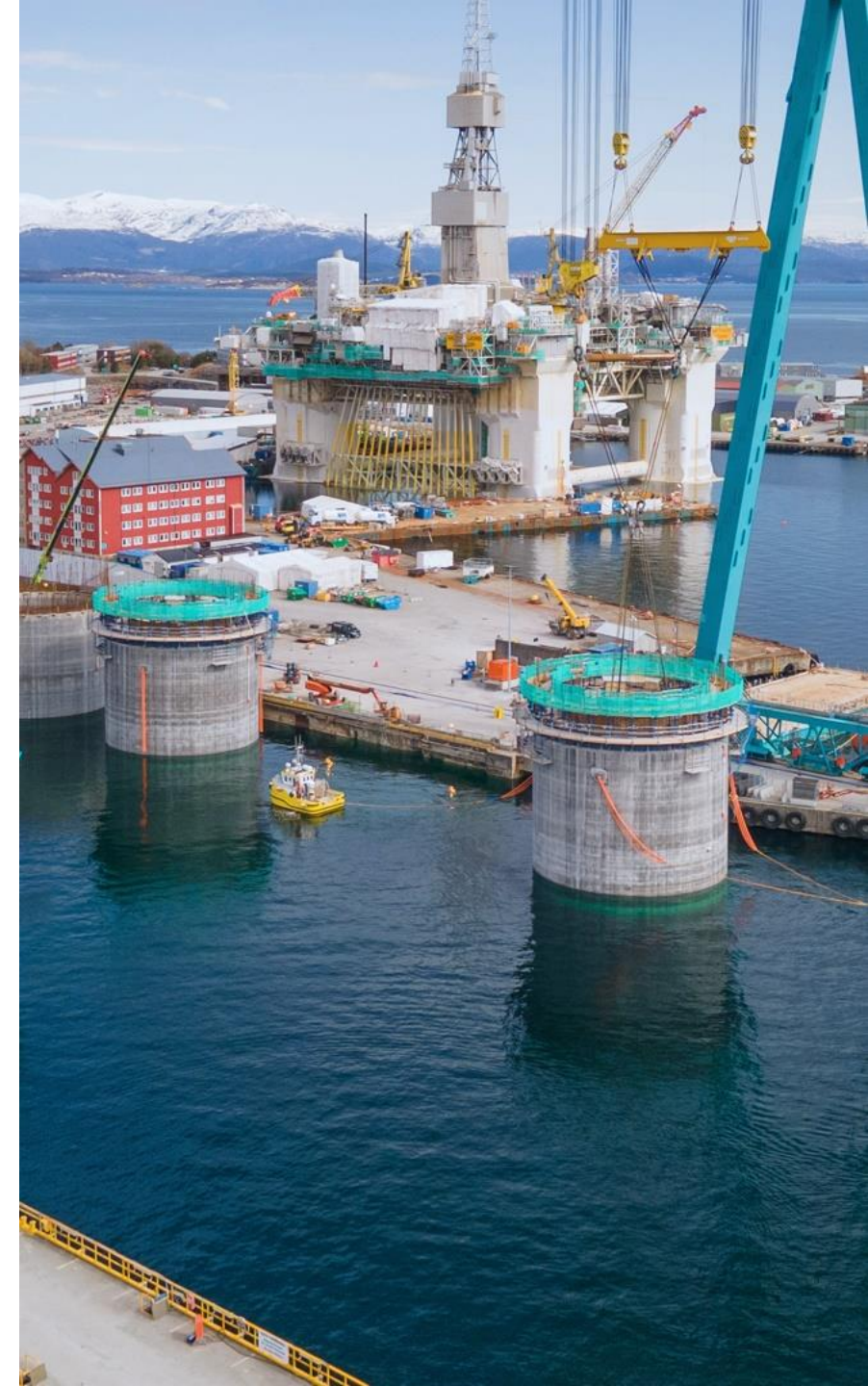


# Aker and Balfour Beatty working together



# Balfour Beatty and Aker Solutions JV

- Purpose to collaborate on UK offshore wind opportunities - to deliver end-to-end design and construction solutions for the concrete floating and gravity-based UK offshore wind industry
- The partnership will see the companies' complementary skills, resources and experience combined to offer a whole life solution.
- **Balfour Beatty** has an extensive track record of executing complex civil engineering works for complex infrastructure and energy projects across the UK, and
- **Aker Solutions** has a long history of delivering concrete structures for marine environments globally



# Balfour Beatty Overview



## Balfour Beatty at a glance

- **Leading international infrastructure group with 25,000 employees** delivering new solutions, shaping thinking, creating skylines and inspiring a new generation of talent to be the change-makers of tomorrow.
- **We finance, develop, build, maintain and operate complex and critical infrastructure** that supports national economies and deliver projects at the heart of local communities.
- Over the last **114 years** we have created iconic buildings and infrastructure all over the world.

# £17.4bn

Order book (FY22)

# £8.9bn

Underlying revenue (FY22)

- £3.894bn UK

- £3.954bn US

- £1,083m Rest of world

# £804m

Average net cash (FY22)

# Industry leading capabilities

Major Projects



Power and Energy



Construction



Highways



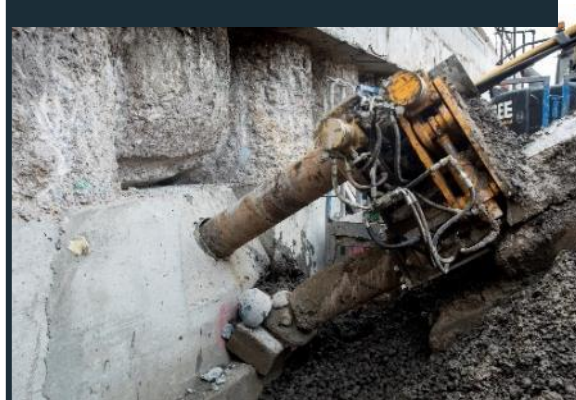
Rail Engineering



Mechanical & Electrical Engineering



Ground Engineering



Asset & Technology Solutions



# Our UK core capabilities

## Construction Services

Unmatched scale and vertically integrated capability for delivering nationally critical infrastructure projects

## Support Services

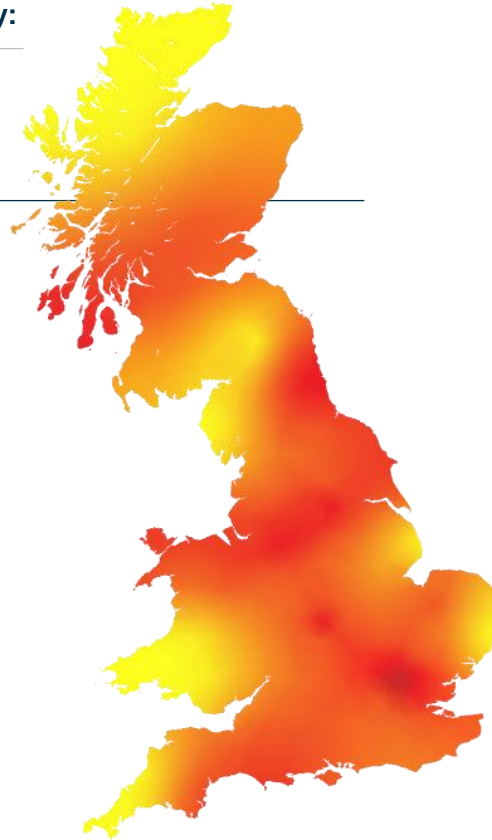
Power, plant, road and rail maintenance

## Infrastructure Investments

Development, finance and operation of public and private infrastructure projects

## Balfour Beatty's UK footprint

Project density:



## UK projects

**Over 600**  
live projects

## Social value\*

**£816 million**  
social value generated

## Our supply chain<sup>^\*</sup>

**£1.5 billion**  
spent with UK SMEs  
and local businesses

**9,162**  
UK supply chain  
partners

## UK revenue\*

**£3,894 billion**

## Our people

**c.12,000**  
employees



**20.1%**  
Female employees  
across the workforce







**6.5%**  
UK workforce in earn  
and learn positions

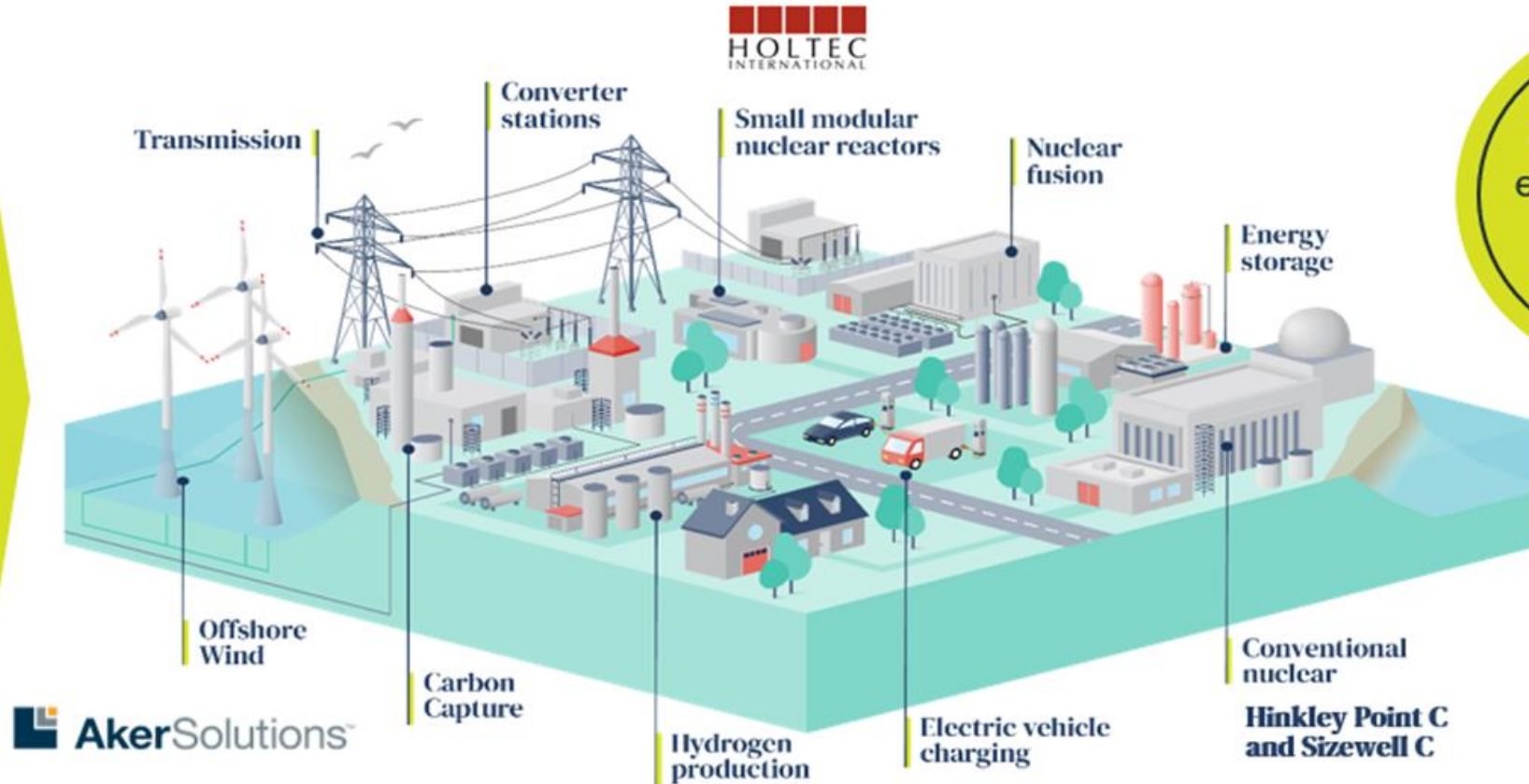
<sup>^</sup> 2022 annualised data  
<sup>\*</sup> UK data as at May 2023

**UK's largest construction and infrastructure company**

# Energy Transition and Security

**Balfour Beatty**  
End to end capabilities

-  Commercial & technical
-  Design & planning
-  Ground engineering
-  Civil engineering
-  Mechanical & electrical
-  Power transmission & distribution



c. **£50bn\***  
estimated total  
market  
opportunity

*\* this figure represents Balfour Beatty's serviceable available market for the Group to pursue over the next 10 years*

**Capabilities to capitalise on market opportunities**



# Hinkley Point C – Marine Works



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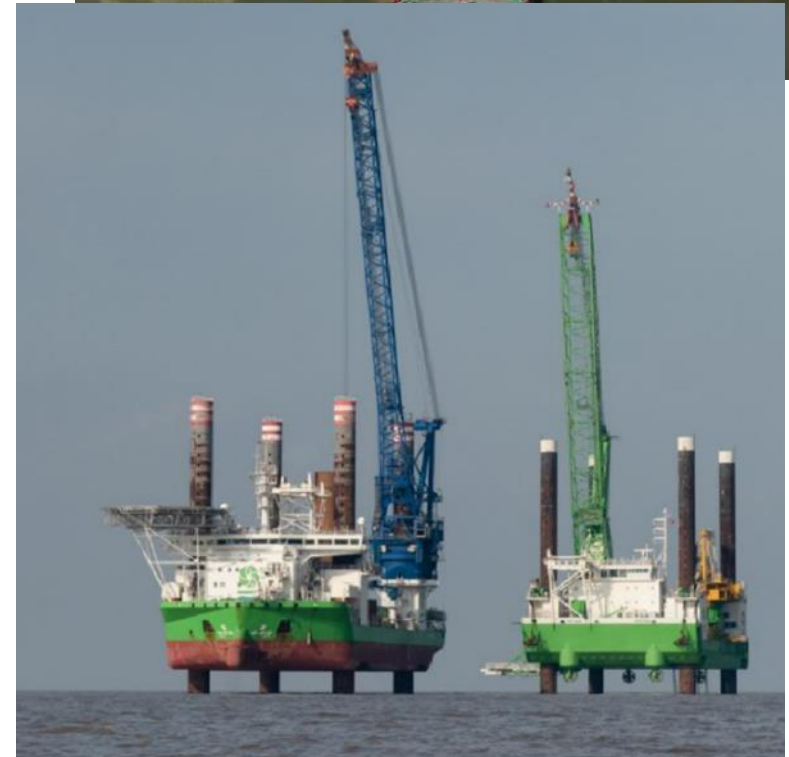
# Hinkley Point C – Marine Works



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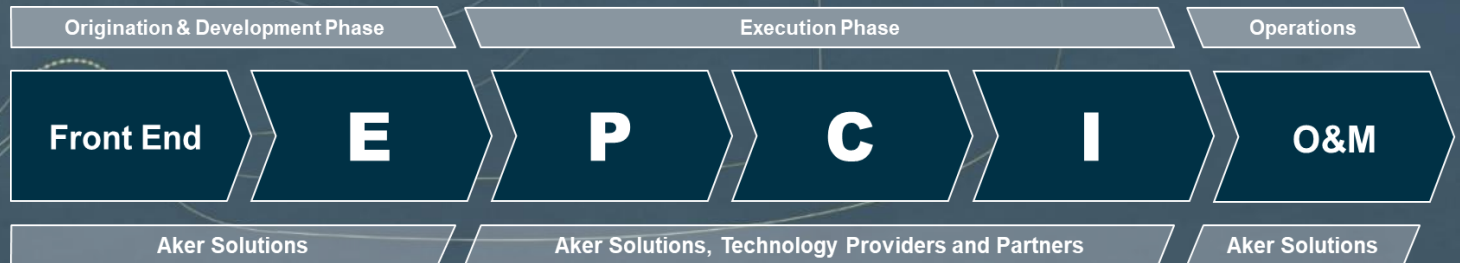
# Hinkley Point C – Marine Works



# Aker Solutions Overview



# Complete **Offshore Wind** Solutions



# Concrete Substructures for Offshore Wind Turbines



**Concrete Gravity Base  
Structure (GBS)**



**Concrete Semi**



**Concrete Spar**



# Concrete Floaters for Offshore Wind

**Balfour Beatty and Aker Solutions joint venture**

**Concrete well suited for large-scale fabrication**

- Local materials available
- Low skilled workers trained on site (no certified workers)
- Simpler facilities required - yard/site build-up with hired equipment

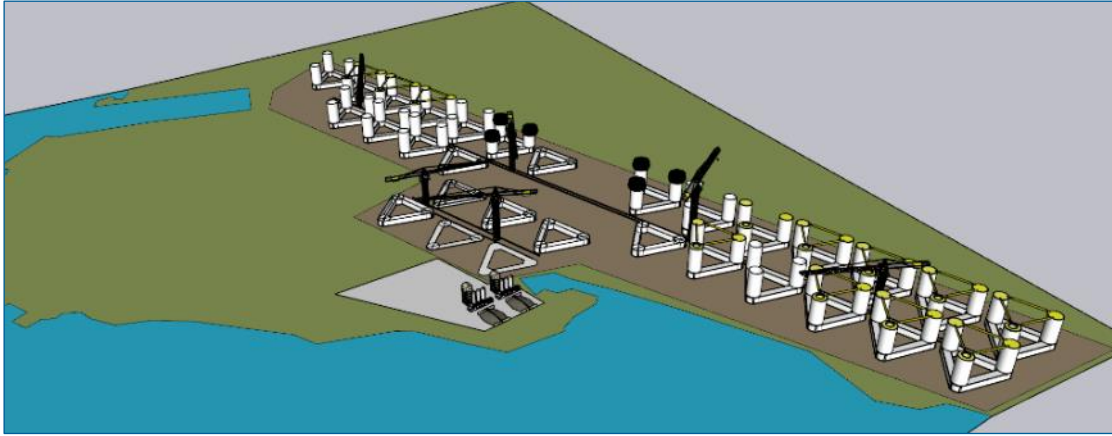
## **High Local Content Potential**

- Locally established yard
- Local supply chain (e.g. materials as cement, sand, gravel, rebar, formwork)
- Local labour: Concrete fabrication demands a large, non-technical work force
- Positive ripple effect on local community (typical: 1 employee on site equivalent to 3 employees off site)



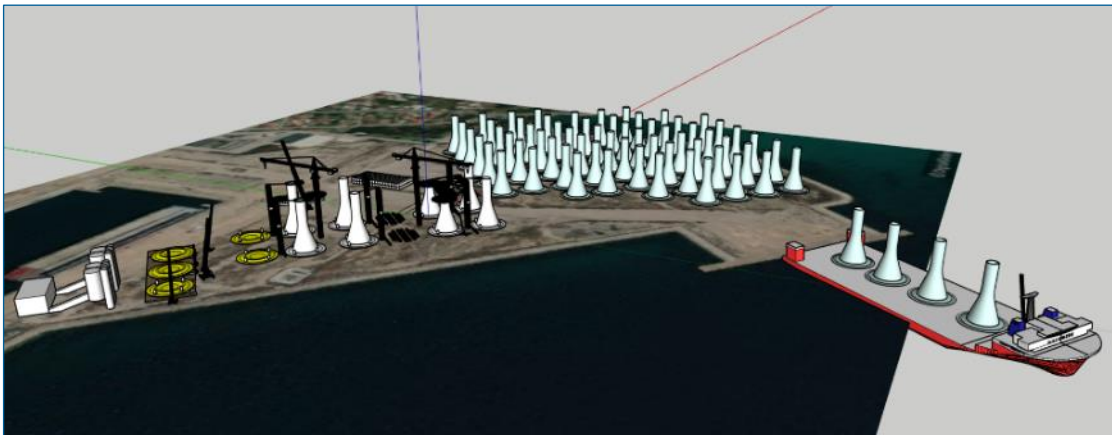
## Efficient Serial Fabrication

### Concrete Semi



- Concepts designed with high focus on constructability
- Efficient, stepwise station fabrication
- Onshore fabrication (access around the total structure)

### GBS for wind turbines



# Concrete Construction - Flexibility in choice of construction site



## Several options for choice of construction site

- Use already established construction sites
- Modify/refurbish and use industrial areas/sites
- Establish new construction site

## Site to be developed and equipped for concrete construction

- The layout will be carefully planned with focus on the construction tasks at hand utilizing the site properties
- Sequential construction preferred to enable reuse of construction facilities
- The construction site will utilize the local facilities at the yard. Significant services may be supplied by local businesses.

## Important construction site needs:

- Adequate size
- Sites allowing for a 24/7 construction work schedule

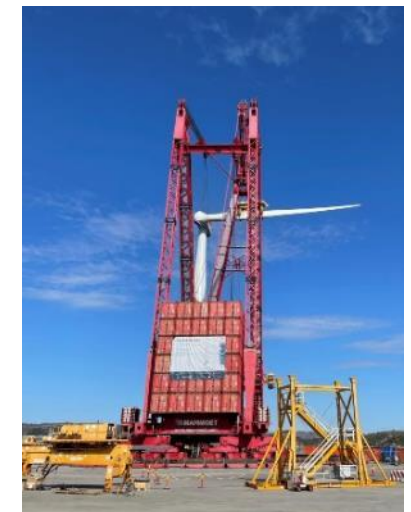
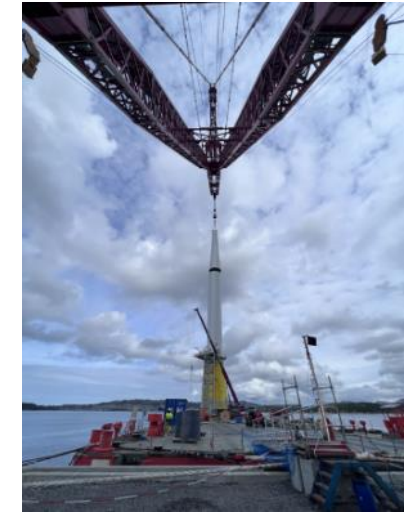
# Initial slip forming in dry dock



# Slip forming in deep water Fjord after tow out



# Assembly & Tow to Commissioning – Q3/Q4 2022





**Balfour Beatty**



**Aker**Solutions