

# Concrete Gravity Base Foundation

Reinforced concrete Gravity Base Foundations, Blyth Project

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# Introduction

Currently most offshore wind foundations are made of steel and depend on the use of piling and the installation with heavy lift equipment. BAM have designed an alternative concrete gravity base foundation that does not require piling and is self floating. The design focusses on constructability as well as installability.



# Value Proposition

## Concrete Gravity Base Foundation

- Competitive alternative to jackets and XXL monopiles
- Compact design: steel monopile in concrete caisson
- No piling, installation on stiff/hard seabed
- 30-50m waterdepth, 8MW+ WTG's
- Self floating: no installation vessels
- Fabricate locally: local jobs
- Detailed Design certified by DNV-GL



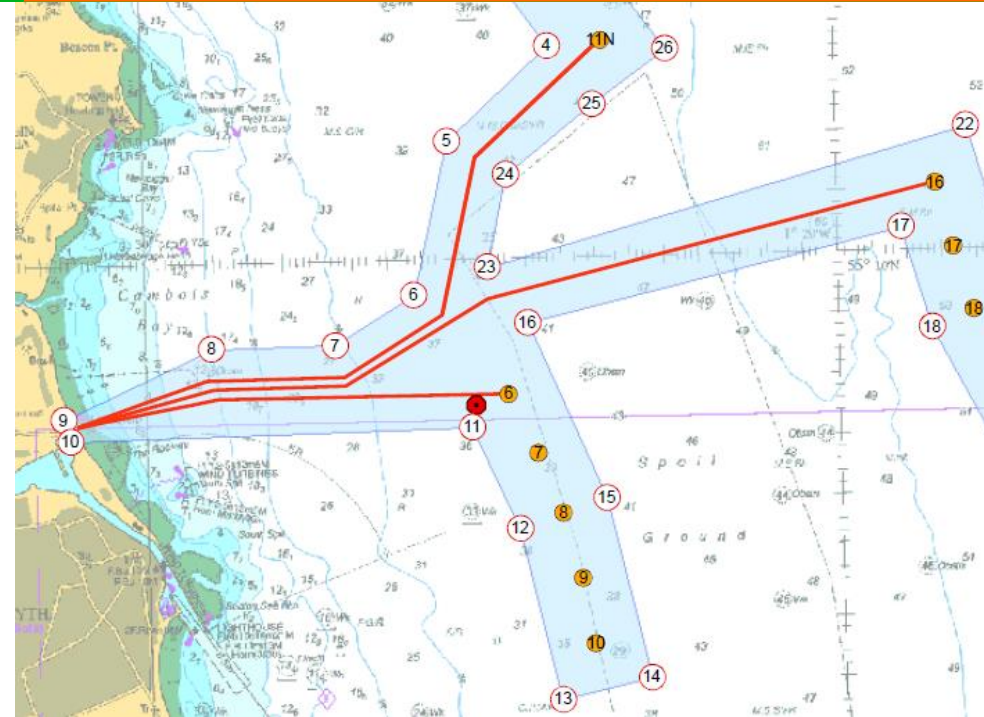
# Route to implementation

## FLOW

- Innovation programme Dutch government and offshore wind industry

## Demonstrator project

- EDF Energy Renewables, UK
- Certification: DNV GL
- Blyth Offshore Demonstrator, 40m waterdepth
- 5x GBF: BAM with Van Oord, Strukton, Smulders/SIF
- 5 x WTG 8.3MW: MHI Vestas Offshore wind
- 66kV Array Cable: Nexans and VBMS

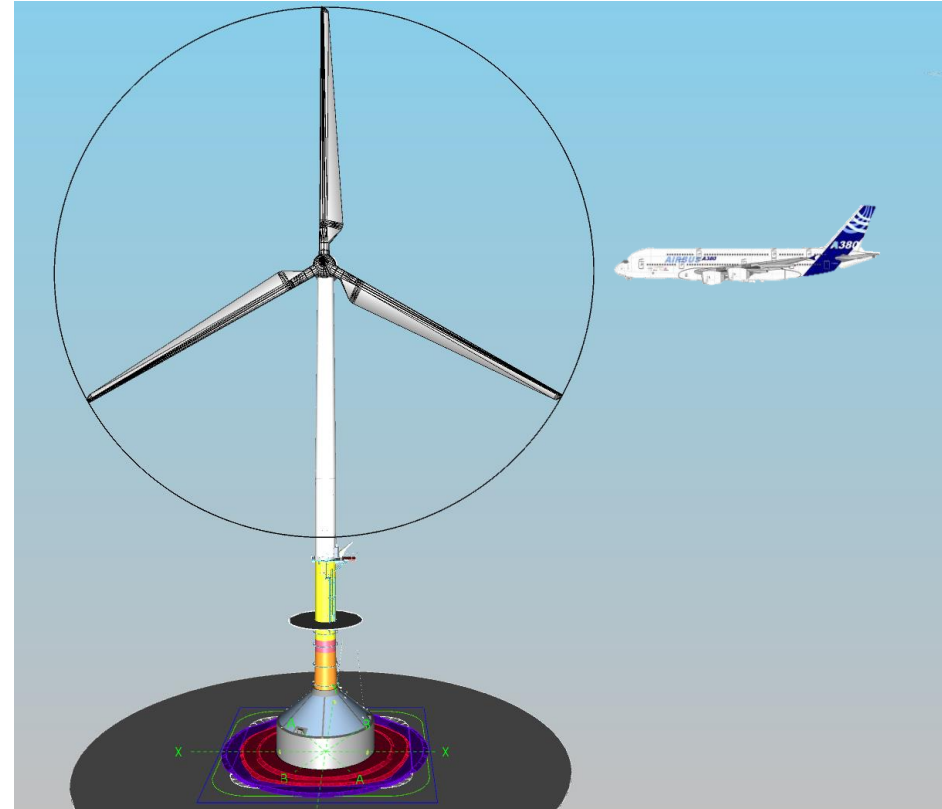


## Dimensions of WTG with GBF

- Water depth 42 m
- Caisson diameter 30 m
- Caisson height 20 m
- Height foundation 60 m
- Hub height 150 m (r.t. sea bed)
- Rotor diameter 164 m
- Tip blade height 232 m (r.t. sea bed)

Lift of WTG blades is comparable to lift of A380

- Blade length 82 m
- Span A380 80 m





# Fabrication of the Blyth GBFs





# Construction of the GBFs in Newcastle upon Tyne





# Float of the GBFs, June 2017





# Towing down the river Tyne, July 2017



# Installation at Blyth, August 2017

