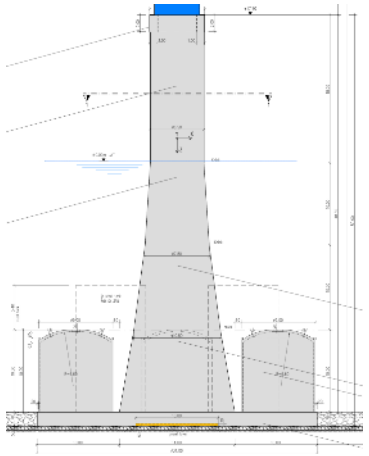
OFFSHORE WIND CONCRETE SUBSTRUCTURES
SCALING UP PRODUCTION & CONCRETE INNOVATIONS

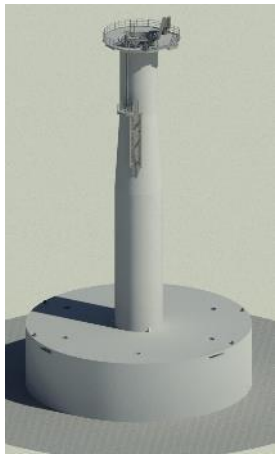
bam

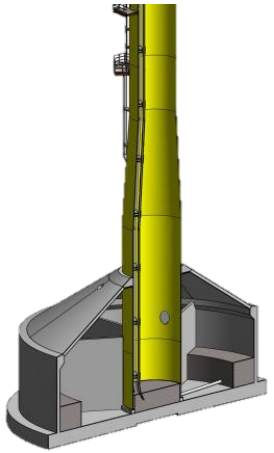
BAM GRAVITY BASE FOUNDATION

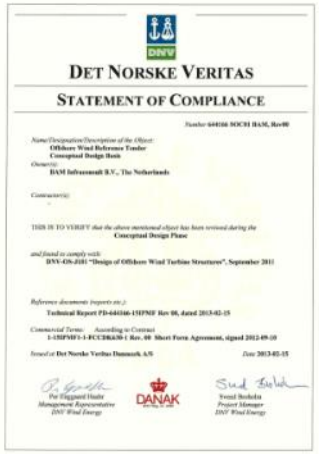
BAM GBF DESIGN EVOLUTION

2011









DET NORSKE VERITAS

STATEMENT OF COMPLIANCE

Offshore Wind Reference Tender
Conceptual Design Basis

BAM Infraconsult B.V., The Netherlands

Conceptual Design Phase

DNV-OS-J101 "Design of Offshore Wind Turbine Structures", September 2011

Technical Report PD-044166-15EPNF Rev 00, dated 2013-02-15

1-15EPNF1-1-FCCDR&M-1 Rev. 00 Short Form Agreement, signed 2012-09-10

Det Norske Veritas Danmark A/S — Date 2013-02-15

DANAK

DNV·GL

CONFORMITY STATEMENT

Design
of
Blyth Offshore Demonstrator
Consisting:
Wind Turbines

Blyth Offshore Demonstrator Ltd.

According to:
DNVGL-SE-0073:2014-12 Project certification of wind farms according to IEC 61400-22

Based on the documents:
DR-O-DNVGL-SE-0073-01023-1 Evaluation Report, dated 2017-05-15

Changes of the design are to be approved by DNV GL.

2015

BLYTH DEMONSTRATOR PROJECT

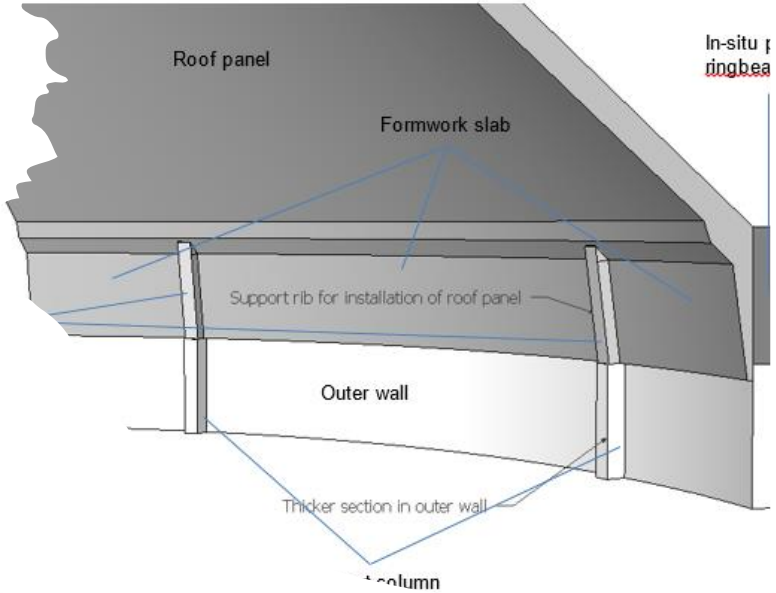
BEYOND BLYTH
SCALING UP

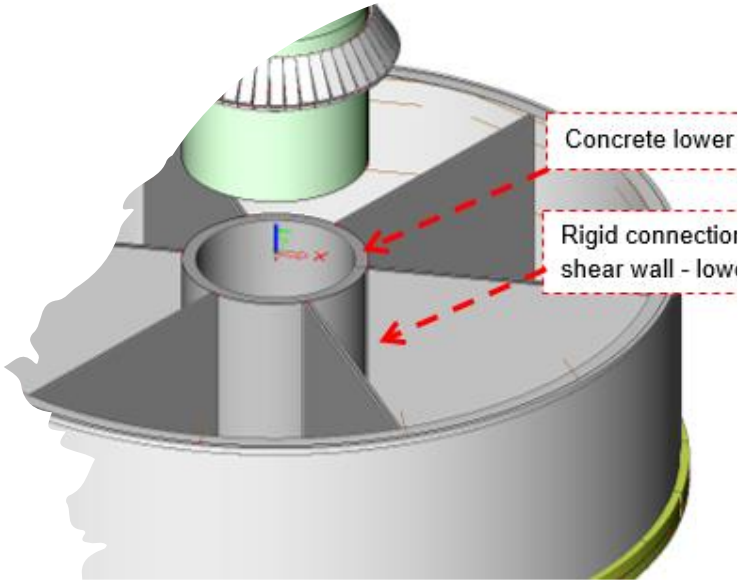
CONSIDERATIONS

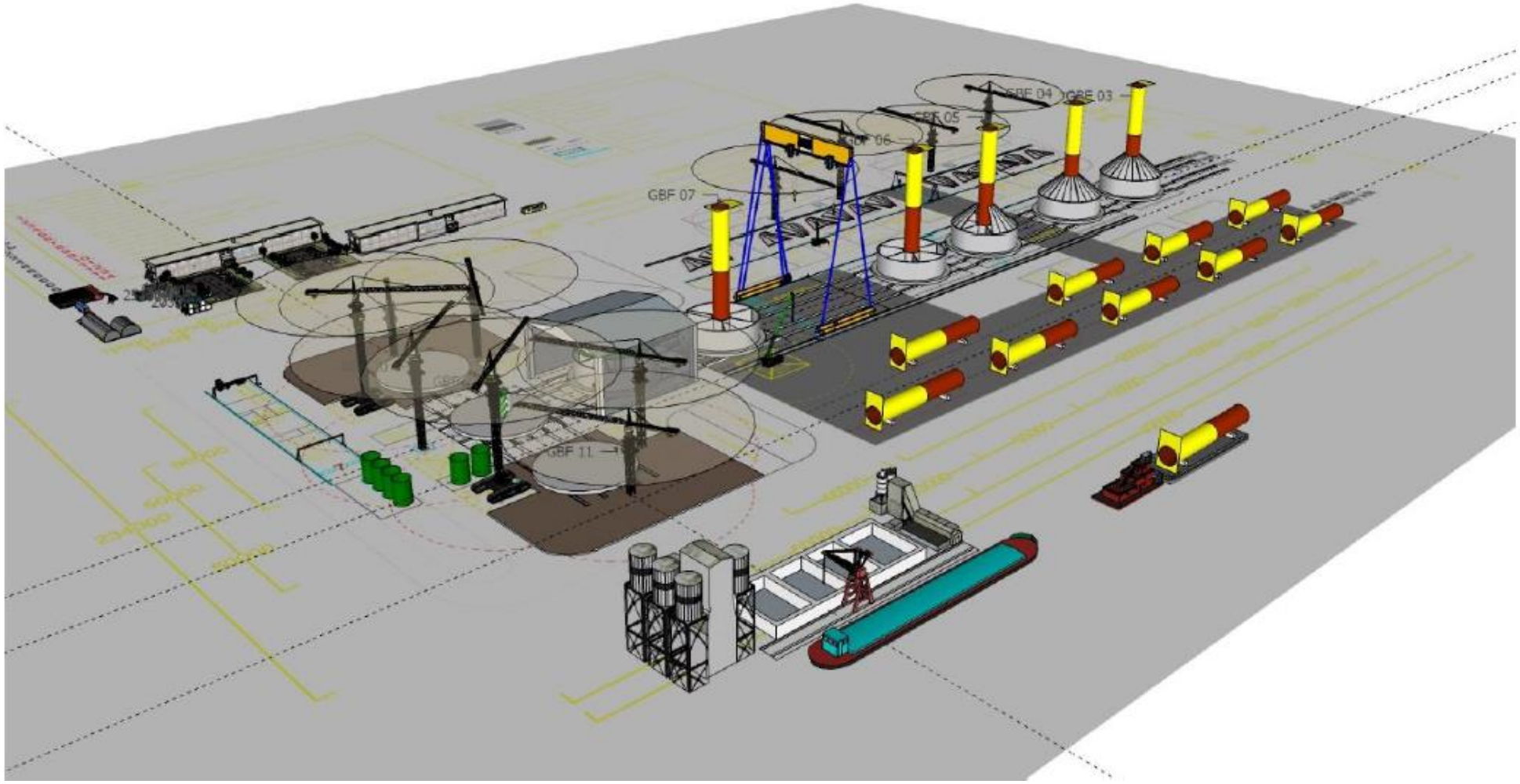
- Design Changes for Improved Constructability & Efficiency
- Manufacturing Approach
- Launch Method

DESIGN REFINEMENT POST BLYTH

- Development of scalable details, design tools and processes
- Design Changes for Improved Constructability & Efficiency
  - Shaft thickness optimisation
  - Lower shaft in concrete
  - Re-design of lower roof connection
  - Shaft used to support pre-cast roof units
  - Towing points included in pre-cast roof panels







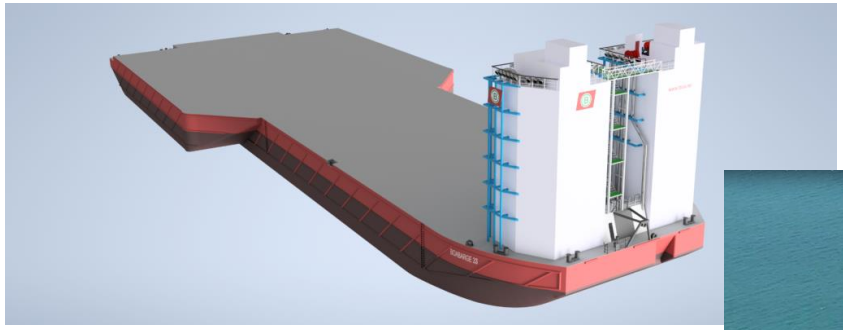
FACTORY CONCEPT DEVELOPMENT

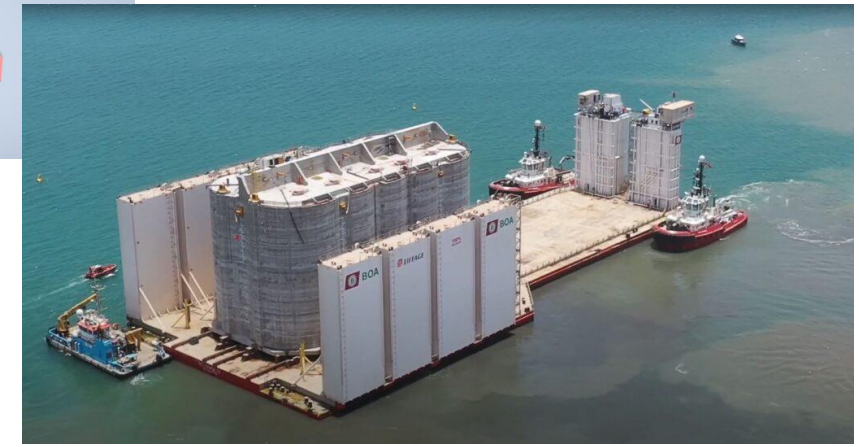
MANUFACTURE & LAUNCH OPTIONS

- Precommercial –
  - dry dock or
  - floating dry dock

FULL PRODUCTION LAUNCH OPTIONS

- Transport
  - SPMTs
  - Skid system



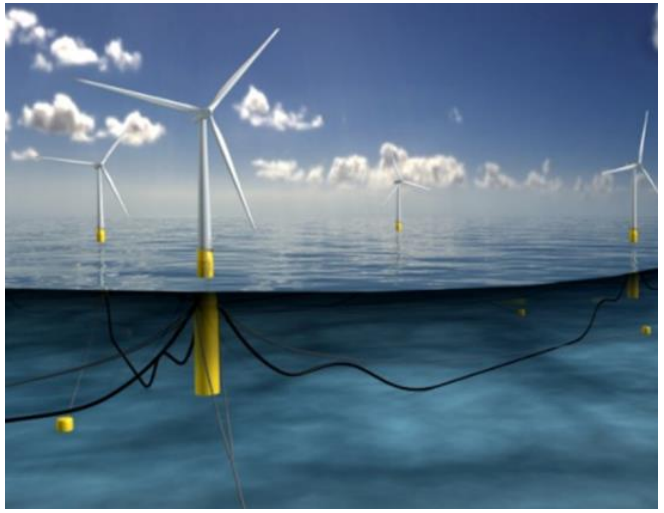


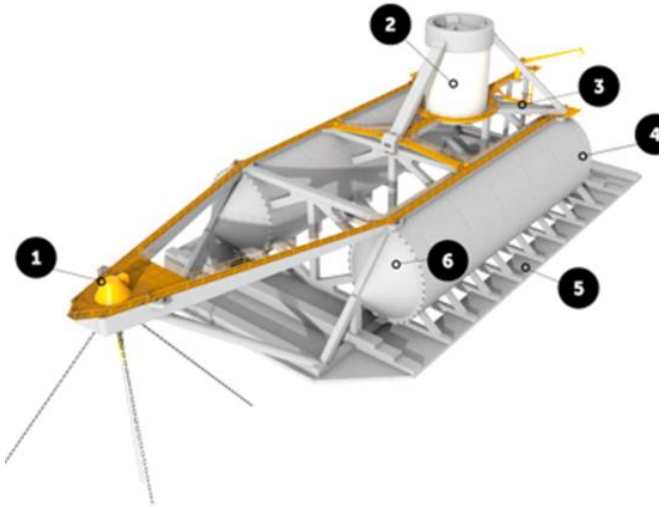
FULL PRODUCTION LAUNCH OPTIONS

- Launch
  - semi-sub
  - ship lift

APPLICATION TO FLOATING OFFSHORE WIND SUBSTRUCTURES

- Damping Pool Barge
- Spar Buoy
- Reduced Draft Spar Buoy
- Modular Barge





CONCRETE INNOVATION

CONSIDERATIONS

- Basalt Rebar
- Low Carbon Concrete


THANK YOU