



Netherlands Enterprise Agency

# Site investigations

Workshop offshore Wind Farm Zones  
Amsterdam, 23 October 2018

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Netherlands Enterprise Agency



# Site investigations

- 1 Roadmap and goals
- 2 Content site studies
- 3 Status of the site studies
- 4 Communications

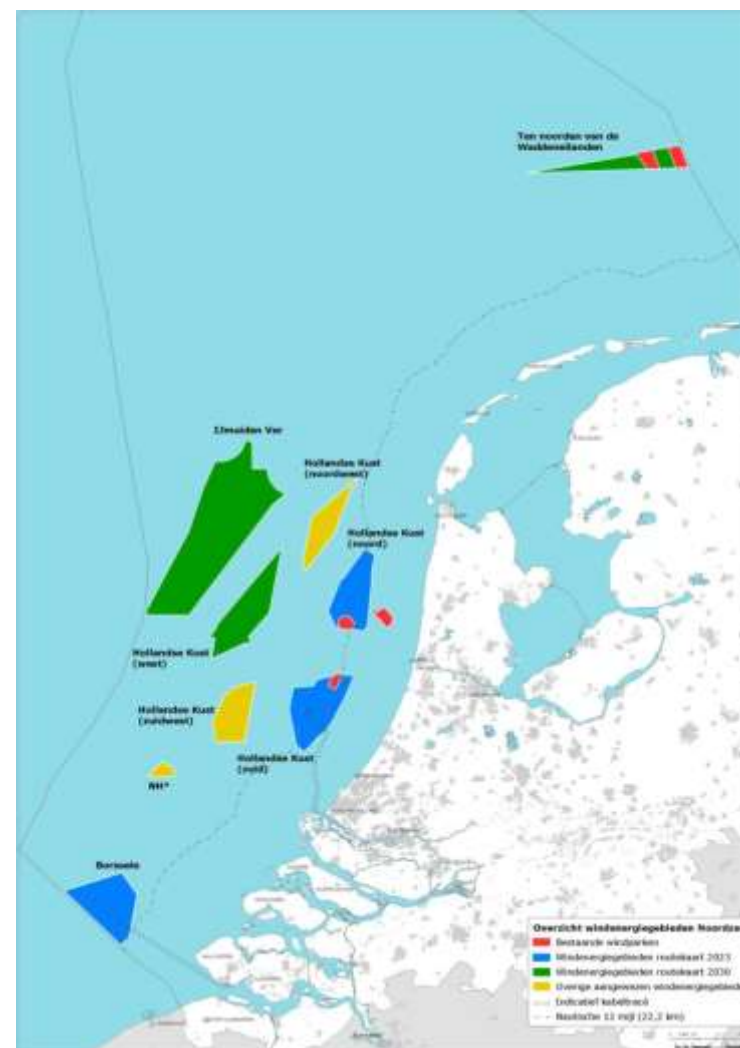


# 1

## Roadmap and goals



# Roadmap





# Goals site investigations

- High quality site investigations resulting in lower development costs
- Deliver what the developer needs
- Allows tenderers to optimize design, planning and business case
- Replicate/improve success Borssele and HKZ WFS I&II
- Ensuring conditions favourable
- Package of site studies disclosed





# High quality

- Market consultation in expert workshops and stakeholder meetings
- Lessons learned incorporated
- SoW drafted in consultation with internal, external experts, industry and agencies
- Draft reports and final deliverables reviewed by internal and independent external experts
- Certification for studies with results becoming part of the design basis
- Statement of Compliance:
  - Complete and fulfill requirements
  - Risks and uncertainties minimised
  - State-of-the-art methods

DNV GL

STATEMENT OF COMPLIANCE

Statement No.: SC-DNVGL-SE-0190-03691-1

Issued 2018-03-29

Issued for:

**Site Conditions Assessment**  
of  
**Wind Farm Zone Hollandse Kust (zuid) (WFS III and WFS IV)**  
Comprising:  
**Wind Turbines, Substation and Power Cables**  
Specified in Annex 1

Issued to:

**Netherlands Enterprise Agency**  
Croeselaan 15  
3521 BJ Utrecht  
The Netherlands

According to:

**DNVGL-SE-0190:2015-12**  
**Project certification of wind power plants**

Based on the documents:

CR-SC-DNVGL-SE-0190-03691-0

Certification Report, dated 2018-03-22

Changes of the site conditions are to be approved by DNV GL.

Hamburg, 2018-03-29

For DNV GL Renewables Certification

  
i.V. Fabio Pollicino  
Service Line Leader Project Certification

Hellerup, 2018-03-29

For DNV GL Renewables Certification

  
Erik Asp  
Project Manager

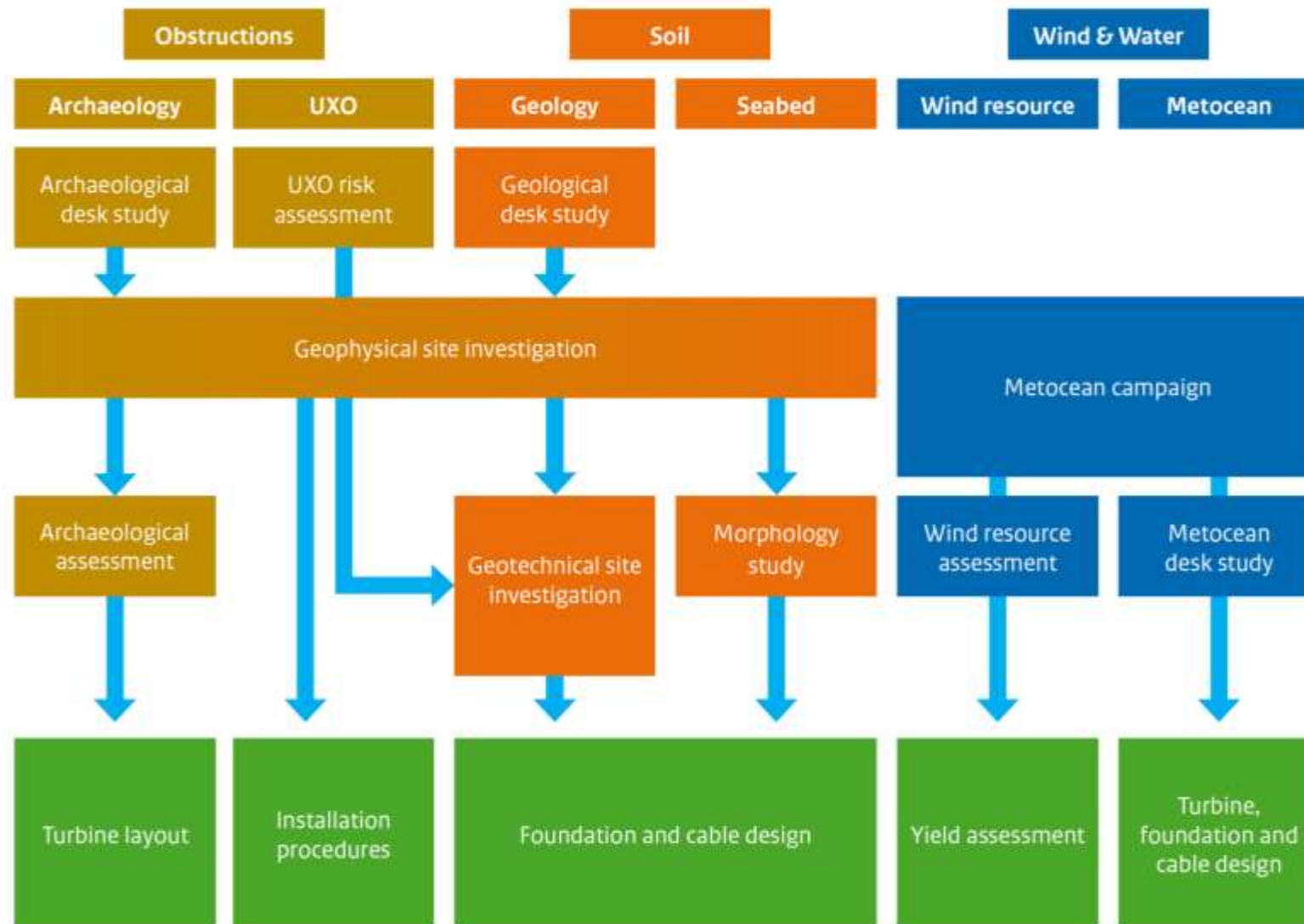
  
By DAKKS according to DIN EN IEC/ISO 17065  
accredited Certification Body for products. The  
accreditation is valid for the fields of certification  
listed in the certificate.

The accredited certification body is Germanischer Lloyd Industrial Services GmbH, Brooktorai 18, 20457 Hamburg.  
DNV GL Renewables Certification is the trading name of DNV GL's certification business in the renewable energy industry.



# 2

## Content of site studies

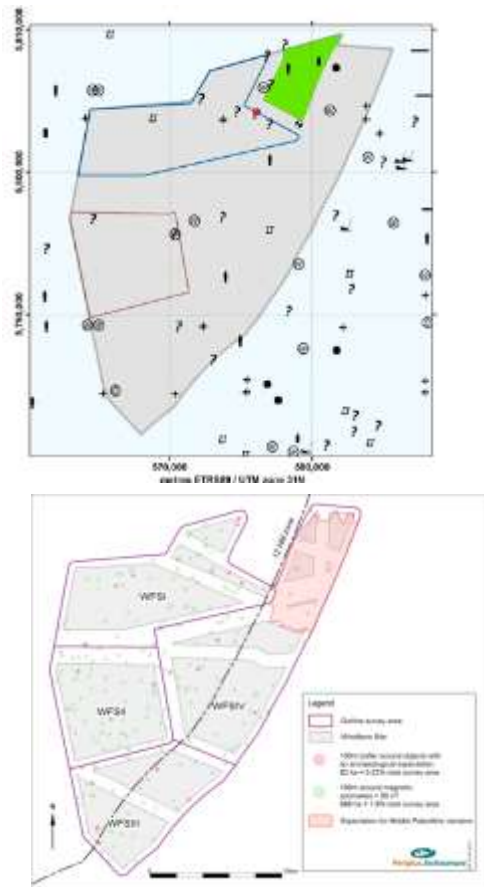




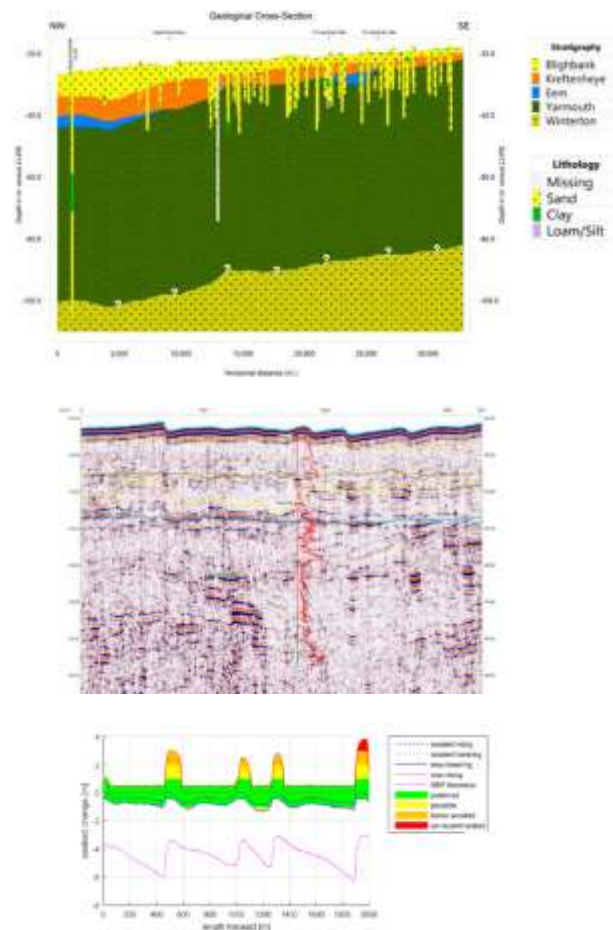


# HKZ

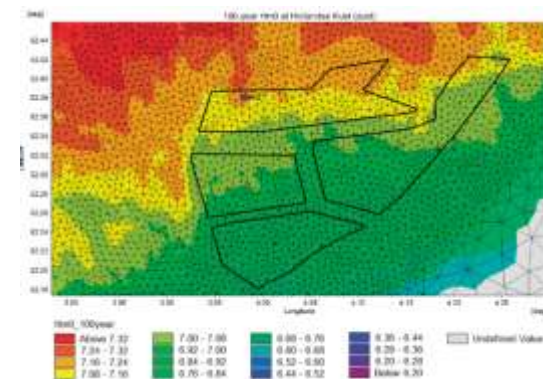
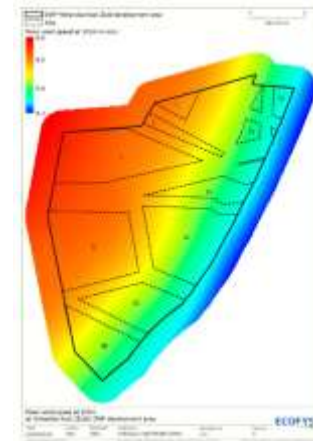
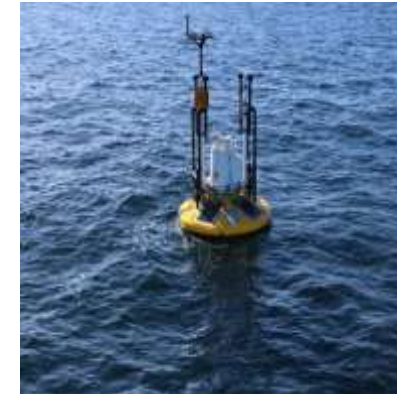
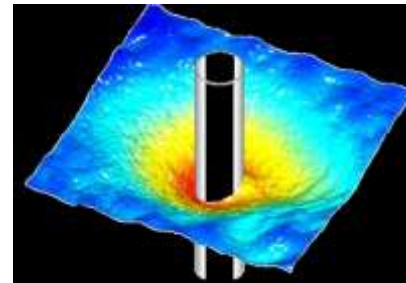
## Obstructions



## Soil



## Wind and water





# Ancillary studies

- Aeronautical study into lighting
- Visibility
- LCOE
- Helicopter accessibility





# 3

## Status of site studies



# Metocean campaign report Hollandse Kust (zuid)

- Full two year campaign (June 2016 – June 2018)
- Data Availability combined dataset:
  - Wind: 99.6%
  - Current: 99.7%
  - Waves: 100.0%
- Availability full dataset equal or higher than monthly reported datasets.
  - HKZA +1,5 % availability Wind (V100: 91.8% -> 93.3%)
  - HKZB +0.2 % availability Wind (V100: 94.2% -> 94.4%)
- Raw wind (incl. Lidar) and wave data
- Better post-processing
- Equal or higher quality
- Preferred dataset







# Hollandse Kust (noord) Wind Farm Zone

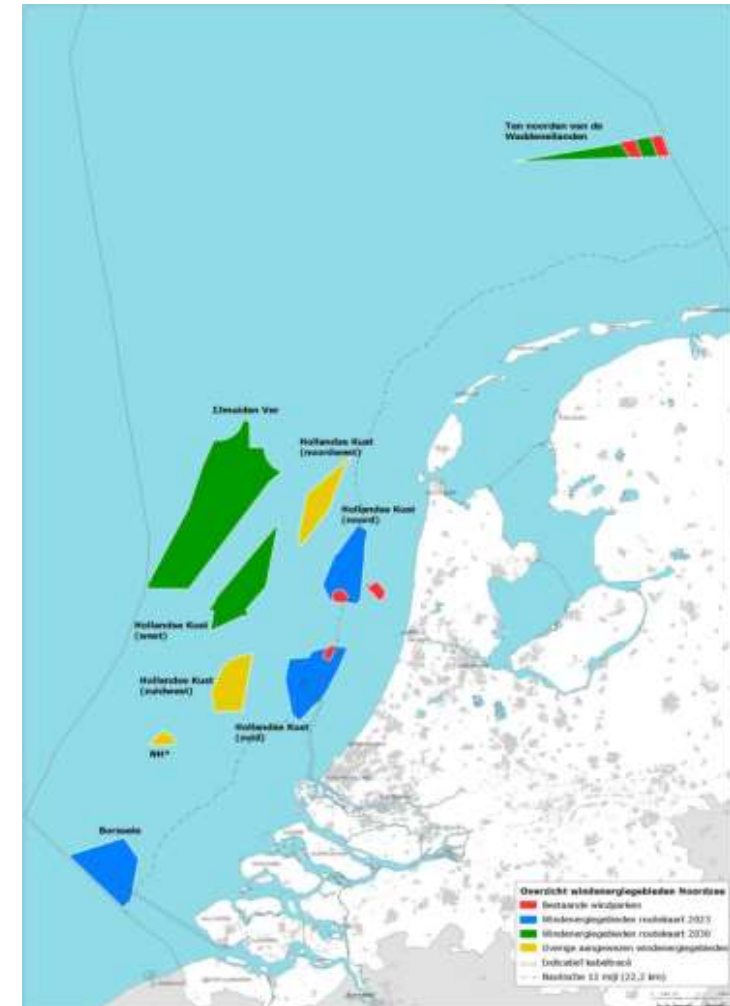
- Set of site studies available Q1 2019
- Geophysical survey conducted in 2017
- Geotechnical survey conducted in 2018, reporting phase
- Metocean campaign extended to April 2019
- Morphodynamical desk study being finalised
- Update on Metocean database and execution of Wind Resource Assessment





# Hollandse Kust (west) Wind Farm Zone

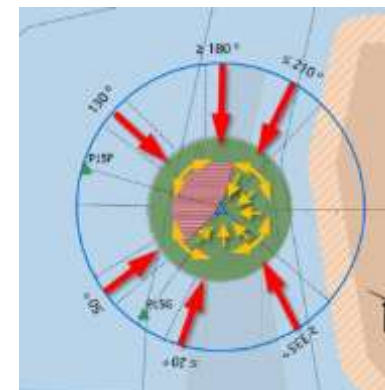
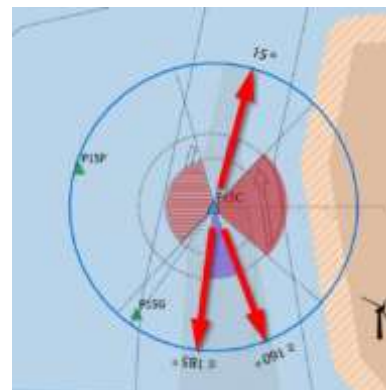
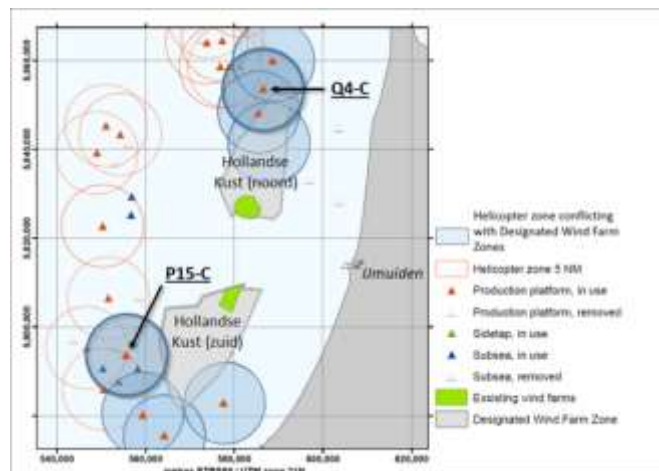
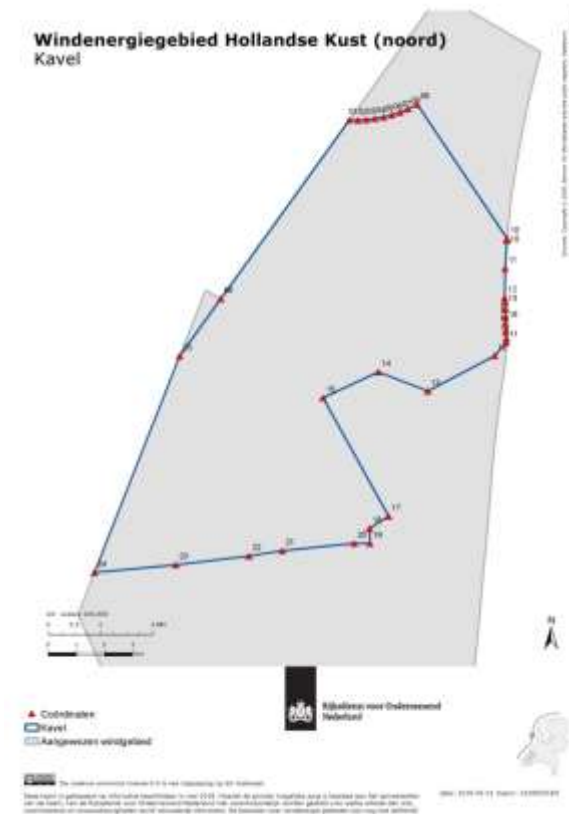
- Set of site studies available Q1 2020
- Geological, UXO and archaeological desk study executed
- Geophysical survey started Oct 2018
- Geotechnical survey to be conducted in Q2 2019
- Metocean campaign to be conducted from Jan 2019 - Jan 2021
- Ten Noorden van de Wadden and IJmuiden Ver just started





# Ancillary studies

- Aviation lighting: study on night vision and pilot for radar detection systems
- Visibility: RAL 7035
- LCOE: for Hollandse Kust (noord) and (west) WFZ
- Helicopter accessibility: FOSA for 2 platforms in HKZ and HKN being executed including simulations





# 4

## Communications





# Communications

- Website: <https://offshorewind.rvo.nl>
- Regular workshops, e-mail updates register: [woz@rvo.nl](mailto:woz@rvo.nl)
- Site data: webinars
- Each tender: project and site description

