



Netherlands Enterprise Agency

Status Site investigations

Scheveningen, 12 April 2018

Ir. F.C.W. (Frank) van Erp



Status Site investigations

- 1 Hollandse Kust (zuid)
WFS III and IV
- 2 Hollandse Kust (noord)
- 3 Roadmap 2030
- 4 Conclusions



1

Hollandse Kust (zuid) WFS III and IV



Roadmap 2023





HKZ WFS III and IV

- › Replicate/improve success WFS I&II
- › Ensuring conditions favourable
- › Package of site studies disclosed
- › Statement of Compliance, site conditions:
 - 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 EN 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, Brooktorkei 18, 20457 Hamburg.
DNV GL Renewables Certification is the trading name of DNV GL's certification business in the renewable energy industry.



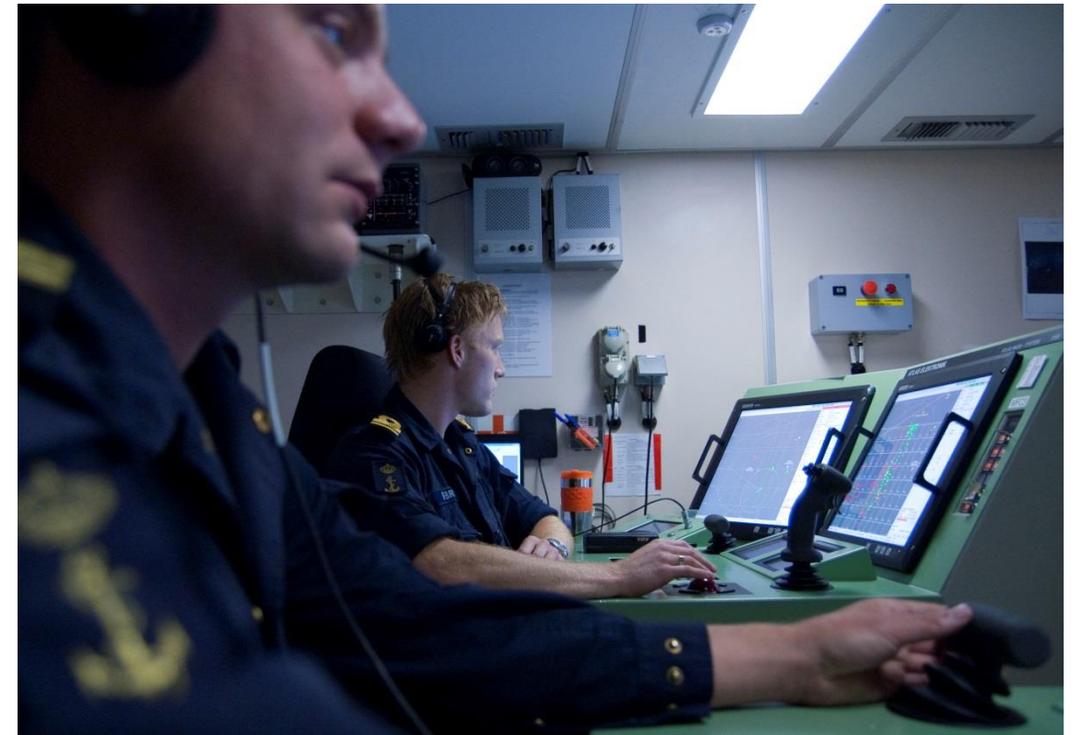
HKZ WFS III and IV Experts

- › BLIX Consultancy (Project management, experts)
- › The Cultural Heritage Agency (Archaeological desk study)
- › Rijkswaterstaat
- › Windsupport Ltd (Geotechnical site investigations)
- › Reynolds International Ltd (Geophysical site investigations)
- › RPS Energy Ltd (Geophysical and geotechnical site investigations, Metocean campaign HSE)
- › Rambøll (Geotechnical Site Investigations)
- › ECN (Metocean measurements)
- › Ecofys WTTS (Metocean measurements)
- › Carbon Trust, Offshore Renewable Energy Catapult (Metocean measurements)
- › Primo Marine (Metocean desk study)
- › Periplus Group (GIS)
- › DNV GL for Verification Letters
- › Ministry of Defence (UXO risk assessment)



HKZ WFS III and IV Obstructions

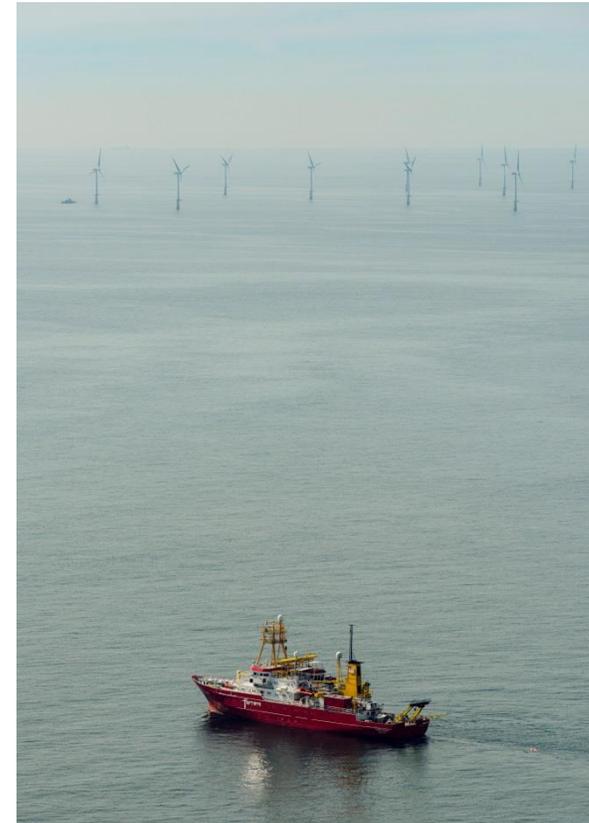
- › Archaeology
 - Information on evolving prehistoric landscape
 - No further archaeological research recommended
- › UXO
 - Type of ordnances (mines) to be expected (based on archives)





HKZ WFS III and IV Soil

- > Geophys
 - Bathymetrical, Morphological and Geological understanding
 - Improved resolution in shallow subsurface
- > Geotech
 - Solid basis for geotechnical designs
 - Additional sampling boreholes not needed in further development





HKZ WFS III and IV Soil



- > Morphodynamics
 - Provides best-estimate seabed levels over 40-year period
 - Define monitoring or maintenance requirements for infield cables and scour protections
- > Scour
 - Scour development and scour mitigation



HKZ WFS III and IV Wind & Water

- > Metocean campaign
 - Measuring campaign extended
 - 24 months of data
 - Possibility for market to continue
- > Metocean desk study
 - Stable platform and spatial optimisation
- > WRA
 - Combined WRA 1 & 2
 - further reduced uncertainties





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Hollandse Kust (noord)



Hollandse Kust (noord)

- › Set of site studies available Q1 2019
- › Geophysical campaign conducted in 2017
- › First geotechnical vessel to mobilise April 2018
- › One year metocean measuring campaign concluded in April 2018
- › Extension of metocean measuring campaign to 24 months





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Roadmap 2030



Roadmap 2030

- › Route from 4.5 GW installed in 2023 to 11.5 GW in 2030
- › First wind farm zone Hollandse Kust (west) (expected total 1.4 GW)
- › Preparations by RVO.nl already underway
 - Procurement for geophysical works
- › Looking forward to working with the sector!
 - Metocean campaign, meeting NWEA





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Conclusions



Conclusions

- › HKZ III and IV
 - Conditions favourable to optimise designs and bid
 - Complete package of site studies disclosed
- › HKN
 - Set of site studies available Q1 2019
- › Roadmap 2030
 - Preparations already underway





Communications

- › Regular workshops, webinars, email updates
register: woz@rvo.nl
- › Site data & Project and Site Description:
<https://offshorewind.rvo.nl/>
- › Permit tenders <https://www.rvo.nl/>





Thank you very much
for your attention!

