DNV·GL

STATEMENT OF COMPLIANCE

Statement No.:
SC-DNVGL-SE-0190-02664-3

Issued
2017-11-01

Issued for:

Site Conditions Assessment

of

Wind Farm Zone Hollandse Kust (zuid) (WFS I and WFS II)

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-0190-02664-5 Certification Report, dated 2017-11-01

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

Hamburg, 2017-11-01

For DNV GL Renewables Certification

per

i.V. Fabio Pollicino
Service Line Leader Project Certification

DAkkS
Deutsche Akkreditierungsstelle
D-ZE-11053-01-00

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

Hellerup, 2017-11-01

For DNV GL Renewables Certification

Digitally signed by Asp, Erik
Date: 2017.11.01 09:40:44 +01'00'

Erik Asp
Project Manager

STATEMENT OF COMPLIANCE – ANNEX 1

Wind power plant layout and coordinates

Coordinates for the polygon corner positions in the ETRS 89/UTM Zone 31

Easting	Northing
576,948.7	5,808,275.5
576,952.6	5,808,157.7
575,197.5	5,804,680.4
579,083.4	5,802,567.5
578,933.5	5,802,214.5
568,076.4	5,799,744.2
563,545.3	5,799,743.0
564,404.0	5,804,398.4
571,480.7	5,804,824.1
572,804.4	5,807,112.0
563,073.9	5,797,187.7
570,003.9	5,797,059.0
570,376.5	5,797,159.5
571,344.5	5,791,559.5
564,370.2	5,789,770.2
562,982.7	5,796,693.2

Wind conditions General

Air density	Approx. 1.24 kg/m^3 (temperature and pressure dependent)
Minimum - Maximum air temperature	- 9.1°C to 28.4°C (50 year)
Air humidity	<100%
Average inclined flow	0°

Wind conditions – Normal

Annual average wind speed (at 100m)	9.44 m/s
Weibull A-parameter (at 100 m)	10.77 m/s
Weibull k-parameter (at 100 m)	2.07

Wind conditions – Extreme

Wind speed 50 year recurrence period, 10 min. (at 100 m)	42.9 m/s (max. within the area)
Wind speed 1 year recurrence period, 10 min. (at 100 m)	32.9 m/s (max. within the area)

Marine conditions

Highest astronomical tide (HAT)	1.98 m (LAT)
Lowest astronomical tide (LAT)	0 m (LAT)
Tidal variation HAT/LAT	1.98 m (LAT)
Shallowest - deepest position	18 m-24 m (LAT)
Significant wave height for 50 year recurrence period, $H_{s,50\text{-}yr}$	7.0 m
Significant wave height for 1 year recurrence period, $H_{s,1\text{-}yr}$	5.4 m

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Peak wave period T_p for extreme for 50 year recurrence wave $H_{s,50\text{-}yr}$	12.3 s
Peak wave period T_p for extreme for 1 year recurrence wave $H_{s,1\text{-}yr}$	10.4 s
Extreme deterministic wave height for 50 year recurrence period, $H_{max,50\text{-}yr}$	13.5 m
Extreme deterministic wave height for 1 year recurrence period, $H_{max,1\text{-}yr}$	10.1 m
Interval of wave periods $T_{Hmax,50\text{-}yr}$, associated with $H_{max,50\text{-}yr}$	9.4 s -12.1 s
Interval of wave periods $T_{Hmax,1\text{-}yr}$, associated with $H_{max,1\text{-}yr}$	7.8 s - 9.8 s
Extreme wave crest height for 50 year recurrence period	11.2 m (MSL)
Extreme wave crest height for 1 year recurrence period	7.9 m (MSL)
Extreme high water level with recurrence period of 50 year	4.0 m (LAT)
Extreme high water level with recurrence period of 1 year	2.9 m (LAT)
Extreme low water level with recurrence period of 50 year	-1.1 m (LAT
Extreme low water level with recurrence period of 1 year	-0.5 m (LAT)
Extreme current for 50 year recurrence period (depth averaged)	1.0 m/s
Extreme current for 1 year recurrence period (depth averaged)	0.9 m/s
Water level rise to year 2045 due to climate change	0.2 m
Water density	Approx. 1027 kg/m³
Minimum - Maximum sea temperature	-2->24°C

Soil Conditions

Layer	It mostly consists of medium to coarse sand with shells and shell fragments, silt, clay and gravel.