DNV·GL

STATEMENT OF COMPLIANCE

Statement No.:
SC-DNVGL-SE-0190-04805-1

Issued
2019-10-07

Issued for:

Site Conditions Assessment

of

Wind Farm Zone Hollandse Kust (noord)

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-0190-04805-1 Certification Report, dated 2019-10-07

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

Hamburg, 2019-10-07

For DNV GL Renewables Certification

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, 2019-10-07

For DNV GL Renewables Certification

Erik Asp
Project Manager

STATEMENT OF COMPLIANCE – ANNEX 1

Wind farm zone and coordinates

Coordinate system and datum: ETRS 1989 UTM Zone 31N, EPSG 25831

Coordinates for the polygon corner positions: See table below

Position no.	Easting	Northing	Position no.	Easting	Northing
S_01	586,261.3	5,849,008.4	S_12	591,406.8	5,840,673.5
S_02	586,565.5	5,849,004.8	S_13	589,144.7	5,839,468.5
S_03	586,869.3	5,849,021.2	S_14	588,576.8	5,839,685.5
S_04	587,171.3	5,849,057.4	S_15	588,352.6	5,840,106.4
S_05	587,470.3	5,849,113.4	S_16	587,607.0	5,840,248.8
S_06	587,764.9	5,849,188.9	S_17	587,151.6	5,840,006.2
S_07	588,054.0	5,849,283.6	S_18	586,829.0	5,839,414.7
S_08	588,336.3	5,849,397.1	S_19	587,298.2	5,838,533.8
S_09	588,664.2	5,849,557.3	S_20	585,998.0	5,837,944.0
S_10	591,846.7	5,844,809.2	S_21	587,651.1	5,834,988.4
WFZ_10	591,841.5	5,844,754.0	S_22	586,973.5	5,834,559.4
WFZ_11	591,780.8	5,843,758.8	S_23	586,993.9	5,834,035.5
WFZ_12	591,768.5	5,842,720.7	S_24	586,430.2	5,834,028.7
WFZ_13	591,770.2	5,842,586.6	S_25	583,893.5	5,833,768.8
WFZ_14	591,776.6	5,842,300.0	S_26	582,705.2	5,833,582.7
WFZ_15	591,785.7	5,842,028.4	S_27	580,117.3	5,833,266.0
WFZ_16	591,794.6	5,841,826.7	S_28	577,231.0	5,833,001.2
WFZ_17	591,812.1	5,841,503.1	S_29	580,254.0	5,840,662.8
WFZ_18	591,828.6	5,841,283.3	WFZ_86	581,708.5	5,842,683.4
S_11	591,816.9	5,841,132.6			

STATEMENT OF COMPLIANCE – ANNEX 1

Wind conditions – general	
Air density at 100 m	Approx. 1.22 kg/m^3 (temperature and pressure dependent)
Minimum - Maximum air temperature	-13.9°C to 28.6°C(40 year)
Air humidity	<100%
Average inclined flow	0°
Wind conditions – normal	
Annual average wind speed (at 100m)	9.56 m/s
Weibull A-parameter (at 100 m)	10.79 m/s
Weibull k-parameter (at 100 m)	2.30
Wind conditions – extreme	
Wind speed 50 year recurrence period, 10 min. (at 100 m)	41.0 m/s (max. within the area)
Wind speed 1 year recurrence period, 10 min. (at 100 m)	33.1 m/s (max. within the area)
Marine conditions	
Highest astronomical tide (HAT)	2.2 m (LAT)
Lowest astronomical tide (LAT)	0.0 m (LAT)
Tidal variation HAT/LAT	2.2 m (LAT)
Significant wave height for 50 year recurrence period, $H_{s,50\text{-}yr}$	7.3 m
Significant wave height for 1 year recurrence period, $H_{s,1\text{-}yr}$	5.6 m
Peak wave period T_p for extreme for 50 year recurrence wave $H_{s,50\text{-}yr}$	11.5 s
Peak wave period T_p for extreme for 1 year recurrence wave $H_{s,1\text{-}yr}$	10.0 s
Extreme deterministic wave height for 50 year recurrence period, $H_{max,50\text{-}yr}$	14.0 m
Extreme deterministic wave height for 1 year recurrence period, $H_{max,1\text{-}yr}$	10.4 m
Interval of wave periods $T_{Hmax,50\text{-}yr}$, associated with $H_{max,50\text{-}yr}$	8.5 s -11.8 s
Interval of wave periods $T_{Hmax,1\text{-}yr}$, associated with $H_{max,1\text{-}yr}$	7.5 s - 10.8 s
Extreme wave crest height for 50 year recurrence period	12.3 m (MSL)
Extreme wave crest height for 1 year recurrence period	9.1 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	3.2 m (LAT)
Extreme low water level with recurrence period of 50 year	-1.0 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)	1.1 m/s
Extreme current for 1 year recurrence period (depth averaged)	1.0 m/s
Water level rise to year 2045 due to climate change	0.3 m
Water density	Approx. 1025 kg/m^3
Minimum - Maximum sea temperature	1.3 to 20.2°C(monthly)
Soil Conditions	
Layer	It mostly consists of medium to coarse sand with shells and shell fragments, silt, clay and gravel. Large variations from location to location and in the vertical direction.