DNV·GL

STATEMENT OF COMPLIANCE

Statement No.:
SC-DNVGL-SE-0190-05500-2

Issued
2021-04-16

Issued for:

Site Conditions Assessment

of

Wind Farm Zone Hollandse Kust (west)

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-0190:2020-09
Project certification of wind power plants

Based on the documents:
CR-SC-DNVGL-SE-0190-05500-2 Certification Report, dated 2021-04-16

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

Hamburg, 2021-04-16

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, 2021-04-16

For DNV GL Renewables Certification

Helena Hunt
Project Manager

STATEMENT OF COMPLIANCE – ANNEX 1

Wind farm zone and coordinates

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

Coordinates for the polygon corner positions: See table below

Position no.	Easting	Northing
WFZ_01	535,872.2	5,814,654.0
WFZ_02	537,022.3	5,822,012.5
WFZ_03	534,999.3	5,822,170.2
WFZ_04	537,570.7	5,825,520.7
WFZ_05	537,761.1	5,826,738.8
WFZ_06	560,375.0	5,853,830.4
WFZ_07	556,100.8	5,831,438.1
WFZ_08	556,364.1	5,831,312.2
WFZ_09	549,503.4	5,823,303.3
WFZ_10	548,730.0	5,822,551.6
WFZ_11	549,065.8	5,821,741.1
WFZ_12	549,721.8	5,820,157.5
WFZ_13	547,496.6	5,820,125.9
WFZ_14	536,741.8	5,815,063.4

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	-9.7°C to 29.9°C (40 year)
Air humidity	81.5% (average)
Average inclined flow	0°

Wind conditions – normal

Annual average wind speed (at 100m)	9.72 m/s
Weibull A-parameter (at 100 m)	11.11 m/s
Weibull k-parameter (at 100 m)	2.283

Wind conditions – extreme

Wind speed 50 year recurrence period, 10 min. (at 100 m)	41.4 m/s (max. within the area)
Wind speed 1 year recurrence period, 10 min. (at 100 m)	33.4 m/s (max. within the area)

Marine conditions

Highest astronomical tide (HAT)	1.7 m (LAT)
Lowest astronomical tide (LAT)	0.0 m (LAT)
Tidal variation HAT/LAT	1.7 m (LAT)
Significant wave height for 50 year recurrence period, $H_{s,50\text{-}yr}$	7.5 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 $H_{s,50\text{-}yr}$	12.2 s
Peak wave period T_p for extreme for 1 year recurrence wave $H_{s,1\text{-}yr}$	10.3 s
Extreme deterministic wave height for 50 year recurrence period, $H_{max,50\text{-}yr}$	14.1 m
Extreme deterministic wave height for 1 year recurrence period, $H_{max,1\text{-}yr}$	10.5 m
Interval of wave periods $T_{Hmax,50\text{-}yr}$, associated with $H_{max,50\text{-}yr}$	8.7 s -13.1 s
Interval of wave periods $T_{Hmax,1\text{-}yr}$, associated with $H_{max,1\text{-}yr}$	7.6 s – 11.0 s
Extreme wave crest height for 50 year recurrence period	11.8 m (LAT)
Extreme wave crest height for 1 year recurrence period	8.6 m (LAT)
Extreme high water level with recurrence period of 50 year	3.5 m (LAT)
Extreme high water level with recurrence period of 1 year	2.8 m (LAT)
Extreme low water level with recurrence period of 50 year	-0.9 m (LAT)
Extreme low water level with recurrence period of 1 year	-0.3 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 2050 due to climate change	0.3 m
Water density	Approx. 1025 kg/m^3
Minimum - Maximum sea temperature	1.7 to 19.2°C (monthly)

Soil Conditions

Layer	Mainly sand with interbedded clay, silt and silty sand layers
Friction angle, φ’	34-42°
Undrained shear strength, c_u	60-330 kPa