

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



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, 2018-03-29

For DNV GL Renewables Certification


Erik Asp
Project Manager

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Wind farm zone and coordinates

Coordinate system and datum

UTM, ETRS89, zone 31

Coordinates for the polygon corner positions

Site	Position no.	Easting	Northing	Site	Position no.	Easting	Northing
WFS III	S_14	564.614,8	5.788.549,4	WFS IV	S_20	576.572,1	5.790.327,9
WFS III	S_15	565.761,4	5.789.096,5	WFS IV	S_21	573.472,2	5.791.607,2
WFS III	S_16	572.004,3	5.790.697,8	WFS IV	S_22	572.710,0	5.791.903,1
WFS III	S_17	573.302,2	5.790.162,1	WFS IV	S_23	571.716,1	5.797.627,9
WFS III	S_18	573.429,2	5.789.883,6	WFS IV	S_24	571.790,9	5.798.626,0
WFS III	S_19	575.586,6	5.789.003,0	WFS IV	S_25	571.805,0	5.798.693,2
WFS III	WFZ_64	575.295,7	5.788.618,4	WFS IV	S_26	573.716,5	5.799.154,4
WFS III	WFZ_65	574.628,8	5.788.129,5	WFS IV	S_27	577.973,7	5.800.132,7
WFS III	WFZ_66	574.056,7	5.787.679,7	WFS IV	S_28	578.941,5	5.800.385,9
WFS III	WFZ_67	573.443,8	5.787.154,9	WFS IV	S_29	580.431,8	5.801.530,6
WFS III	WFZ_68	572.912,4	5.786.661,2	WFS IV	S_30	580.316,8	5.803.383,2
WFS III	WFZ_69	572.228,2	5.785.964,3	WFS IV	S_31	580.760,7	5.804.487,0
WFS III	WFZ_70	571.590,0	5.785.242,2	WFS IV	S_32	580.994,8	5.805.140,0
WFS III	WFZ_71	570.998,7	5.784.499,2	WFS IV	S_33	581.193,4	5.805.657,9
WFS III	WFZ_72	570.303,3	5.783.529,5	WFS IV	S_34	581.587,2	5.806.582,3
WFS III	WFZ_73	569.557,2	5.782.954,5	WFS IV	S_35	581.882,3	5.807.210,7
WFS III	WFZ_74	569.045,5	5.782.532,7	WFS IV	S_36	582.211,3	5.807.858,3
WFS III	WFZ_75	568.540,7	5.782.087,5	WFS IV	S_37	582.711,5	5.808.742,7
WFS III	WFZ_76	567.997,4	5.781.570,0	WFS IV	WFZ_40	585.589,4	5.808.488,5
WFS III	WFZ_30	565.470,5	5.784.279,9	WFS IV	WFZ_41	585.497,2	5.808.225,8
				WFS IV	WFZ_42	585.050,6	5.807.047,7
				WFS IV	WFZ_43	584.618,3	5.805.978,0
				WFS IV	WFZ_44	584.549,1	5.805.759,5
				WFS IV	WFZ_45	583.806,8	5.804.057,5
				WFS IV	WFZ_46	583.658,0	5.803.670,2
				WFS IV	WFZ_47	583.374,1	5.803.062,4
				WFS IV	WFZ_48	582.960,1	5.802.115,9
				WFS IV	WFZ_49	582.523,4	5.801.188,9
				WFS IV	WFZ_50	582.086,2	5.800.162,1
				WFS IV	WFZ_51	581.622,3	5.799.242,1
				WFS IV	WFZ_52	581.211,5	5.798.487,2
				WFS IV	WFZ_53	580.786,3	5.797.658,9
				WFS IV	WFZ_54	580.393,7	5.796.861,7
				WFS IV	WFZ_55	579.898,9	5.795.803,2
				WFS IV	WFZ_56	579.248,3	5.794.721,1
				WFS IV	WFZ_57	578.876,2	5.794.023,5
				WFS IV	WFZ_58	578.378,3	5.793.014,6
				WFS IV	WFZ_59	577.806,7	5.792.061,0
				WFS IV	WFZ_60	576.959,0	5.790.898,9

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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)
Range, lowest - deepest position	18 m-24 m (LAT)
Significant wave height for 50 year recurrence period, $H_{s,50-yr}$	7.0 m
Significant wave height for 1 year recurrence period, $H_{s,1-yr}$	5.4 m

Peak wave period T_p for extreme for 50 year recurrence wave $H_{s,50-yr}$	12.3 s
Peak wave period T_p for extreme for 1 year recurrence wave $H_{s,1-yr}$	10.4 s
Extreme deterministic wave height for 50 year recurrence period, $H_{max,50-yr}$	13.5 m
Extreme deterministic wave height for 1 year recurrence period, $H_{max,1-yr}$	10.1 m
Interval of wave periods $T_{Hmax,50-yr}$, associated with $H_{max,50-yr}$	9.4 s - 12.1 s
Interval of wave periods $T_{Hmax,1-yr}$, associated with $H_{max,1-yr}$	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/m ³
Minimum - Maximum sea temperature	-2 to 24°C

Soil Conditions

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