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IJmuiden Ver Wind Farm Zone Site Alpha

Wind Farm Site Decision – as published in Dutch on 6 December 2023 on this RVO-website.

III Regulations

Regulation 1 Definition of terms

In this Decision, the following terms are defined as indicated below:

- *operational management*: entity that has the ability, on the basis of factual or legal circumstances, to exercise a decisive influence on at least a cumulative nominal capacity of 100 MW of the wind farm;
- *acoustic deterrent device(s)*: a piece of equipment with which marine mammals and fish are driven away by means of a sound signal;
- *axis height*: the height of the rotor axle, to which the rotor blades of the wind turbine are attached, in relation to sea level;
- *continual use*: the continual use of the wind turbine, except during maintenance periods;
- *cut-in wind speed*: the lowest wind speed at which the wind turbine delivers energy;
- *cybersecurity*: all security measures taken to prevent damage due to a disruption, failure or exploitation of an information system or computer;
- *dB re 1µPa²s*: unit for SEL_{ss};
- *third party (called in by the permit holder)*: a legal entity, other than the permit holder, capable of managing the wind farm;
- *national security*: the undisturbed functioning of the Kingdom of the Netherlands as an effective and efficient economy;
- *threshold value*: a value for bird density of 500 birds at rotor height per kilometre per hour, as determined by the Minister for Climate and Energy Policy in consultation with the Minister for Nature and Nitrogen Policy;
- *sound level*: the aggregated source level over the frequency bands;
- *installed capacity*: The maximum electrical power, also known as 'rated power,' to which a wind turbine is designed to be utilized under normal conditions for the production of renewable electricity, as can also be determined by independent certifying parties.
- *Piling:* placing a foundation, which involves sound emissions that have a pulse-like or continuous/even character;
- *Piling plan*: the plan in which, among other things, the permit holder explains how the foundations will be installed, which sound-limiting measures will be taken and in what manner the sound level will be measured and reported.
- *MSL (Mean Sea Level)*: the average level of the sea (the surface of the sea), if all variations that result from the tides are averaged out;
- *migration period* (spring - birds): bird migration in the period between 15 February through to 31 May;
- *migration period* (autumn - birds): bird migration in the period 15 August through to 30 November;
- *oil and gas well*: bore hole;
- *night*: period between sunset and sunrise;
- *MISP*: Maritime Information Service Point.
- *normal conditions*: the average meteorological conditions occurring in a particular area during the period of one year;
- *rotor diameter*: the diameter the wind turbine blades cover (the imaginary circle that is drawn by the rotor blades of the wind turbine;
- swept area: the surface area of the imaginary circle that is drawn by the rotor blades of the wind turbine;
- SEL_{ss}: Sound Exposure Level (single strike);
- *tip highest level*: the axis height plus half of the rotor diameter;
- *tip lowest level*: the axis height minus half of the rotor diameter;
- *UXO survey*: survey into the presence of unexploded ordnance in the seabed;
- *permit holder*: the holder of a permit pursuant to Section 12 of the Offshore Wind Energy Act;

Regulation 2 Boundaries of wind farm

1. The wind farm will be situated within the contours of the following coordinates:

Site Alpha Coordinates according to EPSG 25831		
Point No.	**Easting**	**Northing**
S_01	538,617.2	5,844,313.2
S_02	531,916.7	5,846,661.3
S_03	530,462.0	5,847,067.2
S_04	532,274.5	5,850,210.0
S_05	532,500.8	5,850,215.4
S_06	532,530.6	5,850,219.6
S_07	532,786.7	5,850,292.1
S_08	533,017.9	5,850,423.9
S_09	533,210.7	5,850,607.4
S_10	533,353.7	5,850,831.9
S_11	533,438.7	5,851,084.1
S_12	533,460.6	5,851,349.4
S_13	533,418.1	5,851,612.1
S_14	533,313.8	5,851,857.0
S_15	533,179.6	5,851,779.4
S_16	536,052.6	5,856,761.2
S_17	544,440.0	5,852,084.0
S_18	529,480.8	5,847,367.6
S_19	524,148.0	5,849,128.2
S_20	522,498.2	5,849,609.3
WFZ_11	527,989.9	5,859,978.7
S_21	528,822.7	5,862,497.9
S_22	535,219.3	5,857,317.9
S_23	531,752.3	5,851,306.2
S_24	531,261.4	5,851,306.0
S_25	531,301.2	5,851,013.1
S_26	531,329.5	5,850,925.6
S_27	531,422.2	5,850,733.9

The maps with the location of Site Alpha are included in the appendix to the regulations.

2. The route of the connection to the TenneT platform IJmuiden Ver (Alpha) lies within the following coordinates:

Site Alpha Coordinates according to EPSG 25831		
Point No.	**Easting**	**Northing**
TOS_01	532,359.5	5,851,358.4
CEZ_01	532,651.4	5,851,764.3
CEZ_02	533,790.6	5,852,838.9
S_15	533,179.6	5,851,779.4
S_14	533,313.8	5,851,857.0
S_13	533,418.1	5,851,612.1
S_12	533,460.6	5,851,349.4
S_11	533,438.7	5,851,084.1
S_10	533,353.7	5,850,831.9
S_09	533,210.7	5,850,607.4
S_08	533,017.9	5,850,423.9
S_07	532,786.7	5,850,292.1
S_06	532,530.6	5,850,219.6
S_05	532,500.8	5,850,215.4
CEZ_03	532,503.9	5,851,165.0
CEZ_04	532,454.6	5,851,268.6
CEZ_05	532,368.6	5,851,322.8
TOS_01	532,359.5	5,851,358.4
CEZ_06	532,324.2	5,851,348.4
CEZ_07	532,234.3	5,851,395.7
CEZ_08	532,119.9	5,851,386.5
S_26	531,329.5	5,850,925.6
S_25	531,301.2	5,851,013.1
S_24	531,261.4	5,851,306.0
S_23	531,752.3	5,851,306.2
CEZ_09	532,924.3	5,853,338.5
CEZ_10	532,564.8	5,851,814.3

3. No wind turbines will be installed in the maintenance zones of pipelines and telecom cables. These zones are bounded by the points in the table below, which are also indicated on the map included in the appendix to these regulations.

Maintenance Zone Site Alpha Coordinates according to EPSG 25831		
Point No.	**Easting**	**Northing**
MZ_019	529,663.4	5,861,817.1
MZ_020	529,647.8	5,861,604.5
MZ_021	529,651.9	5,861,391.4
MZ_022	529,675.6	5,861,179.6
MZ_023	529,675.7	5,861,179.1

MZ_024	529,675.8	5,861,178.6
MZ_025	529,675.9	5,861,178.1
MZ_026	529,707.3	5,861,009.6
MZ_027	529,751.2	5,860,843.9
MZ_028	529,807.4	5,860,682.0
MZ_029	529,882.0	5,860,504.1
MZ_030	529,933.3	5,860,402.5
MZ_031	530,019.3	5,860,262.1
MZ_032	530,102.4	5,860,142.6
MZ_033	530,127.4	5,860,111.1
MZ_034	530,187.5	5,860,035.8
MZ_035	530,231.9	5,859,985.5
MZ_036	530,349.9	5,859,865.8
MZ_037	530,472.8	5,859,749.4
MZ_038	530,542.9	5,859,687.9
MZ_039	530,595.6	5,859,646.3
MZ_040	530,715.0	5,859,561.6
MZ_041	530,746.9	5,859,540.7
MZ_042	530,807.5	5,859,504.5
MZ_043	530,955.9	5,859,427.6
MZ_044	531,062.8	5,859,378.4
MZ_045	533,597.5	5,858,393.1
MZ_046	534,021.3	5,858,231.1
MZ_047	534,150.4	5,858,171.5
MZ_048	534,197.8	5,858,145.2
S_22	535,219.3	5,857,317.9
MZ_049	535,173.1	5,857,237.8
MZ_050	535,161.0	5,857,242.8
MZ_051	535,149.3	5,857,248.9
MZ_052	535,138.2	5,857,256.0
MZ_053	535,127.8	5,857,264.0
MZ_054	535,118.2	5,857,272.8
MZ_055	535,109.3	5,857,282.6
MZ_056	535,101.3	5,857,293.0
MZ_057	534,413.5	5,857,676.2
MZ_058	534,371.4	5,857,702.2
MZ_059	534,217.1	5,857,789.2
MZ_060	534,185.0	5,857,797.4
MZ_061	534,172.3	5,857,801.3
MZ_062	534,159.9	5,857,806.3
MZ_063	534,148.1	5,857,812.3
MZ_064	534,136.9	5,857,819.4
MZ_065	534,126.3	5,857,827.4
MZ_066	534,116.5	5,857,836.3
MZ_067	534,107.5	5,857,846.1
MZ_068	534,099.4	5,857,856.6

MZ_069	534,009.8	5,857,906.4
MZ_070	533,904.7	5,857,954.6
MZ_071	533,488.2	5,858,113.7
MZ_072	530,943.1	5,859,103.2
MZ_073	530,821.0	5,859,159.6
MZ_074	530,665.5	5,859,240.2
MZ_075	530,657.5	5,859,244.6
MZ_076	530,610.9	5,859,272.5
MZ_077	530,580.1	5,859,280.7
MZ_078	530,567.0	5,859,284.9
MZ_079	530,554.3	5,859,290.3
MZ_080	530,542.1	5,859,296.8
MZ_081	530,530.6	5,859,304.4
MZ_082	530,519.9	5,859,313.1
MZ_083	530,509.9	5,859,322.6
MZ_084	530,500.9	5,859,333.1
MZ_085	530,493.0	5,859,344.3
MZ_086	530,486.0	5,859,356.2
MZ_087	530,418.9	5,859,403.8
MZ_088	530,412.7	5,859,408.4
MZ_089	530,354.0	5,859,454.8
MZ_090	530,348.0	5,859,459.8
MZ_091	530,272.8	5,859,525.7
MZ_092	530,268.6	5,859,529.6
MZ_093	530,141.8	5,859,649.7
MZ_094	530,138.1	5,859,653.3
MZ_095	530,015.3	5,859,777.8
MZ_096	530,009.6	5,859,783.9
MZ_097	529,960.1	5,859,840.1
MZ_098	529,955.5	5,859,845.6
MZ_099	529,937.1	5,859,868.6
MZ_100	529,925.1	5,859,874.2
MZ_101	529,913.7	5,859,880.8
MZ_102	529,902.9	5,859,888.4
MZ_103	529,892.8	5,859,896.9
MZ_104	529,883.5	5,859,906.3
MZ_105	529,875.1	5,859,916.4
MZ_106	529,867.6	5,859,927.3
MZ_107	529,861.1	5,859,938.8
MZ_108	529,855.6	5,859,950.8
MZ_109	529,851.1	5,859,963.2
MZ_110	529,842.8	5,859,990.6
MZ_111	529,770.6	5,860,094.3
MZ_112	529,765.8	5,860,101.7
MZ_113	529,674.3	5,860,251.1
MZ_114	529,668.3	5,860,261.7

MZ_115	529,611.8	5,860,373.6
MZ_116	529,607.3	5,860,383.3
MZ_117	529,530.0	5,860,567.8
MZ_118	529,528.6	5,860,571.2
MZ_119	529,464.8	5,860,754.7
MZ_120	529,414.9	5,860,942.4
MZ_121	529,379.2	5,861,133.3
MZ_122	529,353.4	5,861,358.4
MZ_123	529,347.3	5,861,584.9
MZ_124	529,360.8	5,861,811.1
MZ_125	529,394.0	5,862,035.2

4. The rotor blades of the wind turbines must remain within the contours cited in paragraph one and completely outside the maintenance zone cited in paragraph three.

Regulation 3 Bandwidth of the wind farm

1. The wind farm consists of wind turbines, foundations, scour protection and cabling up to the connection point.
2. The maximum number of wind turbines to be installed is 134.
3. Wind turbines with a rated capacity of at least 15 MW (per turbine) are to be installed in the wind farm.
4. The minimum distance permitted between the wind turbines is four times the rotor diameter.
5. The minimum tip lowest level permitted is 25 metres above MSL.
6. The maximum tip highest level permitted is 305 metres above MSL.
7. The maximum total swept area permitted is 7,081,150 m^2.
8. Turbines will be connected to the TenneT platform IJmuiden Ver (Alpha). Without prejudice to other regulations, the maximum technical connected output is 2.3 GW.
9. The foundations permitted for the wind turbines are:
   - monopile;
   - tripod;
   - jacket;
   - gravity-based;
   - suction bucket.

   If the permit holder intends to use a foundation not specified in this clause, the foundation plan must demonstrate, as certified by an expert in the field, that the environmental impacts, especially concerning underwater life, are not more adverse than those determined in the Environmental Impact Assessment (EIA) for the examined range.
10. If sacrificial anodes are used as cathodic protection of steel structures, these must consist of aluminium or magnesium alloys. The alloys may contain small amounts (<5% by weight) of other metals.

Regulation 4 Mitigating measures

1. Measures to prevent permanent physical harm and/or effects to harbour porpoises and seals and mortality of fish.

   a) Piling work will start with a low piling energy and extended intervals between strokes. The duration and power of the low piling energy must be such that harbour porpoises have the opportunity to swim to a safe location. In the piling plan referred to in paragraph 2 subparagraph d, the permit holder must provide supporting evidence to substantiate the duration and power of the low piling energy.
   b) Where an installation technique other than pile-driving is used, the permit holder will use one or more acoustic deterrent(s) tuned to the relevant frequencies for a period of half an hour before the start of the work, as well as during the first five minutes of the work. This procedure is repeated if the work is interrupted for an hour or more. In the piling plan as referred to in paragraph 2 subparagraph d, the permit holder

must explain what type(s) of deterrent(s) it plans to use, including by providing evidence supporting the effectiveness of the selected type(s) of deterrent(s).

c) The permit holder may deviate from the provisions outlined in subparagraph b of this section in the event that the equipment specified in that subparagraph generates more noise than the applicable installation technology. Alternatively, a subject matter expert in the foundation plan may justify that the measure, as such, does not contribute to preventing permanent effects on the hearing of porpoises.

2. Measures to prevent disturbance to harbour porpoises, seals and fish (sound emission standard).

a) The underwater sound level resulting from impulsive noise during piling work for the construction of the wind farm may never exceed 164 dB re 1 μPa^2s SEL_{ss} (at 750 metres from the sound source), except in accordance with the stipulations in subparagraphs b and f.

b) For the first ten foundations, the permit holder may exceed the sound level cited in subparagraph a by a maximum of 2 dB re 1 μPa^2s SEL_{ss} (at 750 metres from the sound source).

c) If using a technique that does not cause impulsive noise, the number of harbour porpoise disturbance days may not exceed 117,000.

d) The permit holder is required to prepare a piling plan to be submitted to the Minister for Climate and Energy Policy no later than eight weeks before the start of construction.

e) If (joint) use is made of a technique that does not cause impulsive noise, the piling plan will include a calculation of the number of harbour porpoise disturbance days, prepared by an expert in the field , demonstrating compliance with subparagraph c.

f) The piling plan, as referred to in subparagraph d, provides for the permit holder to deviate from the sound emission standard, as referred to in subparagraph a, for test and research purposes that are in compliance with applicable legislation and regulations and for which compelling reasons of overriding public interest exist. This deviation must be limited to levels strictly necessary for the purpose of the test and applies to three foundations at most for a maximum of 25 minutes per foundation. The reason for the deviation must be substantiated in the piling plan. This substantiation must contain the following as a minimum:
   - the benefits and necessity of the deviation;
   - a description of the technique and resources required;
   - the expected sound level, for what lengths of time the sound emission standard is expected to be exceeded in the various phases of the piling process, and the number of days that harbour porpoises are expected to be disturbed;
   - a description of the measures taken in order to reduce sound levels to the greatest extent possible;
   - the method employed for monitoring and processing research results;
   - the term within which the research results will be submitted to the Minister for Climate and Energy Policy.

g) The permit holder will perform the work in accordance with the piling plan.

h) The permit holder makes a concerted effort to minimize disturbance to porpoises to the greatest extent reasonably possible and aims to produce underwater noise within the shortest contiguous timeframe.

i) During the foundation work, the sound level must be continuously measured by the permit holder. The sound measurements for each foundation must be sent to the Minister for Climate and Energy Policy no later than 48 hours after the foundation has been installed. Moreover, following completion of all foundation work, the permit holder will submit the measurement data to the Minister of Infrastructure and Water Management for international reporting obligations.

j) If, in the case of pile-driving, successive sound measurements show the underwater sound level does not exceed the sound emission standard cited in subparagraph a, the permit holder can ask the Minister for Climate and Energy Policy to allow the frequency of sound measurements to be reduced.

3. Measures to limit collision victims among birds at rotor height during mass migration periods:

a) During migration periods, the permit holder will reduce the number of rotations per minute per wind turbine to less than two at night when the threshold value is exceeded, as indicated by the Minister for Climate and Energy Policy.
b) The permit holder is obligated, without financial compensation, to cooperate in the placement and installation of equipment on, in, and/or attached to the turbines designated by the Dutch government for the implementation and evaluation of the measure specified in subsection a of this clause. This includes providing attachment structures on the designated turbines. An agreement for the placement and installation of the equipment will be entered into with the permit holder.
c) The permit holder is obligated, without financial compensation, to cooperate in providing access for the purpose of managing and maintaining the equipment specified in subsection c of this clause. An agreement for the management and maintenance of the equipment will be entered into with the permit holder.
d) Each year on (no later than) 1 February and 1 August, the permit holder will produce report for the Minister for Climate and Energy Policy, specifying how and in what manner subparagraph a, b and c was implemented in the preceding six months.

4. Measures to prevent collision victims among bats at rotor level:
   a) At night, during the period indicated in the table below, the cut-in wind speed at axis height of the wind turbines will be adjusted, as shown in the table.

Night	**Cut-in speed [m/s]**	**Night**	**Cut-in speed [m/s]**
226-228	4.7	265-267	5.5
229-231	4.8	268-270	5.5
232-234	5.0	271-273	5.4
235-237	5.2	274-276	5.3
238-240	5.3	277-279	5.1
241-243	5.4	280-282	5.0
244-246	5.5	283-285	4.9
247-249	5.5	286-288	4.7
250-252	5.6	289-291	4.4
253-255	5.6	292-294	4.2
256-258	5.6	295-297	4.0
259-261	5.6	298-300	3.8
262-264	5.6	301-303	3.6

   b) At a wind speed lower than the adjusted cut-in wind speed, as referred to in subparagraph a, the permit holder will reduce the number of rotations per minute per wind turbine to less than one during the nights referred to in subparagraph a.
   c) Measurements of wind speed and calculations of sunset and sunrise will be conducted per wind turbine in time intervals (for measurements) of no more than twenty minutes. Each time, the most recent measurement will determine the application of the measures referred to in subparagraphs a and b.
   d) No later than within two months after the period referred to in subparagraph a, the permit holder will submit a report to the Minister for Climate and Energy Policy indicating how subparagraphs a, b and c have been implemented.

5. Measures to prevent nitrogen deposition in Natura 2000 areas.

   a) During construction, operation, maintenance and removal activities, nitrogen depositions in nitrogen-sensitive Natura 2000 areas must be prevented.
   b) In an action plan, the permit holder will indicate which equipment and vessels will be deployed for construction, operation and maintenance work for the wind farm. By means of an attached calculation based on a calculation model specified in or under the Nature Conservation Act for the construction phase and an attached calculation based on the calculation model referred to above for the operation and maintenance phase, the permit holder will demonstrate that nitrogen deposition in the nitrogen-sensitive Natura 2000 areas does not exceed 0.00 mol N/ha/year as a result of the deployment of equipment and vessels in accordance with the action plan for these separate phases.

c) In an action plan, the permit holder will indicate which equipment and vessels will be deployed for removal of the wind farm. By means of an attached calculation according to a calculation model specified in or under the Nature Conservation Act for the removal phase, the permit holder will demonstrate that nitrogen deposition in the nitrogen-sensitive Natura 2000 areas does not exceed 0.00 mol N/ha/year as a result of the deployment of equipment and vessels in accordance with the action plan for this phase.
d) The permit holder will submit the action plan referred to in subparagraph b to the Minister for Climate and Energy Policy for assessment no later than eight weeks before the start of construction of the wind farm.
e) The permit holder will submit the action plan referred to in subparagraph c to the Minister for Climate and Energy Policy for assessment no later than eight weeks before the start of the removal of the wind farm.
f) The permit holder will perform the work in accordance with the plans drawn up in subparagraphs b and c.

6. Measures to limit disruption to seals and fish during construction and maintenance work.

a) During transport to and from the site, the permit holder must take into account the presence of seals in shallow waters/sandbank areas and designated resting areas, as well as the concentrations of birds present. The measures cited in the Voordelta Management Plan, the Delta Water Management Plan, the Wadden Sea Management Plan and the North Sea Coastal Zone Management Plan must be taken into account. The terms and conditions in the appropriate Management Plans are included in the appendix to this Regulation.
b) This Regulation will cease to apply once the transportations referred to in the first sentence of subparagraph a are included as operations in the Voordelta Management Plan, the Delta Water Management Plan, the Wadden Sea Management Plan and the North Sea Coastal Zone Management Plan.

7. Measures to increase suitable habitat for species native to the North Sea.

a) If stones, rocks or other materials are used to prevent scour around the foundations of the wind turbines, then for at least 20% of the wind turbines, the entire uppermost level of the scour protection must be designed in such a way that no movement of the materials will occur in storm conditions with a likely return period of one year.
b) The uppermost level of the scour protection referred to in subparagraph a must contain at least two slits or cavities per square metre of surface area that are 10-30 cm in diameter and 20-50 cm deep. The design of the scour protection must minimise sedimentation in the cavities.
c) Without prejudice to the provisions in subparagraph a, the obligation referred to in subparagraph b can be fulfilled by installing six artificial structures per wind turbine onto or into the uppermost level of the scour protection referred to in subparagraph a. These structures must be placed on top of the scour protection in a stable manner or be partly or fully embedded in the scour protection and be located outside the area of turbulence created by the wind turbine pile in the dominant direction of the current. The design of the scour protection must minimise sedimentation in the cavities.
d) With regard to the artificial structures referred to in subparagraph c, the following structures or combinations of structures are permitted:
    - pipes that are either entirely cylindrical or have a hexagonal exterior with a cylindrical interior and have both a length and diameter in excess of 100 cm. In addition, one of the ends of the pipe must be accessible at all times and the top side of one of the pipes must be equipped with a minimum of four holes measuring a minimum of 15 cm and a maximum of 30 cm per metre to guarantee water exchange;
    - spherical or cubic structures with an interior diameter of at least 100 cm and accessible via a minimum of 6 and a maximum of 15 openings with a diameter varying between 15 and 50 cm;
    - other structures that must include a minimum of 6 separate cavities with the following dimensions: a 10-30 cm diameter and 20-50 cm depth.

e) Without prejudice to the provisions of subparagraphs a and c, other artificial structures or combinations of structures not included in subparagraph d may also be installed. The dimensions of cavities and openings and the numbers of openings in these structures must be such that the structures offer habitats for the intended species in a similar manner as the structures specified in subparagraph d. Furthermore, the permit holder must also organise a location-specific monitoring programme to examine the effects of the measures.
f) The permit holder must draw up an action plan for the necessary measures, to be submitted to the Minister for Climate and Energy Policy no later than eight weeks before the planned commencement of construction.
g) The work must be performed in accordance with the plan referred to in subparagraph f.

8. Measures to protect archaeology and cultural history.

a) The permit holder will not place wind turbines, cables or other installations within a 100 metre radius of the 12 locations with possible archaeologically valuable objects and the 261 buried ferrous objects listed in the appendix to this regulation. Oversail of rotor blades is permitted.
b) Subsection a may be deviated from if it is impossible to avoid the performance of seabed-disturbing activities within a 100 metre radius of the 12 locations specified in the appendix to these regulations that might contain archaeologically valuable objects. In that case, a detailed exploratory field survey (Inventariserend Veldonderzoek, IVO) into the possible presence of archaeological monuments in the seabed must be conducted for those sites before laying cables and/or placing the foundations of wind turbines. This survey must be performed in accordance with the prevailing Dutch Archaeology Quality Standard Aquatic Soils.
c) Subparagraph a may be deviated from if it is impossible to avoid the performance of seabed-disturbing activities within a 100 metre radius from the 261 buried ferrous objects specified in the appendix to these regulations. In that case, the UXO survey must be accompanied by on-site archaeological supervision. This survey must be performed in accordance with the prevailing Dutch Archaeology Quality Standard Aquatic Soils.
d) The results of the surveys referred to in subparagraphs b and c must be submitted to the Minister for Climate and Energy Policy no later than six months before the start of construction of the wind farm.
e) Depending on the conclusions of the surveys referred to in subparagraph b and c:
    - the work can proceed without any changes;
    - a follow-up study will be required;
    - physical measures must be taken to protect archaeological sites;
    - sites are to be excluded permanently from interference, taking into account a buffer zone; or
    - the work must be supervised archaeologically.
f) The permit holder shall formulate a plan that specifies the manner in which the requirements stemming from these regulations and from Section 6.16f of the Water Decree will be fulfilled, and shall submit this plan to the Minister for Climate and Energy Policy no later than three months prior to the start of construction.

9. Measures to reduce light pollution and to promote the safety of seafarers.

    a) Aeronautical obstruction lights on the highest fixed point on all wind turbines shall be steady-burning red lights.
    b) All wind turbines will have nautical identification marks/codes that will be illuminated indirectly by a low-intensity light source. The identification marks shall be positioned on the transition piece or the mast at intervals of 120 degrees. The identification codes must be clearly readable from a position 3 metres above MSL and at least 150 metres from the wind turbine.
    c) Without prejudice to subparagraphs a and b, and contrary to Section 6.16h (2) of the Water Decree, the permit holder will draw up the lighting plan, referred to in Section 6.16d (1)(d) of the Water Decree, in accordance with the information sheet 'Designation offshore wind turbines and offshore wind farms in relation to aviation safety' and the IALA guideline G1162.
    d) In the lighting plan, referred to in Section 6.16d (1)(d) of the Water Decree, the permit holder will take account of requirements arising from safety investigations in the context of helicopter flights to and from the TenneT's substation converter platforms.
    e) On the instructions of the Minister for Climate and Energy Policy or the Coast Guard, the wind farm will be (partially) lit in the event of a rescue operation in or in the immediate vicinity of the wind farm.

10. Measure to promote safety in the event of repairs or maintenance to cables and pipes.

    a) During the repair and maintenance of cables and pipelines, and repairs to (sealed) mining wells, on the instructions of the Minister for Climate and Energy Policy, the number of rotations per minute per wind turbine for the wind turbines located within a 1,000 metre radius of the repair and maintenance location must be reduced to less than two.

11. Measures to protect (sealed) oil and gas wells.

    a) The permit holder will not place wind turbines, cables or other installations within a 150 metre radius of the oil and gas wells listed in the table in the appendix.[1] Oversail of rotor blades is permitted.
    b) Subparagraph a may be deviated from if it is impossible to avoid the performance of seabed-disturbing activities within a 150 metre radius of a (sealed) oil or gas well. A detailed investigation must be conducted before laying cables and/or placing the wind turbine foundations to show that no safety risks can occur.
    c) The results of the investigation referred to in subparagraph b must be submitted to the Minister for Climate and Energy Policy no later than three months prior to start of the construction of the wind farm.

Regulation 5 Data gathering, monitoring and evaluation

1. Obligation to cooperate with regard to research as well as the installation, operation and maintenance of equipment and sensors in the wind farm on behalf of central government.

    a) The permit holder is required, without financial consideration, to cooperate with the installation, operation and maintenance of sensors and equipment in the wind farm by or on behalf of central government, in the context of the execution of its public duty in the following aspects:
        - digital connectivity,
        - ecology, hydro/meteorological information,
        - maritime security,
        - shipping and aviation safety.

[1] The distance of 100 metres is a minimum distance. The Ministry of Economic Affairs and Climate Policy will be further investigating to what extent this distance is sufficient given the (safety) interests to be served. The insights may result in changes in the (definitive) Wind Farm Site Decision.

b) The obligations referred to in subparagraph a may include:
   - provision of a MISP installation point in the wind turbine (inside) for equipment, including network equipment for fibre optic communication to the TenneT platform,
   - provision of a safely accessible attachment point for sensors and equipment on the wind turbine (outside),
   - provision of an attachment point for sensors and equipment on the wind turbine foundation and erosion protection,
   - installation of cables between the equipment in the wind turbine and sensors and equipment on the wind turbine,
   - supply of power for the sensors and the equipment in and on the wind turbine,
   - availability of fibre optic infrastructure from wind turbines to the TenneT platform,
   - patching of the fibre optic infrastructure to the MISP facility.

   Whether or not with vessels supplied by the permit holder, notwithstanding the provisions of regulation 4, third subsection, section c, the permit holder is obligated, without financial compensation, to cooperate in granting access to all parts of the wind park to individuals acting on behalf of the Dutch government, performing tasks and duties related to the aspects mentioned in section a of this subsection, including related research activities.

2. Obligation to investigate collisions and avoidance behaviour of bird species from the Natura 2000 area Bruine Bank (Great black-backed gull, Little gull, Northern gannet, Great skua).

   a) For at least 5 years, the permit holder will continuously record the species-specific number of collisions and the avoidance behaviour of the species in question. The permit holder will produce the results in a research report.
   b) The permit holder will install equipment on and/or in wind turbines that registers collisions and avoidance behaviour of the species in question and distinguishes between the different species.
   c) The combined range of the monitoring equipment referred to in subparagraph b covers at least the entire southern side of the wind farm, being an area of at least one third of the wind farm and the space between the southern side of the wind farm and the Natura 2000 area Bruine bank.
   d) The monitoring equipment referred to in subparagraph b will be installed and validated for quality in coordination with MISP.
   e) The monitoring study referred to in subparagraph a will start no later than 5 years after the permit referred to in Article 12 of the Offshore Wind Energy Act has become irrevocable.
   f) The permit holder will submit a monitoring plan to the Minister for Climate and Energy Policy no later than six months before the start of the monitoring study referred to in subparagraph a.
   g) The research plan referred to in subparagraph f will at least include:
      - a (scientifically) substantiated research design;
      - a description of the way a link will be made with the Wozep's current bird research programme, including substantiation that data management and reporting comply with the Wozep and MISP standards;
      - a (scientific) substantiation of the suitability of the monitoring techniques, monitoring equipment and data storage to guarantee statistically significant results and substantiation as to why these techniques and equipment are considered the best available techniques;
      - a (scientific) substantiation of the distribution and reach of the monitoring equipment over the southern part of the site in order to guarantee statistically significant results;
      - a description of how, in accordance with MISP standards, validation of the monitoring equipment is conducted and operations and maintenance is organised,;
      - a description of how ,in accordance with MISP standards, data is stored and made publicly accessible and shared with the Minister for Climate and Energy Policy,;
      - the dates on which interim and final reports will be shared with the Minister for Climate and Energy Policy;

- a description of the quality assurance, endorsed by an external supervisory committee with independent experts.

h) The permit holder will conduct the research in accordance with the plan referred to in subparagraph f.
i) The permit holder will share interim reports with the Minister for Climate and Energy Policy each year and will make the data publicly available. After at least five years, the permit holder will share a draft report and a final report.

Regulation 6 Permit

The permit as referred to in Section 12 of the Offshore Wind Energy Act will be issued for a period of 40 years.

Regulation 7 Security strategy

1. The entity that manages the wind farm, namely the permit holder or a third party commissioned by the permit holder, is established in the EU.

2. At least six months before construction of the wind farm, the permit holder will share a strategy with components for cybersecurity, national security and physical resilience with the Minister for Climate and Energy Policy. The strategy covers both the development and operational phases and specifies which risks are managed and which are excluded from the scope.

3. The strategy referred to in subparagraph 2 contains the following:
   a) The main security risks based on a review of:
      - the interests to be protected;
      - the threats against which the interests must be protected, including threats originating from state actors;
      - the extent to which the interests to be protected are resistant to the threats, the so-called resilience.
   b) The measures to be taken to achieve and maintain the resilience at an appropriate level during the entire operating period.
   c) A description of the high level architecture of the entire IT/OT environment.
   d) A description of the physical security;
   e) The following topics using the ISO/IEC27001 or IEC62443 standard:
      - The Structure of Information Security function within the organisation, including the way in which this is checked.
      - Requirements for personnel such as screening, knowledge and skills.
      - Description of the management processes in relation to (cyber) security:
        - asset management,
        - risk management,
        - vulnerability management
        - incident detection, response and recovery,
        - business continuity management,
        - identity and access management in the physical and cyber domain,
        - backup and restore,
        - exercise structure with realistic scenarios.
      - Risks in the supply chain (supply chain risk management);
      - The way in which applicable legislation and regulations and sector guidelines in the field of (cyber) security are satisfied;
      - A description of experience and approach to receiving and sharing security information and knowledge.

4. Every five years, the permit holder will share an up-to-date version of the strategy referred to in subparagraph 2 with the Minister for Climate and Energy Policy.

Regulation 8 Removal

The permit holder will remove the wind farm within two years after operation has ceased and no later than within the term of the permit.

Regulation 9 Financial security

1. At the latest, as soon as the Netherlands Enterprise Agency (Rijksdienst voor Ondernemend Nederland, RVO) receives proof that Guarantees of Origin have been issued for the supplied electricity, the permit holder will provide the State with a bank guarantee in the amount of €120,000 per MW installed in respect of the costs for removal of the wind farm.
2. The permit holder will annually increase the amount referred to in the first paragraph by 2% as a consequence of indexation, during a period of 12 years after the issue of the bank guarantee.
3. After operating for a period of 12 years, operating for a period of 24 years, and one year before the date of removal, the Minister for Climate and Energy Policy will redetermine both the amount referred to in the first paragraph and its indexation.