**Summary of the Draft Memorandum on Scope and Level of Detail (Draft MSLD) – Doordewind I**

This draft Memorandum on Scope and Level of Detail (draft MSLD) is an essential document for initiating the environmental impact assessment (EIA) for the offshore wind farm (Site I) in the Doordewind wind energy zone. The wind farm planned for construction in the North Sea is a crucial part of the Dutch energy transition. This document outlines the background, objectives, location choices, environmental impact and legal frameworks required for the construction, operation and removal of the wind farm.

The draft MSLD forms an extended framework that provides direction for the EIA and site decisions about Doordewind I. The wind farm will contribute to the energy transition, with minimal impact on the ecology and economic interests in the area. A flexible approach will ensure future viability, while the legal and technical environmental frameworks safeguard sustainable utilisation of the North Sea.

## 1. Purpose, aim and frameworks

### 1.1 Purpose

The Netherlands has set ambitious targets for reducing $CO_2$ emissions. In accordance with the Climate Act of the Netherlands, the government aims to lower $CO_2$ emissions by 55% by 2030 in relation to 1990 levels. The government is committed to realising fully carbon neutral electricity production by 2050. Offshore wind energy plays a major role in achieving these goals for the following reasons:

- Wind farms can deliver sustainable energy on a large scale.
- Wind energy will make the Netherlands less dependent on imported energy.

The Offshore Wind Energy Road Map sets out the government's plans for new wind farms, including Doordewind I. The Doordewind site is essential for achieving the target of 21 GW of offshore power output by 2032.

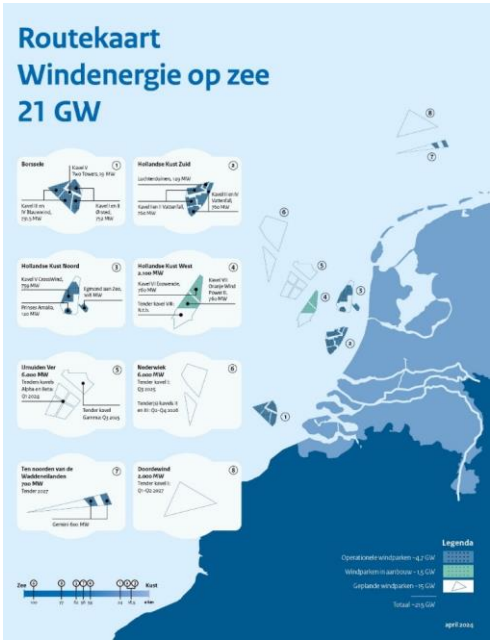

*Figure 1.0 Road map with additions.*

### 1.2 Aim of the Memorandum on Scope and Level of Detail

This draft version of the MSLD forms the basis for the EIA and defines the following.

- Proposed activities: construction, operation and removal of the wind farm.
- Scope: the parts of the project subject to environmental assessment, the areas and activities forming the main focus, and the alternatives or extremes that must be explored.
- Level of detail: the environmental aspects relevant to the impact assessment, the way in which the effects will be identified, along with the corresponding analysis.

The draft MSLD aims to document the effects in order to ensure environmental impact is fully incorporated into the decision-making.

### 1.3 Legal frameworks

The project falls under the following extensive range of laws and regulations.

- The Offshore Wind Energy Act: Regulates the allocation of sites and sets conditions for operation.
- North Sea Programme.
- Partially Revised North Sea Programme.
- Offshore Wind Energy Road Map.
- Environment and Planning Act: brings together regulations on environment, nature and planning changes.
- Marine Strategy Framework Directive (MSFD): Safeguards the ecological and chemical quality of the North Sea.
- Ecology and Cumulation Framework (KEC).
- Netherlands Nature Network.
- Espoo Convention: regulates consultations on transboundary environmental effects with neighbouring countries such as Germany.
- North Sea Agreement and North Sea Consultative Committee: weighs the interests of ecology, shipping, mining, fishing and the defence forces.

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## 2. Competent authority and procedural steps

### 2.1 Initiator and competent authority

The Minister of Climate Policy and Green Growth is the initiator and competent authority for site decisions. Decisions are taken in consultation with the Minister of Infrastructure and Water Management, the Minister for Housing and Spatial Planning, and the State Secretary for Agriculture, Fisheries, Food Security and Nature.

### 2.2 Procedural steps

The steps for the development of wind farms are outlined below.

1. **Designation of wind energy zones:** Designation of zones by the government in national policy documents, such as the National Water Programme.
2. **Preliminary site decision:** Investigation into spatial use within the zones.
3. **Route map development:** Priority setting and determination of the order of site development.
4. **EIA and site decisions:** Environmental impact assessments, followed by decision-making.
5. **Licensing:** Selection of a developer by tender or auction procedure.
6. **Construction and operation:** Conclusion of contracts, installation of turbines, delivery of electricity.
7. **Monitoring and oversight:** Rijkswaterstaat (Public Works and Water Management) is tasked with overseeing compliance.

Formal submission opportunities are included in steps 4 and 5. Public submissions will be incorporated into the EIA and site decisions.

## 3. Proposed activity

### 3.1 Project details

Doordewind I wind farm is designed to generate up to a maximum of 2.3 GW in energy, potentially divided between two sites, each good for 1.15 GW. Construction and operation include:

- wind turbines, comprising a mast, a nacelle, three rotor blades and any measuring equipment;
- a foundation for the wind turbine, and any transition piece;
- scour protection;
- cables connecting the individual wind turbines together and linking them up to the TenneT platform at Doordewind I (inter-array cables).

### 3.2 Bandwidth

In order to encourage market developments and innovations, a wide bandwidth in technical specifications will be allowed. This ensures flexibility for the ultimate license holder.

Such an approach to bandwidth makes specific demands of the EIA. Environmental effects pertaining to various possible configurations that make a site decision possible must be investigated in the EIA. Table 3.0 below gives further details of the bandwidth for the EIA. It must be noted that this pertains to the bandwidth for the EIA report only, which is not necessarily the same as the bandwidth that will ultimately be permitted in the site decision.

The bandwidth investigated for the EIA may, when necessary, be scaled back in the site decision based on the results of the EIA.
An investigation of all potential configurations will not, however, be possible, due to the multiplicity of combinations imaginable. Therefore, a worst-case scenario will be assumed: if the worst-case scenario impact is permissible for the given bandwidth, then all configurations within the bandwidth will be possible. The worst-case scenario will differ for each environmental aspect or user interest.

The bandwidth under investigation will be based on the current state of technology, expected developments in the years ahead, the outcome of the EIAs and useful information from previous site decisions. This bandwidth is laid out in Table 3.0, with an explanation of each item below, assuming a single site with a maximum power output of 2.3 GW. If two sites are involved, the number of wind turbines and the power output should be divided by two.

*Table 3.0 Applicable bandwidth for EIA reporting* **(based on a single site)**

| Subject | Bandwidth |
|---|---|
| Total power output for wind energy zone DDW I | 2.0-2.3 GW |
| Maximum number of turbines | A total power output of 2.3 GW per site and a minimum power output of 15 MW per turbine results in 153 turbines per site |
| Power output of individual wind turbines | Minimum 15 MW and maximum 25 MW[1] |
| Tip height of individual wind turbines | 15 MW turbines: 261 metres maximum<br>20 MW turbines: 304.8 metres maximum (1,000 feet)<br>25 MW turbines: 330 metres maximum[2] |
| Tip depth of individual wind turbines | 25 metres minimum |
| Rotor diameter of individual wind turbines | 15 MW turbines: 236 metres maximum<br>20 MW turbines: 280 metres maximum<br>25 MW turbines: 305 metres maximum[3] |
| Maximum total rotor surface area[4] | 7,081,150 m² |
| Minimum distance between wind turbines[5] | 4 times the rotor diameter |
| Number of blades per wind turbine | 3 |
| Type of foundation | Monopile, multipile, tripod, gravity based structure, suction bucket |
| Acceptable noise level for pile driving of foundations (impulse noise) | 160 up to a maximum of 164 dB re 1 $\mu Pa_2s$ SELss (at 750 metres from the source of the noise) |
| For pile driving/vibrations from monopile foundations, number of piles per turbine and diameters of the foundation pile or piles: | **Monopile** / **15 MW** / **20 MW** / **25 MW**<br>Diameter at the top (m) / 7.5 / 8.5 / 10.5<br>Diameter at the bottom / 10 / 11.5 / 13 |
| Electrical infrastructure (inter-array cables) | 66 kV, burial depth 1 metre minimum and maintained at depth |
| Lifespan and complete removal of all parts of the wind farm | Approx. 35 years. This permits a licensing period of up to 40 years (5 years for the construction and removal of the wind farm). |

**3.3 Nature-inclusive construction**

In addition to looking at bandwidth, the site decision will also focus attention on nature-inclusive construction techniques. Nature-inclusive construction consciously creates space for biodiversity within wind energy zones enabling a wider diversity of algae and animals to thrive there. One example of this is designing foundations of wind turbine piles or platforms such that they increase the potential habitat of local species. The EIA report will provide details about possible nature-inclusive construction techniques.

[1] The EIA will also look at 25 MW turbines.
[2] The EIA will also look at heights over 1,000 feet.
[3] The EIA will also look at turbines with a rotor diameter up to 305 metres.
[4] The maximum total rotor surface area is based on 115 20 MW turbines with a rotor diameter of 280 metres. 15 MW and 25 MW turbines also fit within this surface area.
[5] This refers to the distance between the wind turbine pile positions. The EIA will look at distances 1 to 4 times the rotor diameter.

## 4. Site location

### 4.1 Geographical location

The designated wind energy zone Doordewind is located in the Dutch exclusive economic zone (EEZ) and borders the German EEZ. The zone is located about 85 kilometres north of the island of Ameland, and about 95 kilometers from the mainland.


*Figure 4.0 Geographical location of DDWI (source: Netherlands Enterprise Agency)*

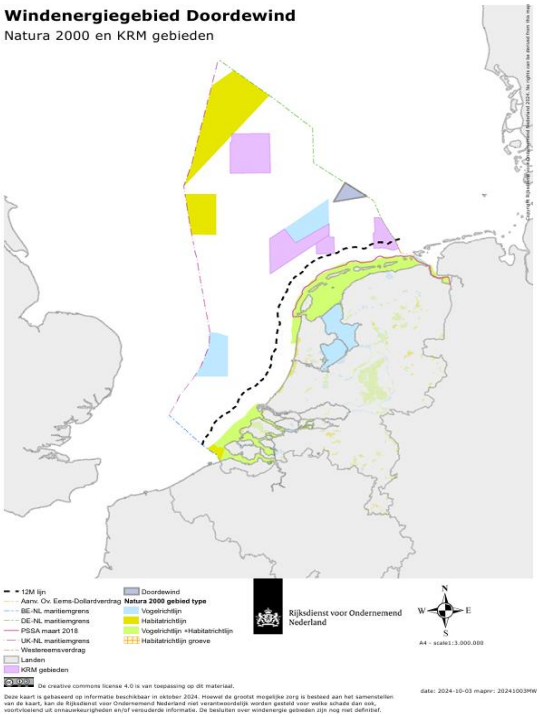
### 4.2 Description of the wind energy zone

*Conservation zones (or protected areas)*

The wind energy zone Doordewind lies outside any designated Natura 2000 areas or areas under the EU Marine Strategy Framework Directive (MSFD). The closest Natura 2000 and MSFD area within Dutch territorial waters is the Frisian Front; further south lies the MSFD area Borkumse Stenen. A number of designated Natura 2000 areas lie within the German EEZ, including Borkum Riffgrund.

*Table 4.1 Distance to Natura 2000 or MSFD protected areas*

| **Natura 2000 or MSFD area** | **Distance to DDW site I** |
|---|---|
| Bruine Bank (Natura 2000 area) | approx. 201 km |
| Klaverbank (Natura 2000 area) | approx. 131 km |
| Friese Front (Natura 2000 and MSFD area) | approx. 6 km |
| Dogger Bank (Natura 2000 area) | approx. 133 km |
| Dogger Bank South (future MSFD area) | approx. 130 km |
| North Sea Coastal Zone (Natura 2000 area) | approx. 75 km |
| Voordelta (Natura 2000 area) | approx. 260 km |
| Vlakte van de Raan (Natura 2000 area) | approx. 323 km |
| Central Oyster Grounds (MFSD area) | approx. 80 km |
| Borkumse Stenen (MFSD area) | approx. 27 km |
| Wadden Sea, incl. Eems Dollard (Natura 2000 area) | approx. 84 km |
| Borkum Riffgrund (German Natura 2000 area) | approx. 27 km |



*Fisheries*
The wind energy zone Doordewind contains important fishing grounds for, among others, trawlers (with and without outriggers) fishing for flat fish like sole.

*Helicopter infrastructure*
Helicopter main routes (HMR) and helicopter safety zones are present in the wind energy zone due to the presence of the above-mentioned drilling platforms.
An HMR is an air traffic route for frequent flights of civil helicopters, primarily to and from oil and gas platforms. The HMRs KY601, KY602 and KY607 are located in and around the wind energy zone Doordewind. The area within a radius of five nautical miles of a platform with a helideck is called a helicopter traffic zone (HTZ), which requires low flight paths to a maximum of 2,000 feet (about 610 metres). HTZs have been set up in order to inform/warn pilots and crew in the vicinity about helicopters taking off and landing on the helideck.

*Shipping*
The southern end of wind energy zone Doordewind borders on a shipping route that forms part of the traffic separation scheme. To the west of the Doordewind I site is an area that may come to be designated as wind energy zone 'Doordewind West'. This zone borders on an important shipping route to the Baltic Sea. The intention is to formalise this route by designating it as a 'clearway'.

*Mining activities*
Mining activities are being carried out in the wind energy zone Doordewind. These activities are concentrated in block G14. They concern gas production at fields G14A and B. There is only one active well in these fields. The current extraction licences for fields G14A and G17B expire in December 2035. Only one drilling platform with a helideck is still active in this zone (at G14A), run by Eni Energy Netherlands BV (formerly Neptune Energy).

*Cables and pipelines*
A number of abandoned telecom cables, plus one active telecom cable, are present in wind energy zone Doordewind. Further, there is one active gas and methanol pipeline and one abandoned gas pipeline.

At the site North of the Wadden Islands, a wind farm is being constructed that will produce both electrons and hydrogen. In order to supply wind energy zone North of the Wadden Islands with electricity, two cables of 100 MW will be laid between the Doordewind I site and the North of the Wadden Islands site. These cables will be hooked up to a customer connection on the TenneT platform of Doordewind I.

### 4.3 Site designation
A site is an area in the wind energy zone where a wind farm will be constructed. Usually there is space for more than one wind farm within a wind energy zone. Designing the layout of the area, also referred to as site designation, requires the application of various frameworks and directives.

For wind energy zone Doordewind, one or two wind farms have been proposed with a total power output of 2.3 GW maximum. Site designation has not yet been announced. The surface area of this zone has provisionally been set at 200 km².
Key considerations for site designation include the needs of shipping, mining and other infrastructure (such as safety zones and maintenance zones).

As far as alternatives are concerned, different aspects will be investigated with regard to:
- one site with a maximum of 2.3 GW power output as opposed to two sites with a maximum of 1.15 GW power output each;
- shipping routes and safe passage;
- current and future mining in and around the zone;
- accessibility for helicopters (obstacle-free zones around existing and future active drilling platforms within and bordering on Doordewind wind energy zone);
- other infrastructure (site alternatives given present and future cables/pipelines, as well as abandoned pipelines).

## 5. Method used for the Environmental Impact Assessment (EIA)

## 5.1 Introduction

Under Section 3(3) of the Offshore Wind Energy Act, the following issues must be taken into account when making site designation decisions:

- the importance of the sea for society, possible degradation of its social functions, and efficient use of space at sea;
- the consequences of site designation for third parties;
- environmental concerns, including ecological interests;
- the costs of constructing an offshore wind farm in the wind energy zone;
- the importance of efficient hookup of a wind farm to a connection point.

The EIA will detail the expected environmental effects of the construction, operation and removal of the wind farm as concerns the designated site (both positive and negative). Impact of both a temporary and a permanent nature will be reported. The EIA report will evaluate the various effects in comparison with the reference situation using the assessment framework drawn up for this purpose.

The EIA report and the final decision will also describe the cumulative effects of the proposal when taking into account licences already granted as well as projects not yet realised, both national and international. This means including the impact of other projects (including offshore wind farms) that, when added to the impact of the proposed activity, will lead to a greater overall impact. The effects will be defined in both qualitative and quantitative terms.

Finally, the EIA will separately address the transboundary effects. One might think here of the impact on ecology and other wind farms in the area (in the Netherlands and in Germany).[6]

Planning area and area for environmental study
For conducting an EIA, a distinction is made between the planning area (the area within which the proposed activity will take place) and the area for the environmental study (area that will be studied for potential environmental effects). Areas for the environmental study differ, depending on the particular effect being investigated, and may be larger than the planning area (e.g. when considering the effect on migrating birds). The geographical scope of each effect described will be substantiated to the greatest extent possible.

Reference situation
In the EIA the environmental effects of the alternatives will be compared with the reference situation. The reference situation is the situation that would exist in the future if the project were not realised but autonomous developments continued to take place. Therefore, the reference situation is the sum of the current situation plus the autonomous developments. Autonomous developments are understood to mean changes to the proposed zone without the existence of the project for which a decision has to be taken.

**Commented [TC-VU1]:** Klopt onze interpretatie van deze zin?

Alternatives
The EIA will describe reasonable alternatives for the project, including their specific characteristics. By assuming a "worst case scenario", the EIA will describe the maximum extent of the environmental impacts resulting from the pending decision. In the case of this project, the EIA will consider alternatives for the site designation as well as alternatives for the bandwidth.
Regarding site designation, the alternatives concern differences in impact due to choices made when designating a site and choosing a geographical location with regard to shipping, mining and other infrastructure, including helicopter accessibility. In addition, the differences in impact will be assessed based on the different choices that could be made regarding the number of turbines, dimensions of turbines and foundation construction techniques (including different pile driving techniques). The impact of overplanting will also be investigated.

[6] On 25 February 1991, a UN convention on transboundary environmental impact assessment was concluded in Espoo, Finland. The convention entered into force on 10 September 1997. The core issue of the Espoo convention is that, in a case of possible cross-border environmental impact, the public and authorities in the neighbouring country should be involved in the EIA at the same time and in the same way as the authorities and public in the home country. This imperative has been implemented in the Environment and Planning Act system of the Netherlands.

**5.3 Assessment framework**

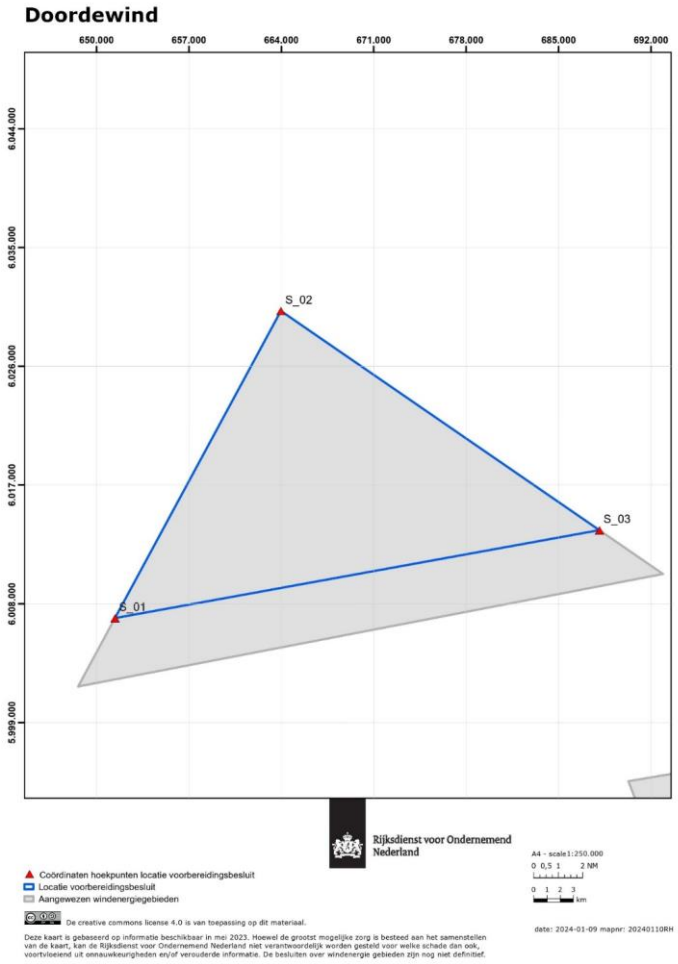
Environmental impact on the following subjects require investigation in the EIA.
Subjects A, B, D and E must be explicitly tested against the operative legal frameworks.

A. Birds and bats
B. Marine mammals
C. Morphology and hydrology
D. Benthos and fish
E. Other ecological aspects
F. Shipping safety
G. Fisheries
H. Mining/drilling
I. Aviation
J. Marine, coastal and air radar systems and other measuring instruments
K. Telecommunications
L. Cables and pipelines
M. Military activities and explosive remnants of war
N. Leisure and tourism
O. Cultural history and archaeology
P. Existing wind farms
Q. Air quality and climate change
R. Chemical water quality

**5.4 Mitigating measures**
The EIA will give details about mitigating measures and their effects. The EIA will also suggest possible measures and opportunities for making nature more resilient, insofar as such measures can be built into the wind farm and can be legislated in a site decision. Measures for making nature more resilient will be described both qualitatively and quantitatively in the EIA and are separate from the assessment framework.

**5.5 Gaps in knowledge, monitoring and evaluation**
The basic assumption is that the EIA will utilise the most up-to-date information and best knowledge available. The EIA will indicate when certain important information is not available, or when only information with a high degree of uncertainty is available, and what kind of consequences this might have on determining and assessing impact. Wherever possible, the report will indicate what kind of additional studies could fill these gaps in our knowledge. For generic gaps in knowledge, the government has set up the Offshore Wind Ecological Programme (WOZEP). The EIA will indicate which environmental aspects should be monitored and evaluated during and after realisation of the proposed project in order to properly discern what the actual environmental effects are and how we can fill gaps in our knowledge.

Annex IV General map of wind energy zone Doordewind I with coordinates




| Coordinates according to EPSG 25831 | | |
|---|---|---|
| Point No. | Easting | Northing |
| S_01 | 651,377.7 | 6,006,914.6 |
| S_02 | 663,961.9 | 6,030,204.0 |
| S_03 | 688,080.9 | 6,013,582.7 |