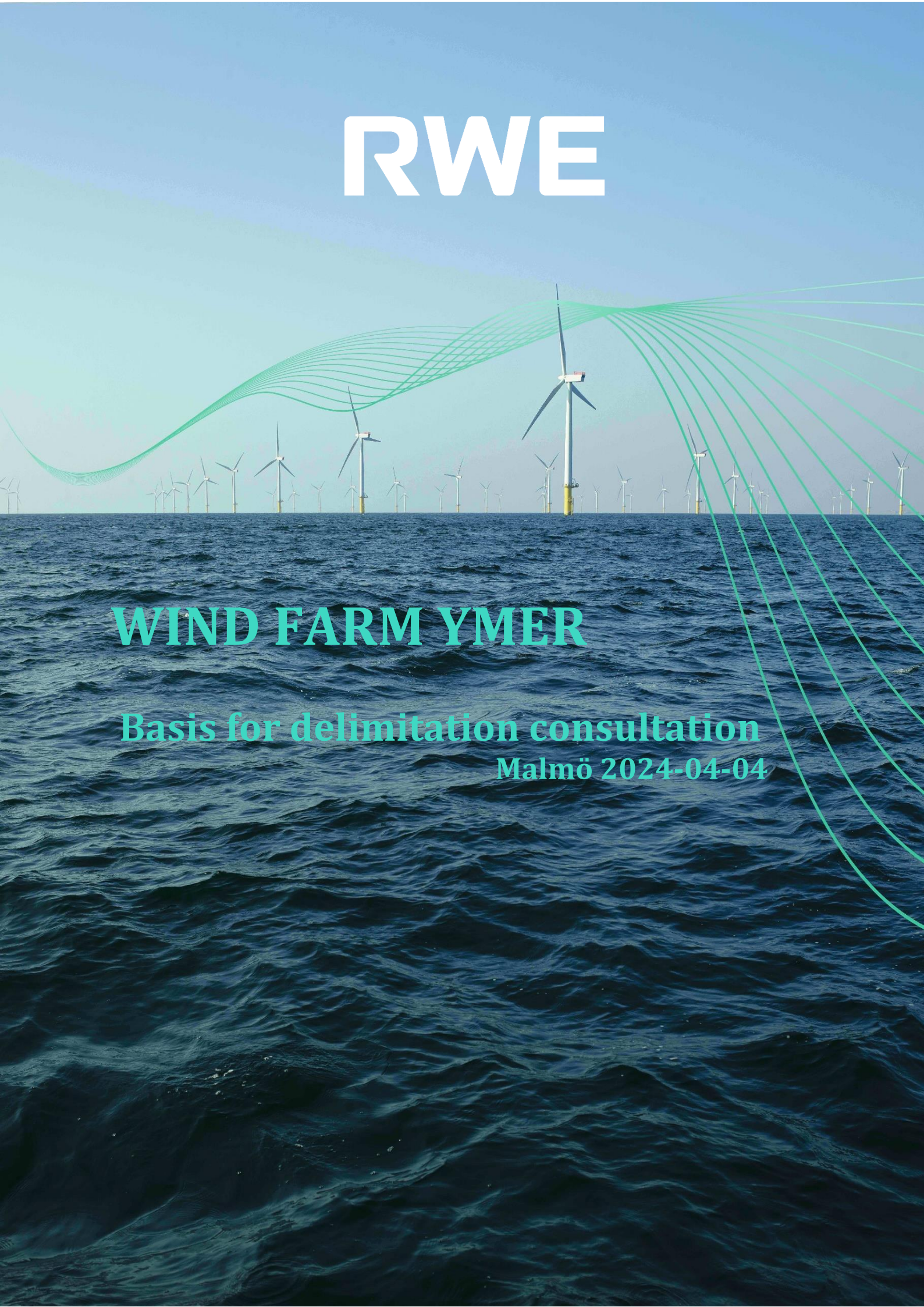

WIND FARM YMER

Basis for delimitation consultation

Malmö 2024-04-04

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List of amendments

Ver	Date	Change description	Reviewed	Approved by
1	2024-04-04	Final	Inger Poveda Björklund	Lina Sultan

1 Administrative tasks

Operator Corporate	RWE Renewables Sweden AB 556938–6864
Address	Box 388 SE-201 23 Malmö
Project manager, contact person	Danial Farvardini danial.farvardini@rwe.com
Consent manager	Maria Andersson Maria.andersson@rwe.com
Legal advisor	Setterwalls Law Firm Tove Andersson
Opinions should be sent to:	sm-se-ymer@sweco.se or Sweco Sverige AB "Ymer" Hospitalsgatan 22 SE-611 32 Nyköping
Information on the processing of personal data	se.rwe.com/personlig-integritet-mark/

2 Background

2.1 About RWE

RWE Renewables Sweden AB (hereinafter referred to as RWE or the Company) intends to establish the Ymer wind farm in the Southern Baltic Sea.

RWE is the world's second largest operator of offshore wind farms. In the Nordic region, the RWE Group operates approximately 300 MW of wind power, with onshore and offshore wind farms in Sweden and Denmark. The Nordic development portfolio has a potential of over 10 GW. RWE owns and operates Kårehamn, one of Sweden's two offshore wind farms in operation.

RWE is expanding renewable electricity production to electrify society, contribute to the climate transition and strengthen the competitiveness of Swedish industry. Electricity consumption in Sweden will double by 2040, largely due to the electrification of the industrial and transport sectors, which currently account for two-thirds of Sweden's total emissions. Wind power can be built quickly and thus meet the increased demand for electricity as industry and transport are electrified. It also helps to keep the price

of electricity down. Every TWh of new electricity production from wind power in Sweden can reduce greenhouse gas emissions by around 600,000 tons. The RWE Group's goal is to reach net zero emissions by 2040. (Svensk vindenergi, 2023)

2.2 About Ymer Wind Farm

The Ymer wind farm is planned to be built about 47 km southeast of the coast of Blekinge. The area of the wind farm is located outside Swedish territorial waters and within the Swedish exclusive economic zone. The wind farm is planned for up to 270 turbines, with a total capacity of up to about 4 GW and an annual production of 15-20 TWh of electricity. The electricity produced is transmitted via high-voltage transmission lines to an onshore connection point, which is designated by the grid operator and determined at a later stage. More detailed information on the Ymer wind farm can be found in the description of operations in chapter 4.

3 Consultation and permitting processes

This document forms the basis for delimitation consultations prior to future applications for permits under the Swedish Economic Zone Act (1992:1140) and the Continental Shelf Act (1966:314) for the construction, operation and decommissioning of the Ymer offshore wind farm, including the associated inter array cables, as well as for carrying out the surveys required to investigate the planned wind farm area.

The wind farm is located about 10 km west of the Natura 2000 area *Hoburgs bank and Midsjöbankarna*. A special Natura 2000 review in accordance with Chapter 7, § 28a of the Environmental Code is not considered to be required for the wind farm, the inter array cables, or the surveys. If future investigations show that a Natura 2000 permit is nevertheless needed, the consultation will be carried out so that it can form the basis for such a review.

3.1 Consultation procedure

The planned activity is assumed to have a significant environmental impact, which is why a scoping consultation, in accordance with Chapter 6, §§ 29–33 of the Environmental Code, shall be carried out for the specific environmental assessment process. Any prior investigation consultation, to decide whether the activity entails significant environmental impact or not, in accordance with Chapter 6, § 24 of the Environmental Code, has therefore not been implemented.

The consultation document has been prepared in accordance with §§ 8-9 of the Environmental Assessment Ordinance and contains information on the location, scope, and design of the planned wind farm, identified interests and values in the area, the anticipated environmental impact and proposals for the content and design of the EIA (Environmental Impact Assessment).

Consultations are advertised in local newspapers. A list of the proposed stakeholders can be found in section 13.3. Consultation with the County Administrative Board of Blekinge is planned to be carried out through a meeting during May-June 2024. Consultation with other authorities, municipalities, organizations, individuals affected, such as owners of infrastructure within the wind farm and nearby planned wind power projects, as well as with the public is planned to take place in writing during April – July 2024.

Comments on the design of the EIA and information about other circumstances should be sent to the e-mail address sm-se-ymer@sweco.se or to Sweco Sverige AB, "Ymer", Hospitalsgatan 22, SE-611 32 Nyköping, Sweden.

Comments, facts, and questions received during the consultation are an important basis for RWE's work on the project and, together with results from in-depth studies and inventories, will form the basis for the project's continued design and delimitation.

The consultation will be described in a consultation report that describes how the consultation was carried out, what comments were received and a general description of how the comments are considered in the design of the project or what is addressed in the EIA.

The wind farm is located in the southern Baltic Sea and borders the Danish economic zone. The distance to the Polish EEZ is about 21 km. Transboundary impacts cannot therefore be excluded.

The company considers that a notification under the Convention on Environmental Impact Assessment in a Transboundary Context, the Espoo Convention, is appropriate. A so-called Espoo consultation is administered separately by the Swedish Environmental Protection Agency.

3.2 Legal context and scope of consultation

The consultation covers the construction, operation and decommissioning of the planned wind farm, including the so-called inter array cables, as well as the carrying out of seabed surveys, through environmental surveys and geophysical and geotechnical survey methods.

The wind farm is in its entirety outside Swedish territorial waters and within the Swedish exclusive economic zone. Permits for the construction and operation of a wind farm and associated facilities are therefore reviewed in accordance with the Swedish Exclusive Economic Zone Act (1992:1140). Permits are granted by the government.

The laying of the submarine cables connecting the wind turbines as well as offshore substations and converter stations within the wind farm (so-called inter array cables) requires a permit in accordance with the Continental Shelf Act (1966:314) (KSL). Permits are granted by the government.

Exploring of the continental shelf requires a permit in accordance with KSL, which generally is issued by the Geological Survey of Sweden. An application for a permit to explore the continental shelf, in

accordance with § 3 of the KSL, was submitted in August 2022 and was preceded by a separate consultation procedure. The application is currently being reviewed by the government. Further surveys than those covered by this application will be required during the detailed design phase.

A special Natura 2000 review in accordance with Chapter 7, § 28a of the Environmental Code is not considered to be required for the wind farm, the inter array cables or the surveys, see further chapter 8. If future investigations show that a Natura 2000 permit is nevertheless needed, the current consultation is carried out in such a way that it can form the basis for such a review. As far as seabed surveys are concerned, the studies described above, which have already been requested, are also part of this consultation. The purpose of this delimitation is to ensure that a possible Natura 2000 review is complete and comprehensive. Permits are granted by the county administrative board whose county the area in question most closely borders.

The laying and operation of export cables, which transmit electricity from the wind farm to land, requires a permit under KSL and a concession under the Electricity Act, as well as a permit for water operations under Chapter 11, Environmental Code. However, the location of the connection cables will not be determined until a later stage of the project. These reviews will therefore take place in separate processes and are not covered by the current consultation. However, the installations and measures and activities linked to the export cables are described in general terms in this consultation document.

3.3 Review

For current permit applications, an environmental impact assessment (EIA) must be prepared in accordance with the provisions of the Environmental Code. A specific environmental assessment must be carried out with the aim of obtaining the right knowledge about the project, limiting the investigation work and the impact assessment to include what is essential, and investigating various alternative locations and designs of the planned activities. The specific environmental assessment also aims to obtain information about the conditions for the planned activity and the effects of the same. As part of the specific environmental assessment, scoping consultations are carried out, see section 3.1.

Once the application with the EIA and technical description has been submitted to the government and any other review authorities, a supplementary and consultation procedure will be initiated, during which it will also be possible to submit statements and views on planned activities.

4 Description of operations

4.1 Localisation

The planned Ymer wind farm is in the southern Baltic Sea about 47 km southeast of the coast of Blekinge, about 55 km northeast of Denmark (Bornholm) and about 100 km north of Poland (Figure 1). The wind farm is located outside Swedish territorial waters and within the Swedish exclusive economic zone. The wind farm covers an area of approximately 710 km^2.

The average wind speed in the area is about 9.8 m/s at an altitude of 170 m. The water depth is estimated to vary between 50 and 85 m with an average depth of about 73 m.

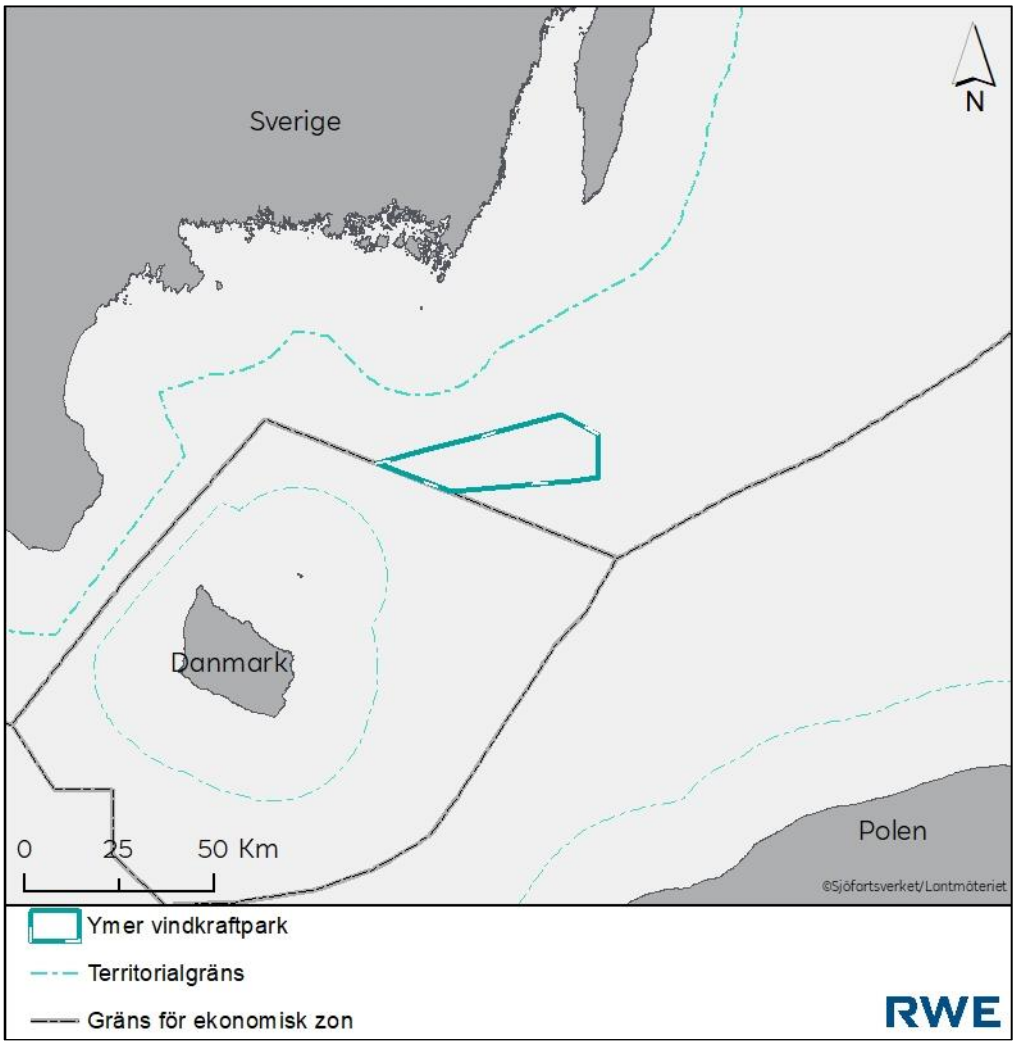

Figure 1. Location of the planned Ymer wind farm. Territorialgräns = Territorial border. Gräns för ekonomisk zon = Swedish exclusive economic zone.

4.2 Design and scope of the wind farm

The Ymer wind farm will consist of up to 270 wind turbines and have a maximum installed capacity of up to 4 GW. In addition to the wind turbines, the wind farm also includes the inter array cables that connects the wind turbines to offshore substations or converter stations anchored to platforms. Export cables also depart from these stations for the transmission of electricity from the wind farm to shore, see section 4.8.

Due to the rapid technological development in offshore wind power, the final choice of turbines has not yet been decided.

The final location of individual wind turbines within the wind farm area will be determined in connection with the detailed design of the wind farm. The location of individual wind turbines is affected by parameters such as their size, wind conditions, prevailing seabed conditions, water depth, geology, environmental values, and optimization of the internal cable network's route. Figure 2 shows an example of how the wind farm could be designed.

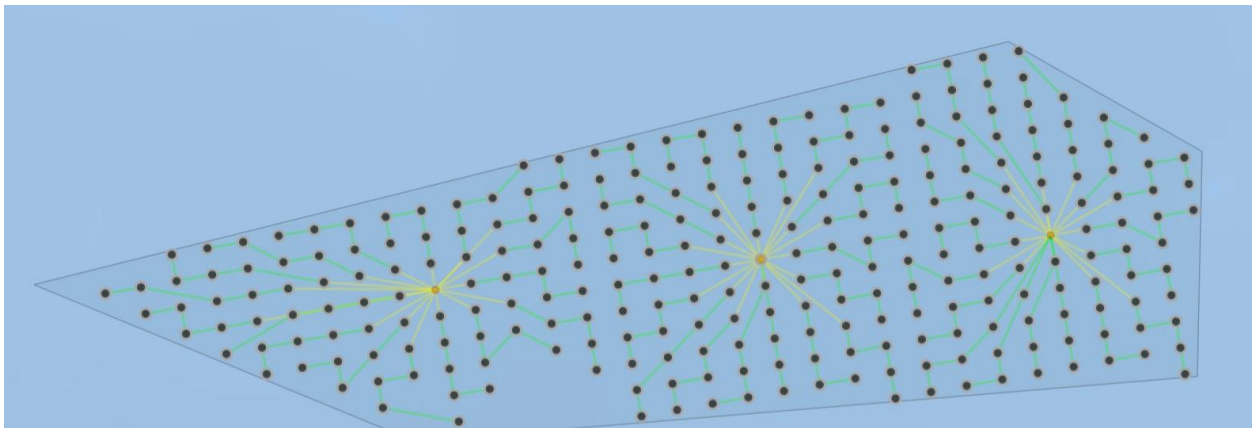

Figure 2. Example layout for the planned wind farm with 270 wind turbines, three substations and inter array cables.

Table 1. Summary technical parameters of the Ymer wind farm.

Parameters	
Installed power	*Up to approx. 4 GW*
Area	*about 710 km2*
Number of wind turbines, max	*270*
Height of wind turbines (including rotor blades), max	*360 m*
Number of platforms for offshore substations or converter stations	*Up to 8*

4.3 Wind turbine

A wind turbine consists of three main components: a tower, a nacelle and a hub with rotor blades (Figure 3). The rotor blades capture the kinetic energy from the wind and transfer it to the generator, which produces electricity. The generator is mounted in the turbine's nacelle and the tower is supported by the foundation. On top of the tower, the nacelle and hub are mounted. The hub connects the blades that

together form the rotor of the turbine. The wind turbine will be installed on a foundation that is anchored to the seabed. Section 4.5 describes different types of foundations.

For Ymer wind farm, the maximum height (total height) of each wind turbine will be a maximum of 360 m above sea level, calculated from sea level to the highest point on the rotor tip when the blade points upwards. The height between the lowest point of the rotor tip, when the blade points downwards, and the water surface, will be approximately 20-30 m.

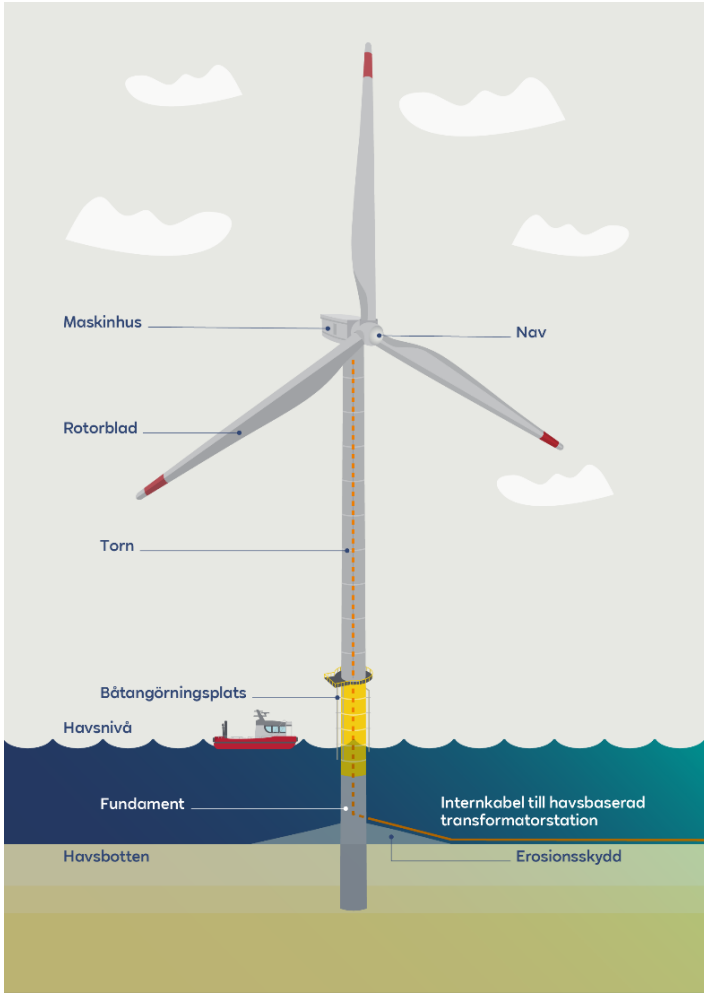

Figure 3. The different parts of a wind turbine.

The wind turbines will be equipped with markings and lights for identification and visibility from ships and aircraft. These will comply, at the time of installation, with the valid regulations established by international, national, and local authorities.

4.4 Offshore substations- and converter stations

The electricity is generated as alternating current in the wind turbines. Prior to the transfer from the wind farm to the grid, the current is converted to a higher voltage level, so that the number of export

cables and energy losses can be minimized. The connection between the wind farm and the grid (usually on the mainland) can be with either high-voltage alternating current (HVAC) or high-voltage direct current (HVDC). In HVAC, the increase of the voltage takes place in offshore substations. In HVDC, the increase of voltage and a redirection from alternating current to direct current takes place instead in offshore converter stations.

The offshore substations or converter stations typically consist of two main components: foundations and a top structure. The foundations of the stations are usually anchored using similar techniques as the wind turbines with floating or fixed-bottom foundations, such as a jacket foundation (Figure 4). The top structure houses the electrical power system and auxiliary systems, such as switchgear equipment, transformers, and reserve power units, but also a platform for boarding and disembarking from vessels and sometimes a helideck.

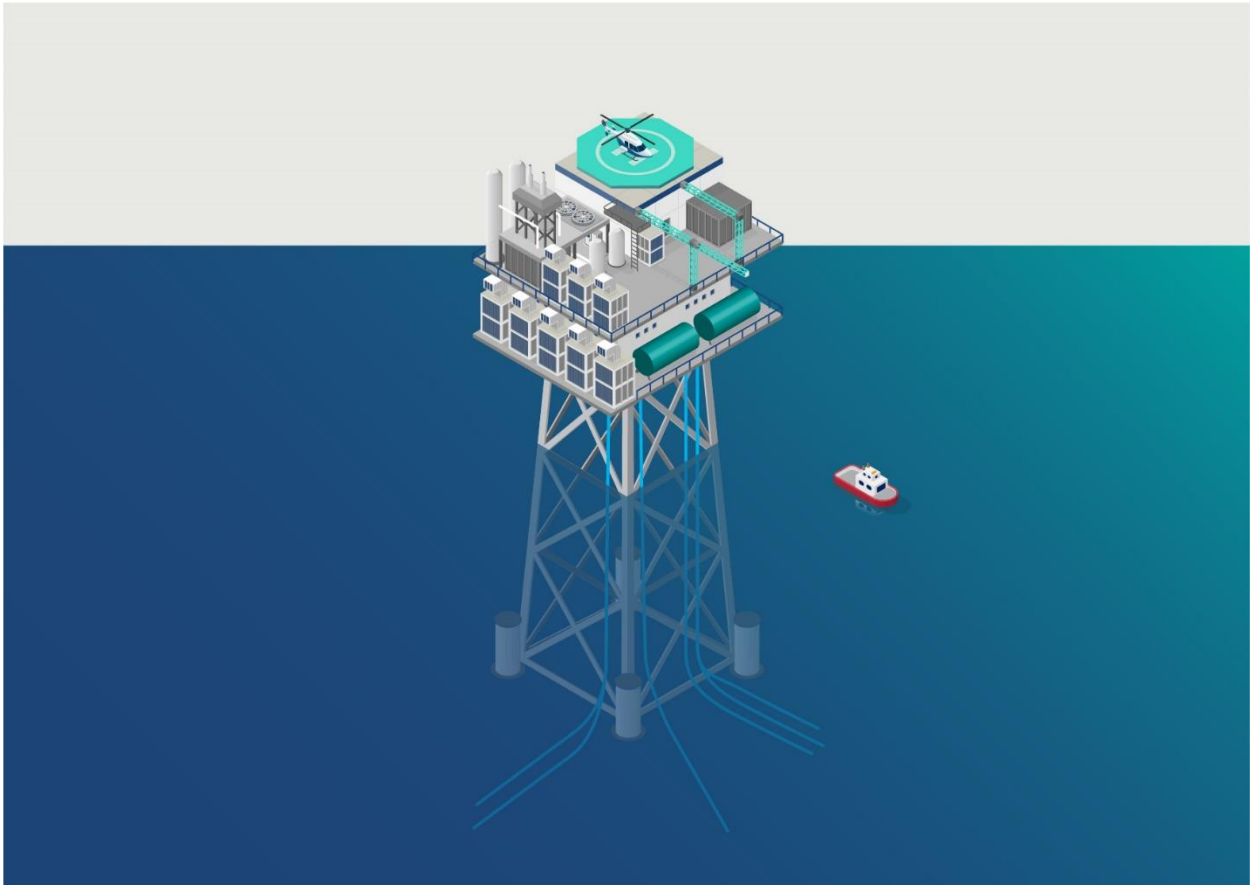

Figure 4. Example of an offshore substation with a jacket foundation.

4.5 Foundation

The wind turbines are anchored to the bottom of the sea via foundations to obtain stability. There are both fixed-bottom foundations and floating foundations (Figure 5). The different types of fixed-bottom and floating foundations are described in general terms in this section.

The main factors influencing the choice of foundations are water depth, seabed properties, and meteorological and oceanographic loads such as wind, currents, and waves. The existing sea depths within the wind farm allow anchoring of the wind turbines with both fixed-bottom and floating foundations, which is why both will be considered.

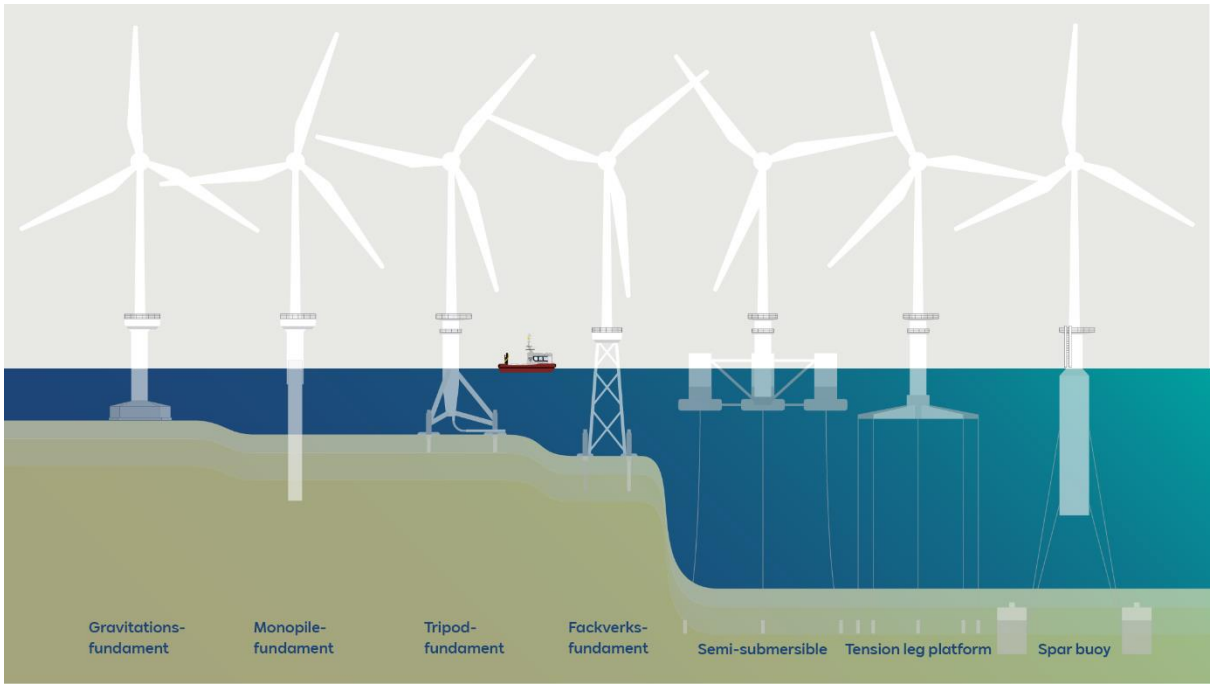

Figure 5. Different types of fixed-bottom and floating foundations.

4.5.1 Fixed-bottom foundations

Four types of fixed-bottom foundations are considered: gravity based, monopiles, tripods, and jackets. The foundations are attached to the seabed using piling, concrete basement, or suction buckets.

All types of fixed-bottom foundations usually need scour protection. The protection consists of a layer of rocks, gravel or similar material that stabilizes the seabed and prevents erosion caused by the movement of water, such as waves and currents, around the foundation. Scour protection can be adapted to benefit the habitat of deep-sea species and organisms, for example through other substrates and structures.

4.5.2 Floating foundations

The technology of floating foundations makes it possible to install wind turbines at much greater depths than is possible with fixed-bottom foundations. Suitable water depths for floating foundations range from about 60-800 m.

A floating foundation consists of a substructure that provides buoyancy and stability for the wind turbine, as well as a mooring system that attaches the structure to the seabed. Currently, there are five

main types of floating foundations: semi-submersible, barge, tension leg platform, suspended counter-weight, and spar buoy, but more types are under development.

The type of floating foundation that can be used is mainly influenced by local restrictions at the installation port, water depth and the wind, wave, and climate conditions of the area.

4.6 Inter array cables

The inter array cables conducts the power from the wind turbines to the offshore substations or converter stations and is then transmitted to shore via export cables. To protect the subsea cables from damage at the seabed, they can either be buried in trenches or covered with suitable protective layers, such as rocks or cable mattresses.

Cables used for fixed-bottom foundations are static and attached to the foundation itself, while for floating foundations, dynamic cables are needed that are designed to withstand the load of the movement of the floating structure.

4.7 Planned activities

4.7.1 Surveys

Surveys to better understand the conditions of the wind farm will be carried out in the form of seabed surveys and meteorological and oceanographic measurements.

The design of the wind farm requires detailed knowledge of the seabed as well as the wind and wave conditions at the site. Data needs to be collected within the proposed wind farm area for various technical and environmental purposes, including:

- Understanding of the environmental conditions at the planned wind farm.
- Selection of appropriate foundation type for the wind farm.
- Selection of the final location of inter array cables.
- Selection of the most suitable methods for the installation of structures and cable laying.
- Completion of the wind farm layout.

Planned studies are briefly described below. The methods that will be used may deviate slightly from the description, for example due to technological advances in the implementation of the surveys.

4.7.1.1 Environmental surveys

Environmental surveys may be carried out to obtain detailed information prior to detailed design and construction. Examples of techniques that can be used include videography and still image shooting, as well as sediment sampling.

Video filming with a camera attached to the ship (drop down video) is used to visually inspect and document the seabed. A Remotely Operated Vehicle (ROV) is an underwater robot that is remotely controlled from a ship and is equipped with cameras and sometimes sample collection tools.

Sediment sampling can be carried out using bottom/grab samplers, which collects sediment from the seabed. The samples are analyzed to determine the composition of the sediment, including any contaminants.

4.7.1.2 Geophysical surveys

Geophysical surveys are carried out to investigate the seabed's properties, water depth and identify risk areas on the seabed. Geophysical data is collected from a ship moving along parallel transects across the wind farm area. Below are examples of different geophysical survey methods that may be used within the framework of the project at a later stage:

- Ultra-high resolution seismic (UHRS, including sparker).
- Examination with sound pulses (Sub-bottom profiler, SBP).
- Side Scan Sonar (SSS) and Multibeam Echosounder (MBES).

4.7.1.3 Geotechnical investigations

Geotechnical surveys are carried out to investigate the firmness and bearing capacity of the seabed and include the following methods:

- Test drilling.
- Vibrocore sampling (sampling of marine sediments).
- Cone penetration test (CPT).

Sites selected for geotechnical investigations at a later stage are scanned with a magnetometer before these activities begin, to avoid collision with unexploded ordinances (UXO).

4.7.1.4 Meteorological and oceanographic measurements

Detailed site-specific knowledge of meteorological and oceanographic features, such as wind, currents, and waves, is needed to optimize the design of the wind farm. This information is obtained through measurements within the wind farm, normally over a couple of years, with floating LIDAR (light detection and ranging) technology and/or measurement masts with a maximum height of 120 m above sea level.

4.7.2 Installation phase

The installation of the Ymer wind farm may take place in stages. If the entire park is built at once, a preliminary estimate of the time is four years. Foundations, wind turbines, offshore substations or

converter stations with associated platforms and inter array cables will be installed and laid within the wind farm.

The installation process differs depending on the type of foundation and does not always follow the same order. For an offshore wind farm, which uses fixed-bottom foundations, the installation sequence usually starts with the onshore substation and the export cable between the shore and the wind farm. This is followed by the installation of foundations, platforms with associated offshore substations or converter stations, inter array cables, and finally the wind turbine towers and turbines.

The main differences in the installation process between fixed-bottom and floating foundations are that the latter includes the installation of anchors and mooring lines, towing wind turbines to the site, connecting to mooring systems, and finally connecting to dynamic cable.

4.7.2.1 Foundation

Generally, no preparatory work on the seabed is required for monopile and jacket foundations, other than removing any boulders on the seabed. To anchor these types of foundations to the seabed, piling is used, where piles are hammered into the bottom. Where the foundations penetrate bedrock or sediment of a harder nature, drilling may be needed to anchor the piles. For gravity-based foundations, which are normally stabilized with the help of weights of, for example, concrete, the seabed may need to be prepared with dredging to level the bottom surface. After the fixed-bottom foundation has been installed, the scour protection is installed.

In the case of floating foundations, wind turbines are generally mounted and installed onto the foundations on the quayside or in calm waters, before being towed out to the wind farm area. Once in place, the wind turbine and the floating foundation are attached to the already installed mooring lines and cables.

4.7.2.2 Inter array cable installation

The installation phase of the inter array cables includes seabed preparation, cable laying, burial, pull-in and finally testing and commissioning. Preparation of the seabed, in the form of clearing boulders and other obstacles, is often necessary to create good conditions for the cable installation. The cables are usually laid about 1–3 m below the seabed to protect them from external damage. The cables can also be anchored and stabilized on the seabed using stones, concrete mattresses, or similar materials. Finally, the cables between the wind turbines are routed to the offshore substations or converter stations, connected and put into operation.

4.7.2.3 Wind turbine

The first part of the wind turbine to be installed on the foundation is the tower. The tower can usually be assembled on land and transported to the wind farm. Alternatively, different sections of the tower can be transported to the wind farm to be assembled on site. A tower is mounted on a foundation by being lifted with a jack-up vessel and carefully placed on the flange of the foundation and then secured with bolts.

Once the tower is mounted on the foundation, the nacelle is lifted with cranes to be assembled. Here, too, careful maneuvering is required for the flanges of the nacelle and tower to be assembled and then secured with bolts.

The final part of the wind turbine to be installed is the rotor blades. These are lifted by cranes and installed in three separate stages.

4.7.2.4 Platforms for offshore substations or converter stations

After installing the foundation, a platform designed for the placement of the high-voltage electrical substation is installed. The top structure of the substations or converter stations is then lifted up to the platform by crane and then mounted.

4.7.3 Logistics in the construction phase

In the construction phase, several vessels are required to transport equipment, personnel and supplies between the wind farm and the installation ports used. Transports are coordinated to optimize operations and increase safety. The extent of transport in the construction phase will be investigated at a later stage of the project.

4.7.4 Operations

During the operational phase, the wind farm is regularly monitored and maintained. During normal operation, the wind turbines and substations or converter stations are unmanned and remotely controlled by trained personnel. Regular site visits are required for both inspection and maintenance. Transportation of personnel to and from the wind farm is done by ship and possibly by helicopter.

Monitoring and maintenance of the wind farm will be necessary throughout its lifetime and will be based on facilities at a port. The final structure, execution of operation and maintenance will be determined at a later stage.

4.7.5 Decommissioning phase

The expected lifespan of the planned wind farm is between 30-45 years. After that, it will be decommissioned. In general, the decommissioning is carried out in the reverse order compared to the installation and involves similar effects as in the installation phase. The decommissioning phase and its effects can currently be described based on current practices, techniques, and methods, but these may have changed by the time the decommissioning is to be carried out, as it will take place far into the future.

4.8 Accompanying activities

The establishment of the wind farm will entail other necessary activities. These are described briefly below.

4.8.1 Export cable and onshore substation

The electricity generated is transmitted from the wind farm's offshore substations or converter stations via export cables to an onshore high-voltage substation, where it is converted to grid voltage and connected to the grid. Subsea cables are used to transport the electricity from the wind farm to shore, where they are transferred to onshore cables (underground cable or overhead line) for onward

transmission to the onshore substation. The export cable is planned to be anchored to the seabed using the same methods used for the internal cable network, see section 4.7.2.2.

The choice of cable and associated power transmission technology, either high-voltage direct current (HVDC) or high-voltage alternating current (HVAC), will be determined at a later stage of the project. In the case of high-voltage direct current, the outgoing alternating current from the wind turbines is converted into direct current, and the voltage is increased, at one or more converter stations. Otherwise, if high-voltage alternating current is used as a power transfer method, the voltage of the current from the wind turbines will be increased via one or more offshore substations within the wind farm before being passed on to shore via export cable.

4.8.2 Management of dredged material

The extent of any dredged material and how it will be managed will be determined at a later stage of the project and handled in accordance with current regulations.

4.9 Preliminary timetable

The schedule for the construction of an offshore wind farm includes several project phases that begin with the permit process.

A complete detailed design can normally only be carried out after all the necessary permits have been issued. The permit processes will continue for several years.

The construction phase can usually begin a year or so after all permits have been obtained and the detailed design has been completed. However, considering delivery times and availability of contractors, it may take longer before the work and detailed design can start. Preliminarily, the construction work is expected to last for four years. In summary, it can take about ten years to plan and construct a wind farm. The Ymer wind farm is expected to be in operation for about 40 years and will then be decommissioned. The decommissioning phase is preliminarily expected to last for a couple of years.

5 Alternative

5.1 Main alternative

The main alternative involves the location and design of the wind farm in accordance with the description in Chapter 4. The fully developed wind farm can have a total installed capacity of up to about 4 GW. The construction work can be carried out in stages and is tentatively expected to last four years.

Impacts, effects and consequences during construction, operation and decommissioning will be assessed in the EIA. A description of the possible effects is presented for each environmental aspect in Chapter 7.

5.2 Alternative localisation

RWE has carried out a study of possible locations for the planned Ymer wind farm. The starting point has been the Environmental Code's rules on the choice of location for an activity or measure in accordance with Chapter 2 § 6 of the Environmental Code.

RWE is investigating possible locations for the construction of several offshore wind farms, including in the southern Baltic Sea. Alternative locations for the establishment of offshore wind farms in the southern Baltic Sea have been evaluated based on technical conditions, impact on protected areas and natural values, as well as impact on other interests. Parameters that have been considered include the size of the project areas, sea depth, wind speed, electricity connection and coexistence with nature conservation interests and other interests, such as shipping, defense interests and the fishing industry.

Based on available information about the area in question and technical conditions, RWE has identified the proposed location as suitable for the establishment of an offshore wind farm with associated cables. The location means that the Ymer wind farm can supply electricity to the SE4 electricity area. The area of the wind farm is far from land and has no overlapping national interests. The area has favorable wind conditions and sea depth to establish a wind farm.

The chosen alternative and the reasons for the proposed location are described in the upcoming EIA. In the EIA, alternative locations and any excluded locations will also be described.

5.3 Alternative design

RWE investigates the conditions of the area and various technical solutions to work out the best design of the wind farm. Alternative design will be described in the upcoming EIA.

5.4 Zero alternative

The zero alternative means that the wind farm will not be built. There will therefore be no environmental or other impact because of the project (positive or negative). Furthermore, the zero alternative means that the company's contribution to renewable electricity production to be able to electrify society, contribute to the climate transition and strengthen the competitiveness of Swedish industry will not happen. The zero alternative will be described and form the basis for the assessments in the upcoming EIA.

6 Planning conditions

6.1 Marine spatial plan

The wind farm is located in the southern Baltic Sea in Sweden's exclusive economic zone (Figure 6). According to the current marine spatial plan from 2022 for the Baltic Sea, the area for the planned

activities is in an area (Ö249) with general use, but where special consideration must be given to high natural values in management, planning and permit reviews. (Havs- och Vattenmyndigheten, 2022)

The area (Ö249) is of particular importance for shipping. The prerequisites for maritime operations shall be maintained and traffic safety with sufficient maneuvering facilities shall be considered. Furthermore, the area is used for commercial fishing, which is why the conditions for continuing commercial fishing must be maintained. The use corresponds to claims of national interest for commercial fishing. The area is also partly used for electricity transmission, where the conditions for infrastructure for distributing and transmitting electricity will be maintained.

The wind farm area (Figure 6) is partly used for electricity transmission, but the other interests are located outside the wind farm. According to the maritime spatial plan, the Southern Baltic Sea has good conditions for energy production. The area is described as having both good wind conditions and suitable depths for offshore wind turbines.

Work is on-going to revise the marine spatial plans to meet the need for increased electricity production. According to the proposal for an amended maritime spatial plan for the Baltic Sea, the Ymer wind farm is located within an investigation area for electricity production (Ö269), but where special consideration must be given to high natural values and the interests of total defence. (Havs- och vattenmyndigheten, 2023)

Ymer also borders the Danish marine spatial plan. The nearest marine spatial plan area in the Danish marine spatial plan is an area designated for public use, without special restrictions.

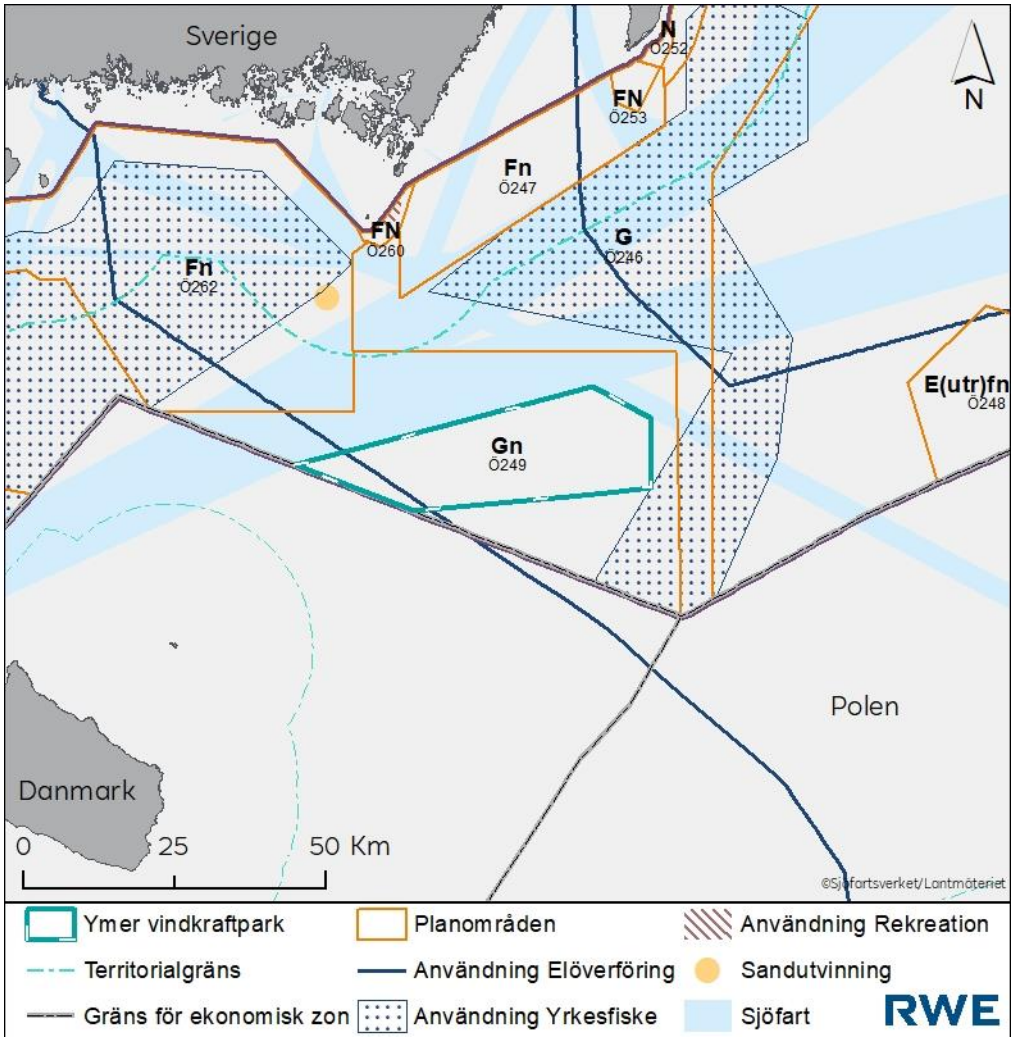

Figure 6. Marine spatial plan for the southern Baltic Sea. Planområden = Marine spatial plans. Användning elöverföring = Use electricity transmission. Användning yrkesfiske = Use commercial fishing. Användning rekreation = Use outdoor life. Sandutvinning = sand extraction. Sjöfart = Shipping.

7 Area description and possible effects

This chapter describes the potential environmental effects that the Ymer wind farm may entail during surveys, installation, operation, and decommissioning. Environmental aspects that are linked to the different phases are described based on the current situation and possible effects. The effects and consequences of all phases of the operation for all environmental aspects will be further investigated and described in the forthcoming EIA. Planned investigations, which form the basis for future assessments in the EIA, are listed in section 13.2.

7.1 Depth conditions and hydrology

7.1.1 Description of the current situation

The Ymer wind farm is in a relatively deep-sea area. The water depth of the wind farm area varies between 50–85 m and the average depth is about 73 m.

The Baltic Sea is a brackish inland sea with a salinity of 6–14 mg/l. A limited inflow of salt- and oxygen-rich water to the Baltic Sea together with high freshwater flows from land and precipitation causes a strong stratification of the water that can give rise to areas on the sea floor with oxygen deficiency or completely anoxic conditions. The main part of the wind farm is located in an area with oxygen-poor conditions. (Isæus, Beltrán, Stensland Isæus, Öhman, & Andersson-Li, 2022)(SMHI, 2020)

7.1.2 Possible effects

Offshore wind turbines have the potential to affect wind conditions, which can cause local effects below sea level such as changes in currents and stratification. The foundations can also have a direct impact on local current and wave conditions, by reducing the water velocity and wave height on the leeward side of the foundations. This will be further investigated in the upcoming EIA, including a desk study on oceanography, hydrography, and currents.

7.2 Seabeds, sediments, and pollutants

7.2.1 Description of the current situation

The surface sediments in the wind farm area consist mainly of postglacial clay and mud as well as glacial clay. To the east of the wind farm are areas with elements of till and postglacial sand and gravel. (SGU, u.å.)

The seabed within the wind farm is expected to consist largely of accumulation bottoms where clay particles and organic matter settle. Since several heavy metals and organic pollutants are particle-bound, they accumulate on accumulation bottoms. National sampling at sampling station SE-11 (within the wind farm) generally indicates low levels of metals and nutrients in the surface sediments. (SGU, u.å.)

7.2.2 Possible effects

The planned wind farm could potentially cause sediment dispersal during the construction and decommissioning phases and marginally during geotechnical surveys. Sediment dispersion is generally less during the decommissioning of wind turbines than during their construction. Furthermore, the extent of sediment dispersion depends on the type of foundation used. The construction of the inter array cables can also cause sediment dispersion. (Isæus, Beltrán, Stensland Isæus, Öhman, & Andersson-Li, 2022)

During the operational phase, fixed-bottom foundations do not normally cause any sediment dispersion. Floating foundations, on the other hand, can cause the spread of sediment if its anchorage drags over the

bottom as the platforms move. This will be further investigated in future EIA, including modelling of sediment dispersion. (Isæus, Beltrán, Stensland Isæus, Öhman, & Andersson-Li, 2022)

7.3 National interests and protected areas

This section describes areas of national interest and areas that are covered by area protection under the Environmental Code. Areas of national interest with mainly land-related or coastal values, which are not considered to be affected by the planned activities, are not described.

7.3.1 National interest for commercial fishing

Areas that are of national interest for commercial fishing are designated in marine areas, lakes, and watercourses as well as for fishing ports. It is the Swedish Agency for Marine and Water Management that provides information on areas that are of national interest for commercial fishing in accordance with Chapter 3 § 5 of the Environmental Code.

7.3.1.1 Description of the current situation

The wind farm is entirely outside areas of national interest for commercial fishing (Figure 7). The southeastern corner of the wind farm is adjacent to an area of national interest for commercial fishing *Southern Öland/Utklippan* (RI YF 8 HP). National interest for commercial fishing *Skåne/Blekinge offshore area* (RI YF 9) is located about 15 km northwest of the wind farm.

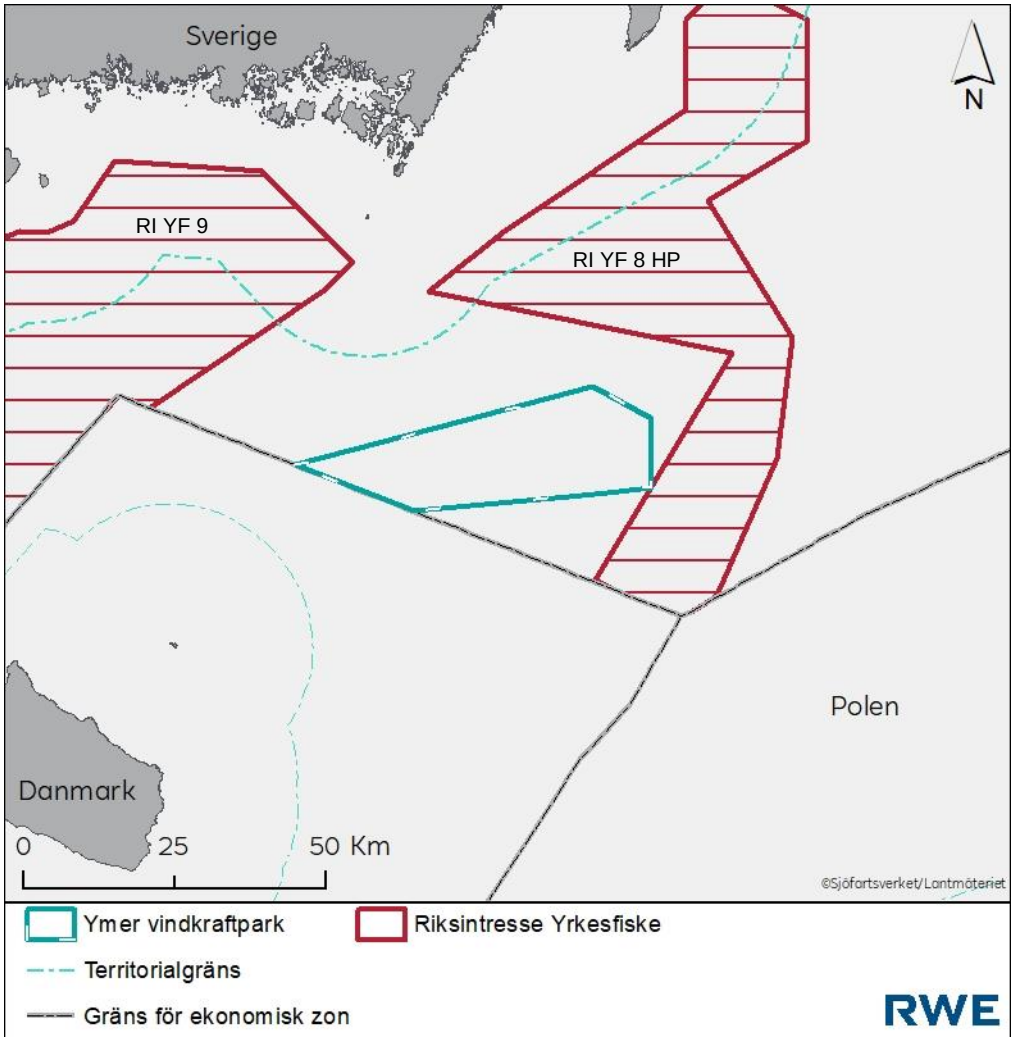

Figure 7. Ymer in relation to the national interest for commercial fishing (riksintresse yrkesfiske).

7.3.1.2 Possible effects

The planned wind farm is outside areas of national interest and is not expected to affect the national interests of commercial fishing. This will be further investigated in the upcoming EIA, including through a desk study on fishing.

7.3.2 National interest for shipping

The Swedish Transport Administration is responsible for claims of national interest relating to the facilities of the modes of transport, including ports and fairways, in accordance with Chapter 3 § 8 of the Environmental Code.

7.3.2.1 Description of the current situation

The area around the planned wind farm is part of the Baltic Sea that is heavily trafficked by ships (Figure 8). South of the wind farm is the shipping lane *Bornholmsgatt – Klaipeida* and North of the wind farm is the deep-water shipping lane; *Gedser-Fårö.* Northeast of the wind farm passes the shipping lane *Utklippan-Gdansk* (Boverket, 2024).

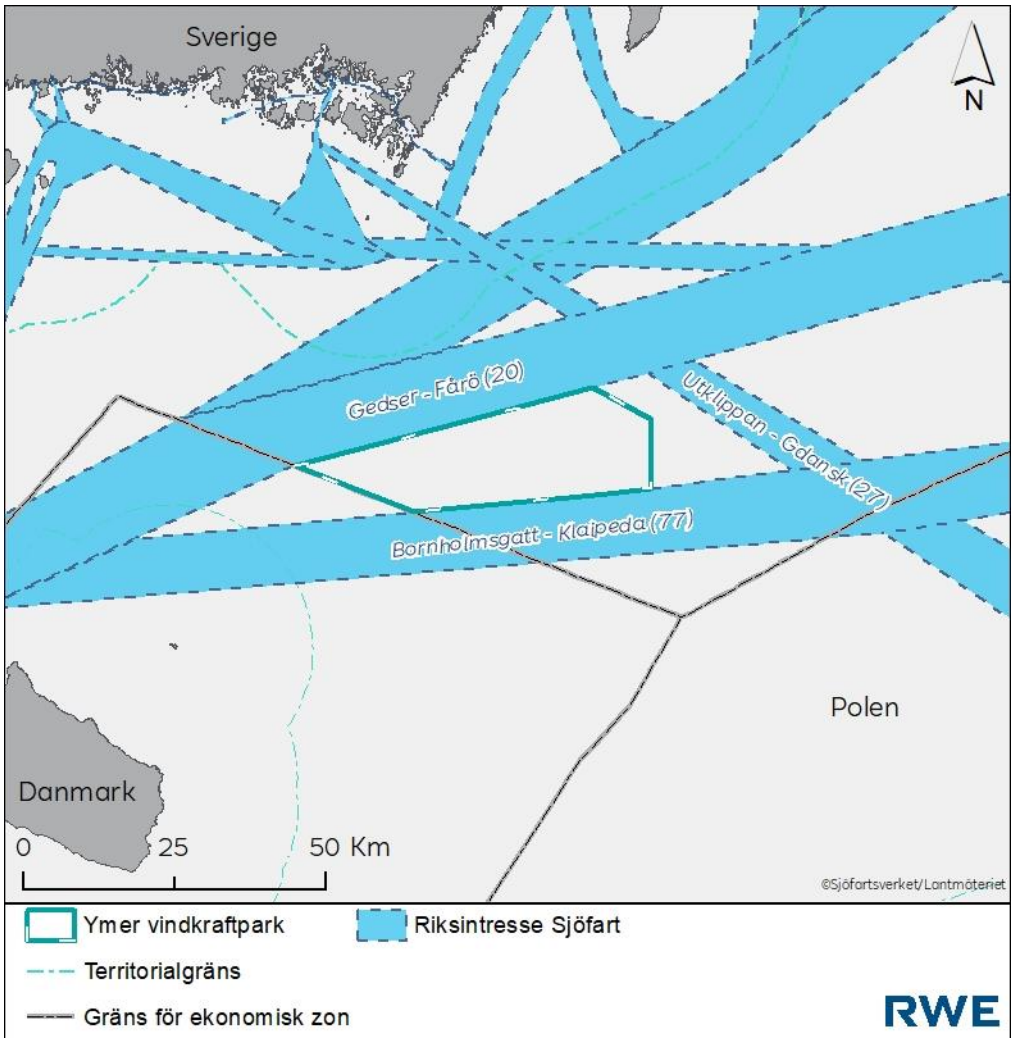

Figure 8. Shipping (riksintresse sjöfart) in the vicinity of the Ymer wind farm.

7.3.2.2 Possible effects

The planned wind farm is located outside designated shipping lanes but could affect national interests for shipping since the wind farm is located between three areas of national interest for shipping. During the construction and decommissioning phase, vessels related to the project will operate in the planned wind farm, which could affect nearby shipping. Consequences for national interests for shipping will be further investigated in the upcoming EIA, including in a nautical risk analysis.

7.3.3 National interest for Total Defence

National interests for the military part of the total defence include national interests that can be reported openly and national interests that cannot be reported openly due to reasons of defence secrecy. The Swedish Armed Forces' national interests include firing and training ranges, airports, naval exercise areas, technical systems, and facilities. Areas of national interest according to Chapter 3 § 9 of the

Environmental Code for the military part of the total defence are areas that are deemed to have nationally important values and qualities for the protection of Sweden.

7.3.3.1 Description of the current situation

The planned wind farm is not located in any openly declared Swedish defence area (Figure 9). The nearest military naval exercise area is located about 10 km northwest of the wind farm and is called *D165* (Boverket, 2024)(Figure 9). The wind farm is located approximately 3 km north of a shooting and underwater training area for Germany, Sweden, and Denmark ((EMODnet, 2022)Figure 10).

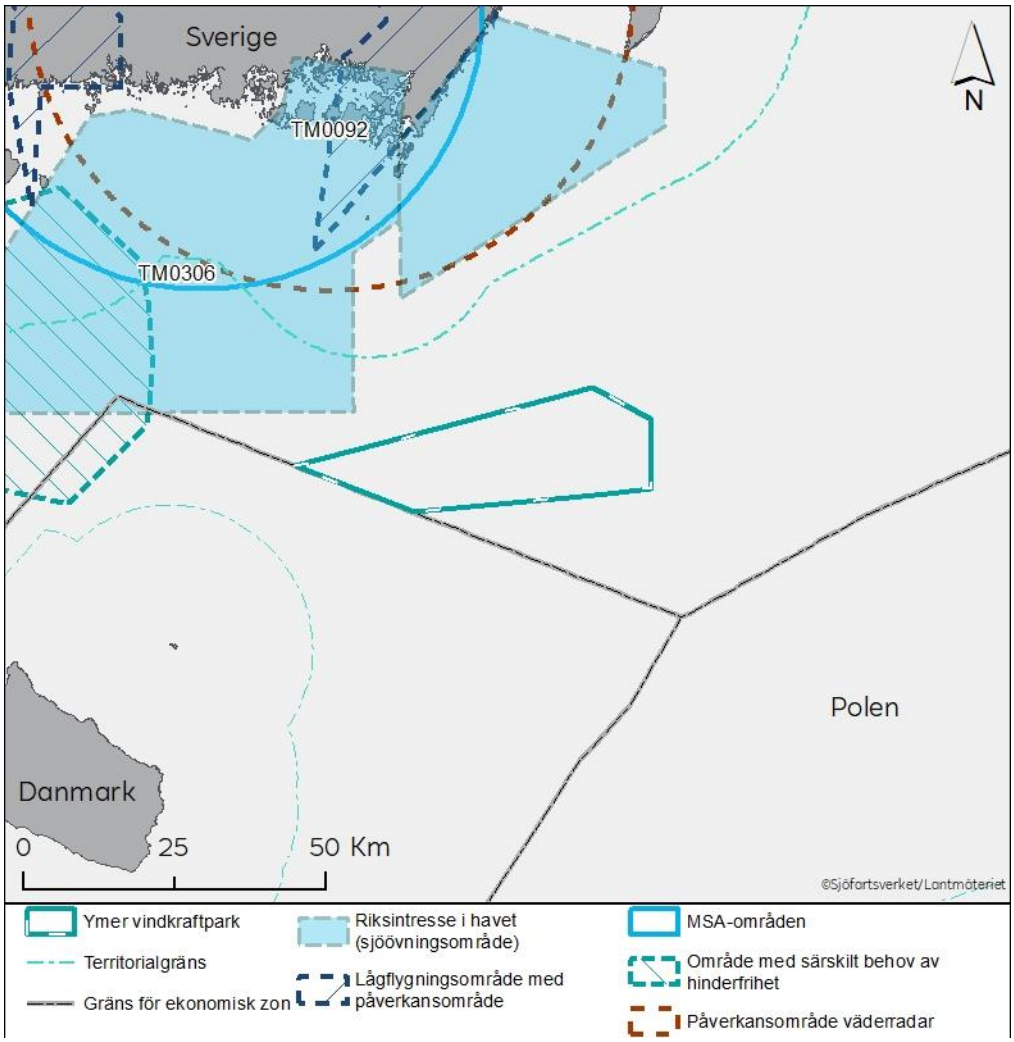

Figure 9. National interest, total defence. Riksintresse i havet (sjöövningsområde) = National interest at sea (marine training area). Lågflygningsområde med påverkansområde = Low-flying area with impact area. MSA-områden = MSA areas. Område med särskilt behov av hinderfrihet = Area with special need for obstacle clearance. Påverkansområde väderradar = Weather-radar impact area.

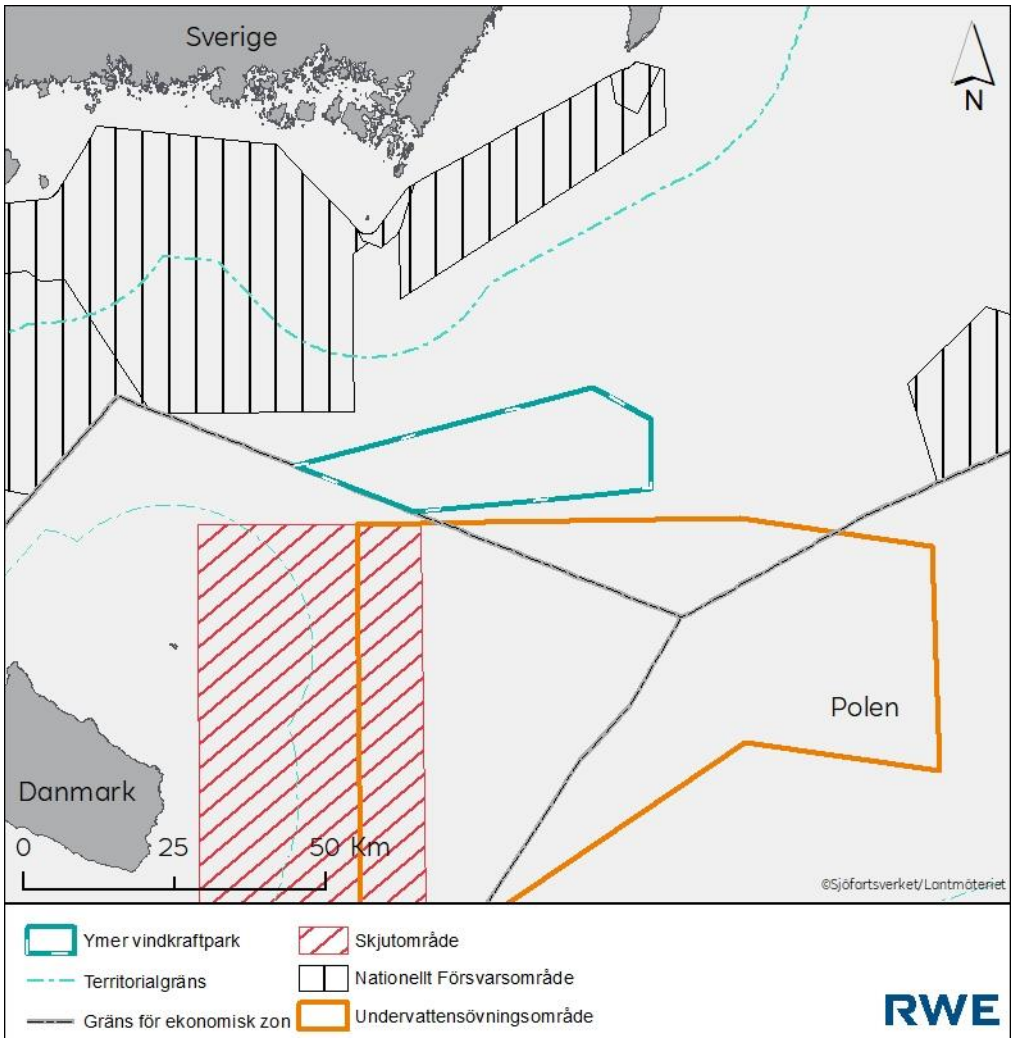

Figure 10. Military areas. Skjutområde = Firing area. Nationellt försvarsområde = National defence area. Undervattensövningsområde = Underwater exercise area.

7.3.3.2 Possible effects

The Ymer wind farm is located outside the areas of national interest for total defence and is therefore not expected to affect them. This will be investigated further in the upcoming EIA.

7.3.4 National interest for outdoor life and active outdoor life

For an area to be of national interest for outdoor life, it must have great outdoor life values seen from a national perspective. The Swedish Environmental Protection Agency is responsible for reporting areas that are deemed to be of national interest for outdoor life in accordance with Chapter 3 § 6 of the Environmental Code. Active outdoor life refers to outdoor activities that can be carried out with the support of the right of public access, such as swimming, walking, berry picking or mushroom picking. These areas are designated by the Parliment in Chapter 4 § 2 of the Environmental Code.

7.3.4.1 Description of the current situation

The wind farm is not located in any areas of national interest for outdoor life or active outdoor life. An area of national interest for active outdoor life is located about 30 km north of the wind farm, called *Öland.*

7.3.4.2 Possible effects

Due to the great distance from the planned wind farm, no impact on the national interest for outdoor life or active outdoor life is foreseen. This will be investigated further in the upcoming EIA.

7.3.5 National interest for cultural heritage conservation

7.3.5.1 Description of the current situation

About 50 km northeast of the Ymer wind farm is a national interest for cultural heritage conservation, *the Eastern Archipelago, Blekinge [K 17] (Sturkö and Torhamns).* The expression of national interest is the open landscape of the archipelago with the visual connections between the islands and the unbroken horizon in most places. Along the coast on the mainland, there are also other areas of national interest for cultural heritage conservation.

7.3.5.2 Possible effects

The wind farm can be visible from the areas of national interest. Due to the great distance from the planned wind farm, no impact on the national interest in the cultural environment is foreseen. This will be investigated further in the upcoming EIA.

7.3.6 Natura 2000 sites

7.3.6.1 Description of the current situation

The wind farm is located about 10 km west of the Natura 2000 site *Hoburgs bank and Midsjöbankarna* (SE0330308) (Figure 11). The Natura 2000 area is designated as a protected area in accordance with the Habitats Directive (SCI) and the Birds Directive (SPA), see chapter 8.

Natura 2000 site *Utklippan* (SE0410040) is located about 35 km north of the wind farm (Figure 11). The area is designated in accordance with the Habitats Directive and the Birds Directive for the protection of a number of bird species and grey seals.

Natura 2000 site *Ertholmene* (DK007X079) is located approximately 35 km southwest of the wind farm, within Danish waters (Figure 11). The site is designated in accordance with the Birds Directive and the Habitats Directive.

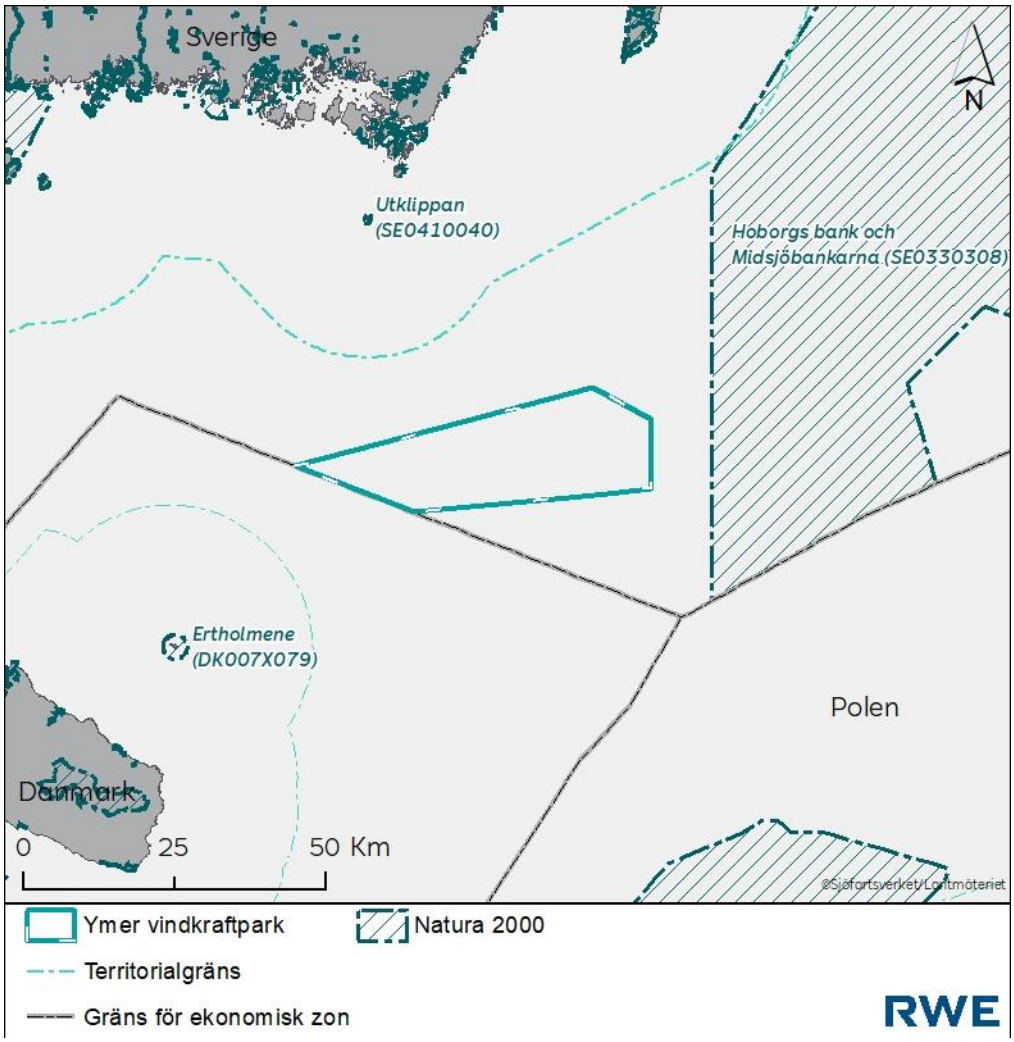

Figure 11. Natura 2000 sites.

7.3.6.2 Possible effects

Possible effects on *Hoburgs bank and Midsjöbankarna*, which is the Natura 2000 site closest to the wind farm, are listed in section 8.3.

The Natura 2000 areas Utklippan and Ertholmene are located at such a distance from the wind farm that habitats and species within these areas are not expected to be affected by the activity. This will be investigated further in the upcoming EIA.

7.3.7 Nature reserve

7.3.7.1 Description of the current situation

The planned wind farm is not located in the vicinity of any nature reserve (Figure 12). The nearest nature reserve, *Utklippan,* is located about 35 km north of the wind farm. Nature reserve *Ottenby reef* is located about 50 km northeast of the wind farm. There are also several nature reserves along the coast of Blekinge.

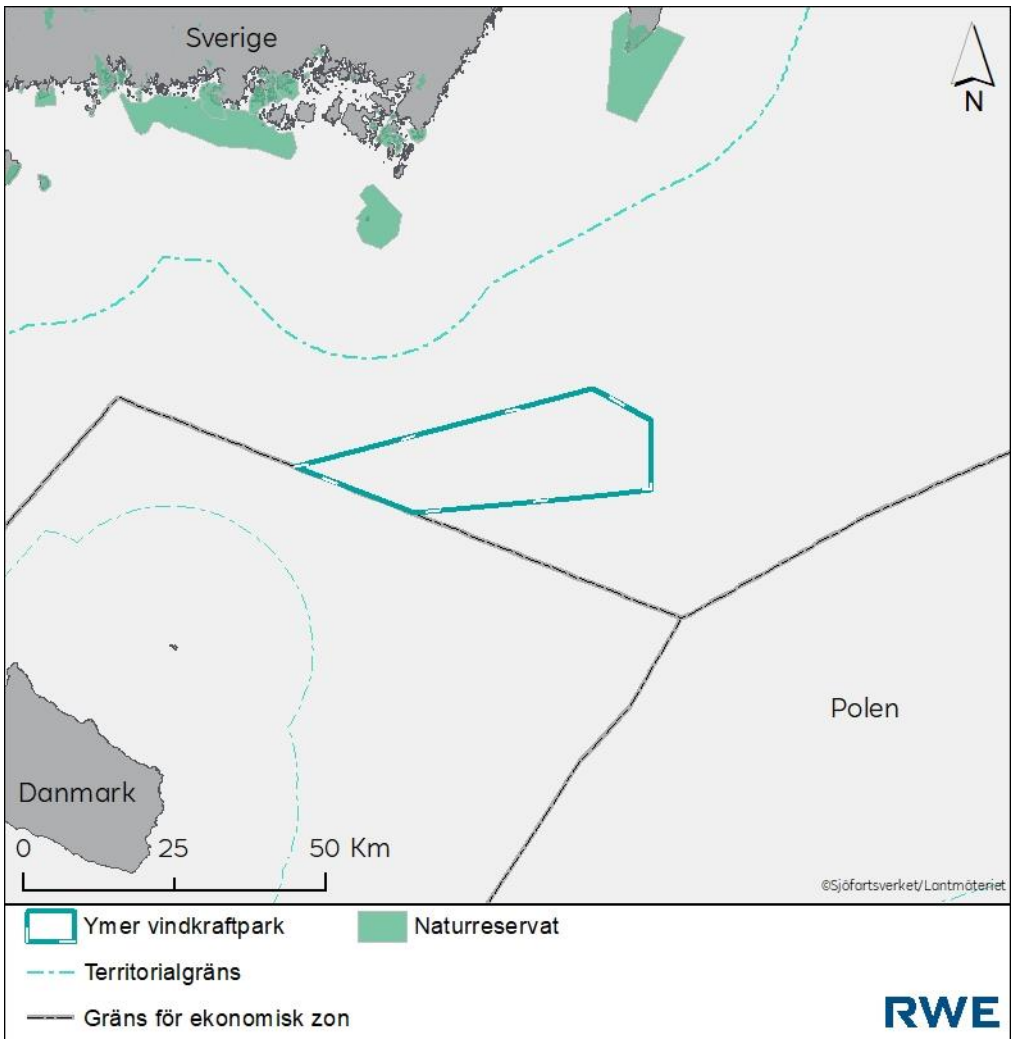

Figure 12. Nature reserve (naturreservat).

7.3.7.2 Possible effects

Due to the great distance from the planned wind farm, no impact on the nature reserves is foreseen. This will be investigated further in the upcoming EIA.

7.4 Benthic flora and fauna

7.4.1 Description of the current situation

Benthic flora and fauna include plants and animals that live on or in the seabed.

The main limit for the spread of benthic flora is the availability of light, which is a prerequisite for photo-synthesis. Wind farm Ymer is in deep water (approx. 50-85 m) within the non-photic zone, where no photosynthesis occurs (Figure 13). This means that there is no benthic flora in the area due to a lack of light.

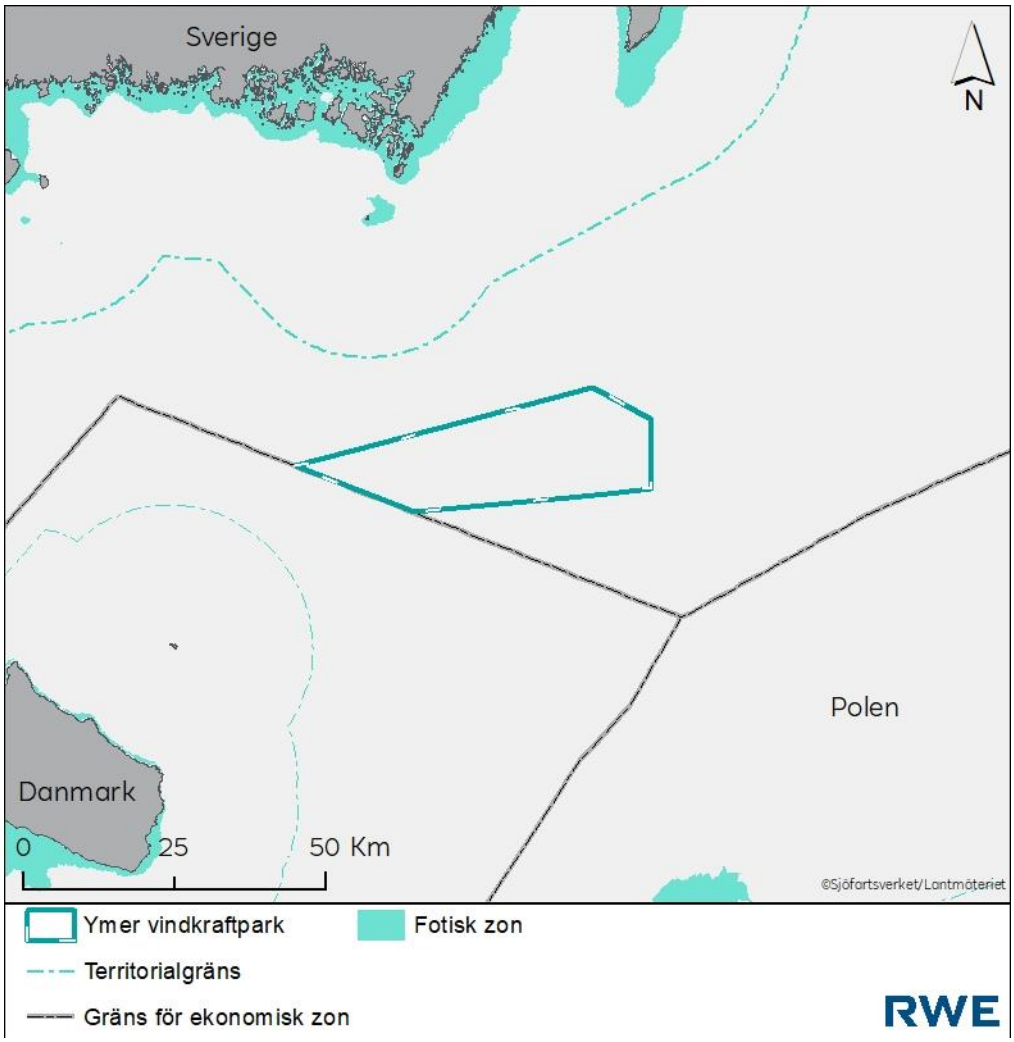

Figure 13. Photic (fotisk) and non-photic zone.

Access to oxygen is an important factor that determines whether benthic fauna occurs in an area or not. The wind farm area has mainly low-oxygen conditions, which is why there are probably few benthic species.

In Kalmar County, monitoring of benthic fauna is carried out within the programmes for regional and national environmental monitoring. Polychaetes, molluscs and crustaceans are the dominant animal groups in the seabed. The monitoring shows that the situation for wildlife in the seabed along the coast of Kalmar County has deteriorated over the past 20 years. (Länsstyrelsen Kalmar , 2017)

7.4.2 Possible effects

Since the planned wind farm is in the non-photic zone with no expected benthic flora as a result, it is not expected that it will be affected.

Benthic fauna can potentially be affected during geotechnical surveys, during the construction of the planned wind farm when the structures occupy the seabed and during decommissioning when the structures are removed. Benthic fauna can also be affected by sediment dispersion, possible release of pollutants and sediment accumulation during the installation and decommissioning phases. During the operational phase, the foundations of wind turbines can create new habitats for hard bottom species, a so-called reef effect, which can have a positive effect. Consequences for benthic flora and fauna will be further investigated in future EIAs, including through a desk study and modelling of sediment dispersion.

7.5 Fish

7.5.1 Description of the current situation

The wind farm is located within larger contiguous areas that constitute potential spawning grounds for cod and sprat.

7.5.1.1. Cod

Cod, which is classified as a vulnerable species, plays a significant role in the Baltic Sea ecosystem. It is also an important species from a commercial perspective. As a result of overfishing, changes in the aquatic environment, food availability and diseases, the amount of cod in the Baltic Sea has decreased significantly in recent decades. (Isæus, Beltrán, Stensland Isæus, Öhman, & Andersson-Li, 2022)

In the southern Baltic Sea there are two populations of cod; the eastern stock and the western stock. The different populations have different spawning grounds. In Sweden, the western stock spawns mainly in Öresund. For the eastern stock, the most important spawning area is outside Swedish waters, in the Bornholm Deep. On the other hand, there are potential spawning areas for cod also within the wind farm ((Isæus, Beltrán, Stensland Isæus, Öhman, & Andersson-Li, 2022)Figure 14). In the southern Baltic Sea, the cod spawning period is from March to August and the spawning season peaks in June. (Lektidsportalen, 2023)(Eero, 2019)

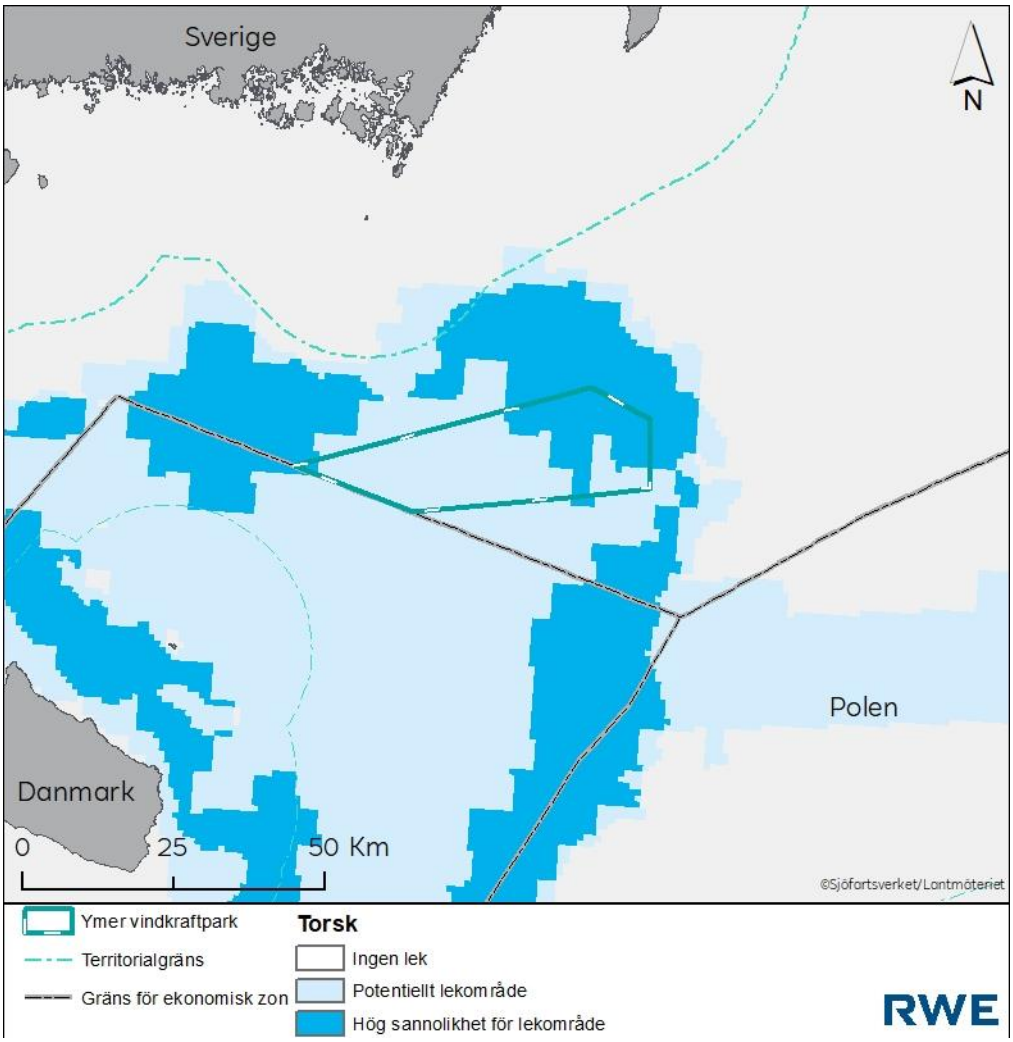

Figure 14. Spawning area for cod. Ingen lek = no spawning ground. Potentiellt lekområde = Potential spawning ground. Hög sannolikhet för lek = High probability for spawning ground.

7.5.1.2. Sprat

Sprat is a pelagic species that lives in all Swedish marine areas, including the Baltic Sea. Its diet consists of zooplankton. The species moves freely in open water and has large spawning areas in parts of the Baltic Sea ((Isæus, Beltrán, Stensland Isæus, Öhman, & Andersson-Li, 2022)Figure 15). Spawning takes place out at sea and on the coast. In the Baltic Sea, the spawning season takes place from March to August.

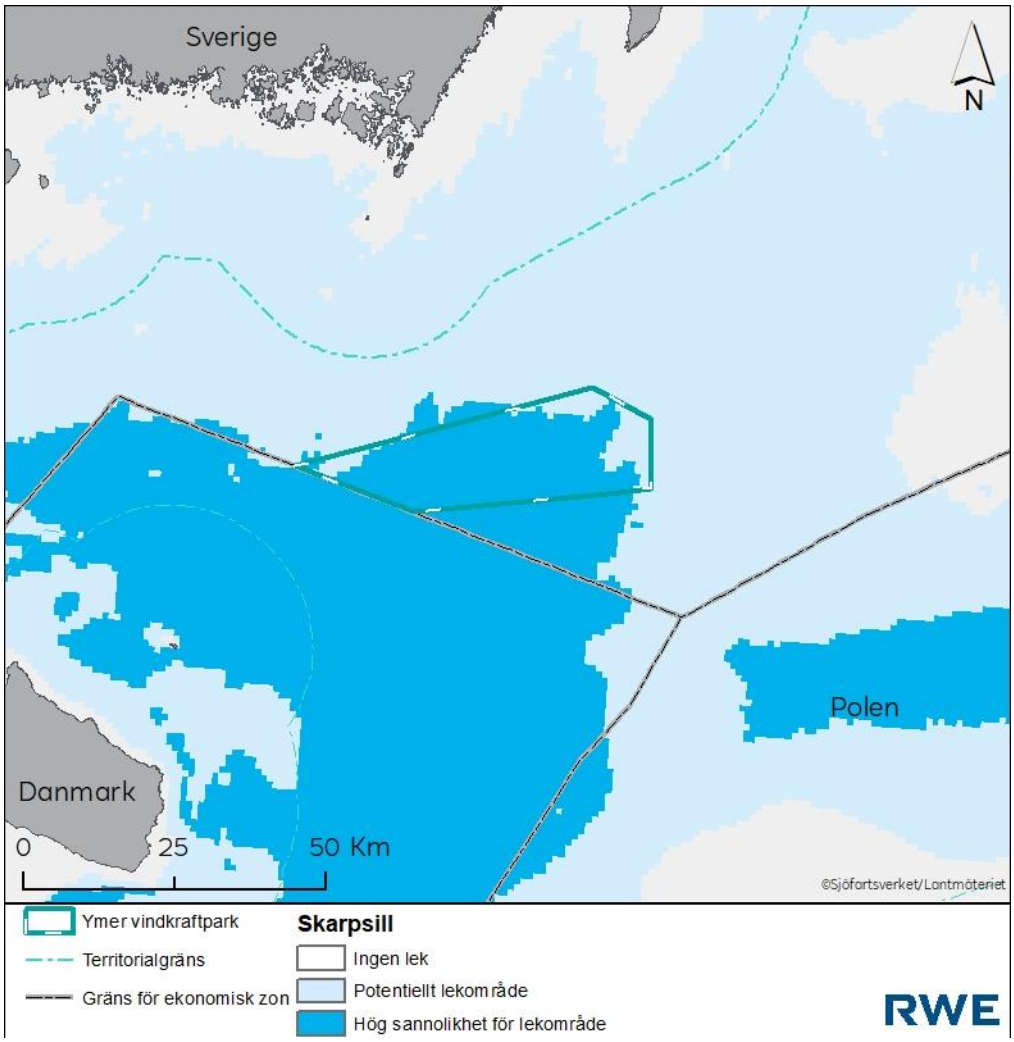

Figure 15. Spawning area for sprat. Ingen lek = no spawning ground. Potentiellt lekområde = Potential spawning ground. Hög sannolikhet för lek = High probability for spawning ground.

7.5.2 Possible effects

During the construction and decommissioning phases and marginally during geotechnical surveys, fish can potentially be affected as a result of sediment dispersion and underwater noise. In the worst case, sediment dispersion can result in mortality when fish eggs are covered. The effect of sediment dispersion depends mainly on the construction methods used and the bottom substrate of the site, for example, fine-grained sediment can give rise to more extensive dispersion than coarser sediments.

Underwater noise in connection with geophysical surveys as well as the construction and decommissioning phase can potentially result in escape behaviors, hearing effects and, in the worst case, mortality.

During the operational phase, the wind farm will result in a changed underwater sound image in the affected area. During the operational phase, a so-called reef effect can also be formed because of the

addition of new fixed structures such as foundations. The structures create a new habitat where fish can find food and seek shelter.

Electromagnetic fields from bottom-lying power cables can potentially affect the orientation of fish.

Consequences for fish will be further investigated in the upcoming EIA, including a desk study and modelling of sediment dispersion and underwater noise.

7.6 Marine mammals

7.6.1 Description of the current situation

The marine mammals that regularly live in the Baltic Sea are seals and porpoises. The area of the planned wind farm is in an area with a low probability of harbour porpoise or seal presence, but the species may occasionally occur in the area.

7.6.1.1 Seal

Both harbor seals (*Phoca vitulina*) and grey seals (*Halichoerus grypus*) occur in the southern Baltic Sea and are listed as Least Concern (LC) according to the Swedish Red List 2020. The species are listed in Annex II of the Habitats Directive 92/43/EEC, which means that special areas of conservation must be established. Both grey seals and harbor seals are mainly found in coastal areas where there are large areas with shallow waters where they forage at depths of about 40–50 m.

Harbor seals are found for along the west coast of Sweden, the south coast, as well as in a limited area on southern Öland and the southern coast of Småland. The population in Sweden amounts to about 15,000 individuals and is growing. In the southern part of the Kalmar Strait there is a local harbor seal population (the Baltic Sea population) that is genetically isolated and amounts to about 2,000 individuals. (SLU, 2023)

The grey seal population is centered around the Stockholm archipelago and the Åland Islands, but there are localities along the entire coast of Sweden, with significantly more seals in the northern Baltic Sea than around the south coast. The grey seal population in the Baltic Sea is estimated at about 13,000 reproductive individuals, the population is increasing. (SLU, 2023)

7.6.1.2 Porpoise

The harbour porpoise (*Phocoena phocoena*) is listed in Annexes II and IV of the Habitats Directive, which means that the harbour porpoise must maintain favorable conservation status and that special conservation areas must be established for the species. The closest Natura 2000 area in relation to the planned wind farm with protection for harbour porpoises is located south of Gotland (*Hoburgs bank and Midsjöbankarna*, SE0330308).

In Swedish waters, harbour porpoises are found in the Baltic Sea, Kattegat, and Skagerrak. As a result of the SAMBAH project, the occurrence and distribution of harbour porpoises has become better known and that there are three distinct populations with limited genetic exchange: Baltic Sea Population, Belt

Sea Population and North Sea Population. The Baltic Sea is home to the viable Belt Sea population and the critically endangered Baltic Sea population with only an estimated 500 individuals (SAMBAH, 2016).

In Figure 16 and Figure 17 the probability of harbour porpoise occurrence during the period May to October and November to April is shown. Ymer is not located in an area with a high probability of occurrence during any of the periods.

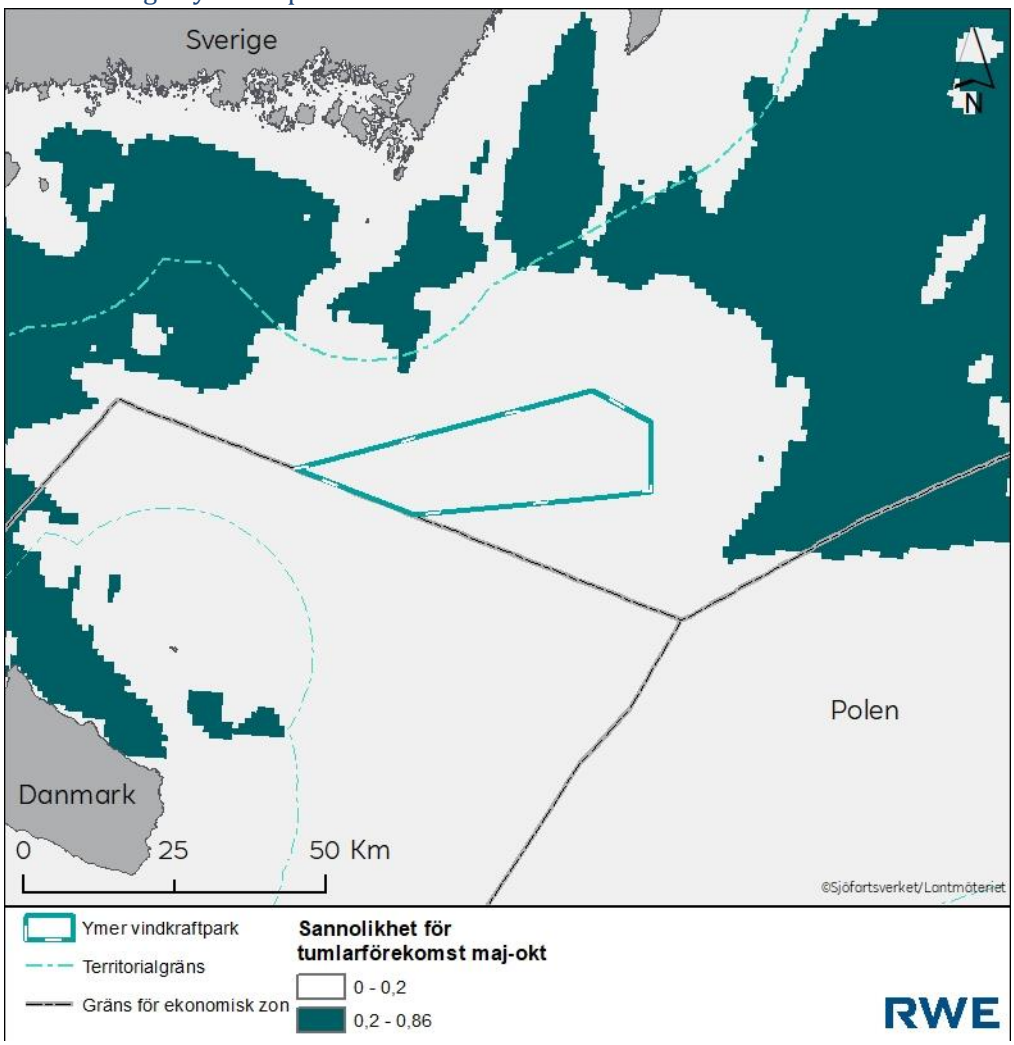

Figure 16. Porpoise occurrence May – October.

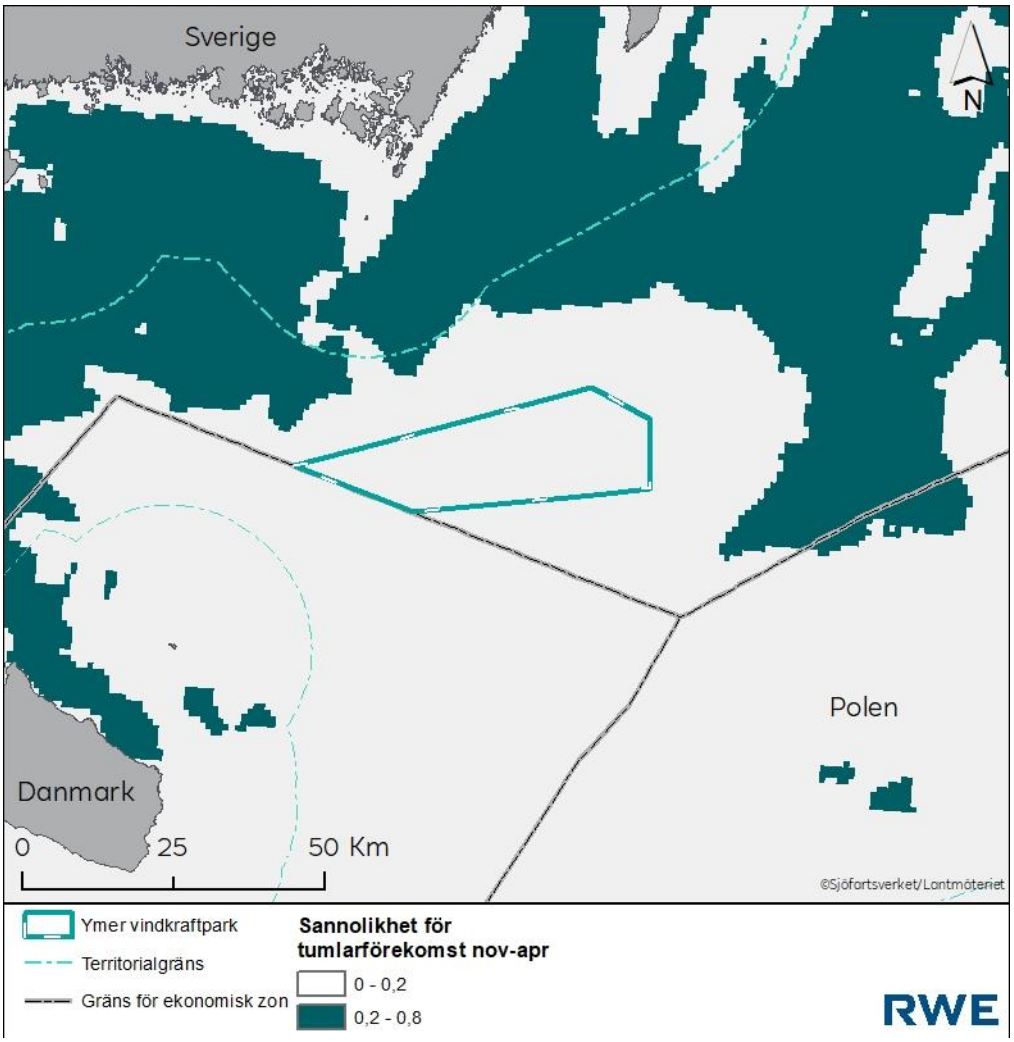

Figure 17. Porpoise occurrence November - April.

7.6.2 Possible effects

During the surveys, the installation phase, and any decommissioning work, marine mammals can potentially be affected by underwater noise from geophysical surveys and piling works, which can result in behavioral changes, escape behavior or hearing impact. During the operational phase, the wind farm will result in a changed underwater sound image in the affected area.

During the operational phase, possible reef effect can attract fish to the area, which in turn can attract marine mammals to the site.

Consequences for marine mammals will be further investigated in the upcoming EIA, including a desk study and modelling of underwater noise.

7.7 Birds and bats

7.7.1 Description of the current situation

7.7.1.1 Birds

The Baltic Sea is home to several important areas (so-called IBAs (Important Bird and Biodiversity Areas)) for both breeding and wintering seabirds. The variety of species in the area is dependent on the season. Some species stay all year round, others migrate to or from the Baltic Sea during the winter season. Furthermore, the Baltic Sea is home to several endangered bird species, including long-tailed ducks, velvet scoters, and eiders. A significant number of long-tailed ducks spend the winter in the southern Baltic Sea. However, the long-tailed duck population in the Baltic Sea has declined drastically since the nineties and the species is now classified as globally vulnerable according to the International Union for Conservation of Nature (IUCN). Other species, such as common scoter, black-throated diver and black guillemot, also winter in the Baltic Sea. (Larsson, 2018) (Jonsson, Hjernquist, Hansson, & Hjernquist, 2022) (Larsson, 2018)

Within the Ymer wind farm there are no designated Important Bird Areas (IBAs) (Figure 18). The nearest Important Bird Area (IBA) is located about 30 km east of the wind farm.

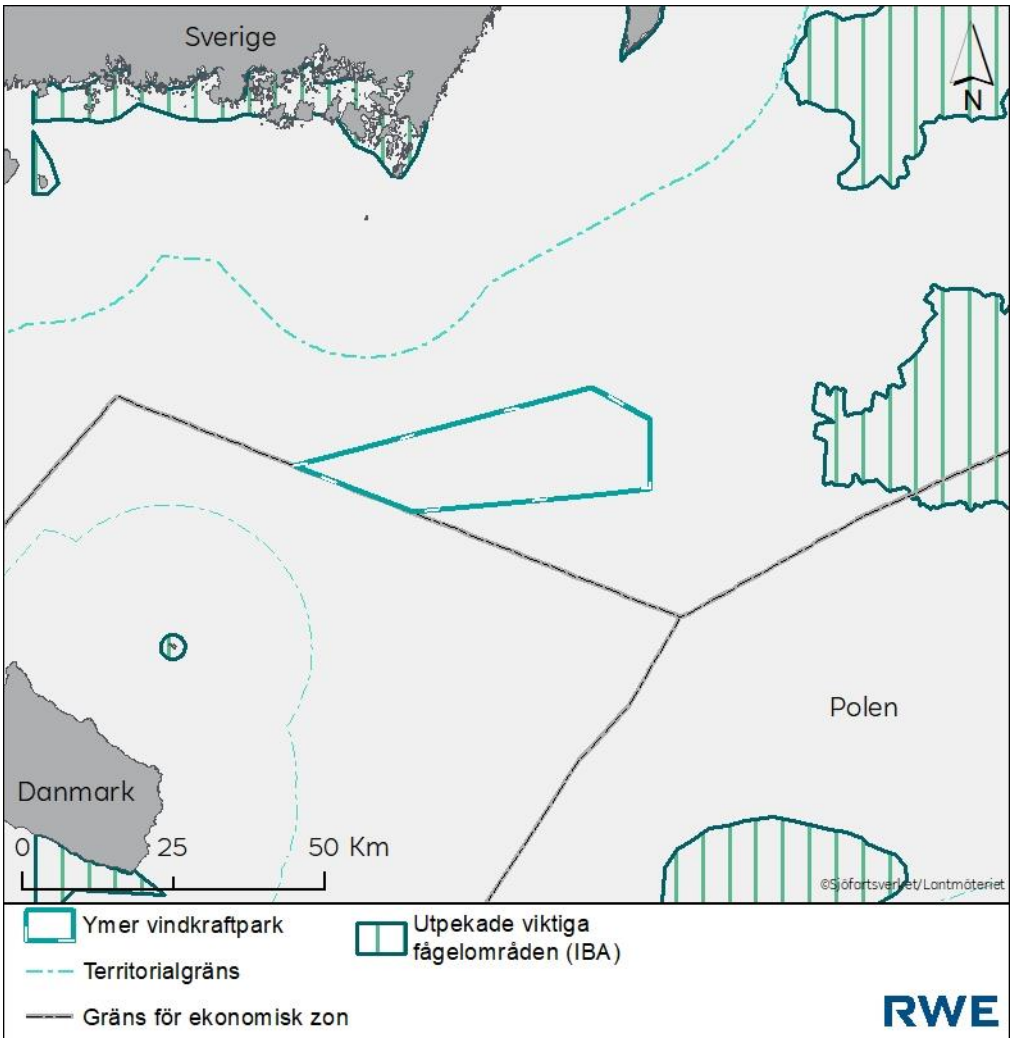

Figure 18. Important Bird Areas (IBAs) in relation to Ymer wind farm. Important Bird Areas (IBAs) are areas designated by BirdLife for the protection of bird populations. The designation does not give rise to formal protection.

7.7.1.1 Bats

Knowledge of bats' behavior and migration routes is limited. Bats migrate over long distances, including across the Baltic Sea, with some sites within these stretches having higher concentrations of bats. (Naturvårdsverket, u.å.)

7.7.2 Possible effects

7.7.2.1 Birds

During the operational phase, the wind turbines can potentially act as obstacles for birds, which in the event of a collision can lead to mortality. Furthermore, the wind turbines can affect birds in such a way that the birds avoid the area. This will be further investigated in future EIAs, including through a desk study on birds.

7.7.2.2 Bats

Bats are potentially at risk of being killed at wind turbines, either by colliding with the rotor blades of the wind turbines or by being subjected to a pressure drop caused by the turbulence behind the rotor blade. This will be investigated further in future EIAs, including a desk study on bats.

7.8 Cultural heritage conservation and marine archaeology

7.8.1 Description of the current situation

There are an estimated 100,000 wrecks in the Baltic Sea. Many of the wrecks are well preserved thanks to the absence of shipworms in the Baltic Sea. The Baltic Sea is also cool and dark, which creates good conservation conditions. Within the Ymer wind farm there are two identified maritime archaeological remains in the form of ship or boat remains. Another remnant borders the area ((Vrak, 2023)Figure 19). The northern part of the wind farm is located within the adjacent zone, which means that the Cultural Environment Act (1988:950) applies there. (Vrak, 2023)

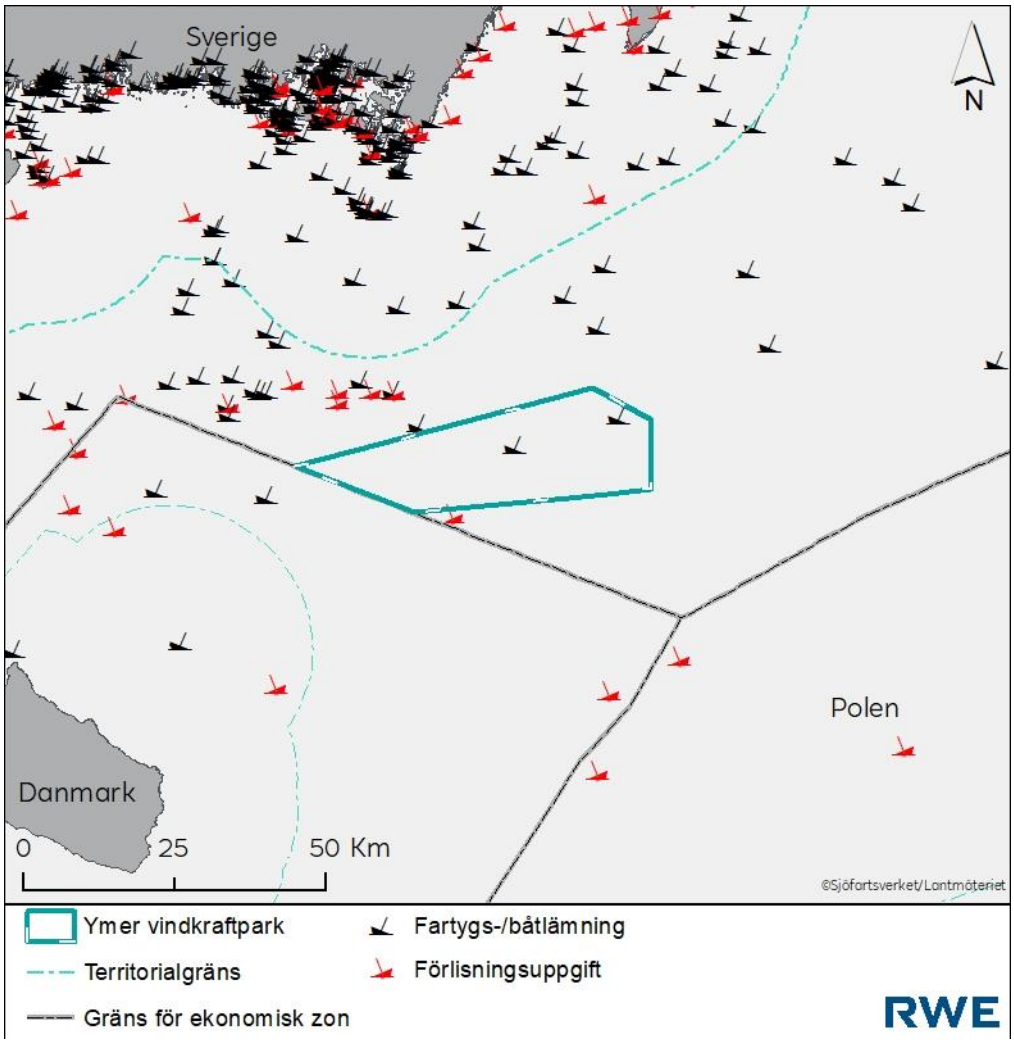

Figure 19. Cultural and historical remains in connection with Ymer. Fartygs-/båtlämning = Remain from shipwreck. Förlisningsuppgift = Information of shipwreck.

The cultural-historical remains, which are centrally located within the wind farm (L1934:4284), have not been confirmed in the field, but according to the Swedish Maritime Administration, the remains cannot be ruled out as a wreck without further investigation. The remains extend over an area of about 27 x 11 m. The cultural-historical remains in the eastern part of the wind farm (L1934:4237) are ship remains from the late 18th or early 19th century. ROV documentation states that the remains are highly degraded, probably because of trawling in the area, and are therefore spread over an area of 150 x 50 m. The remains (L1934:4120) bordering the wind farm are a fishing vessel that sank in 1969 because of a fire. (Fornsök, 2024)

7.8.2 Possible effects

Maritime archaeological remains can potentially be affected by geotechnical surveys and construction work as structures occupy space on the seabed. This will be further investigated in future EIAs, including through a desk study.

7.9 Outdoor activities

7.9.1 Description of the current situation

Ymer wind farm is not located in an area of national interest for outdoor life or active outdoor life, see section 7.3.4. On the other hand, the sea is important for people's opportunities for outdoor life and recreation and contributes positively to public health. Recreational fishing and sport fishing are carried out along the entire Baltic Sea coast, as well as throughout the Baltic Sea. (Havs- och Vattenmyndigheten, 2022)(ICES, 2022)

7.9.2 Possible effects

As the Ymer wind farm is located far out at sea, no impact on outdoor life is predicted. This will be investigated further in the upcoming EIA.

7.10 Human health

Description of the current situation

Ymer wind farm is located about 47 km from land and about 41 km from the nearest residence on the island of Utlängan.

Possible effects

People can potentially be affected by noise, shading and light from wind farms. The greater the distance from land a wind farm is located, the less the impact on people's living environment in terms of noise, shading and light. No impact on human health is foreseen due to the great distance to land. This will be investigated further in the upcoming EIA.

7.11 Landscape

7.11.1 Description of the current situation

The landscape image encompasses people's visual impressions of the landscape. The nearest residential area is on the island of Utlängan, about 41 km from Ymer wind farm.

7.11.2 Possible effects

Due to the long distance to land, the planned wind farm is expected to be visible only to a limited extent from land. This will be investigated further in the upcoming EIA, including through a landscape image analysis.

7.12 Commercial fishing

7.12.1 Description of the current situation

The planned wind farm is located outside an area of national interest for commercial fishing, see section 7.3.1. On the other hand, there is commercial fishing in the southern Baltic Sea also outside the areas of national interest, where for example bottom trawls are used to fish for cod. (ICES, 2022)

7.12.2 Possible effects

During the construction, decommissioning and operation phases, it may be necessary to restrict access to certain places within the wind farm as it constitutes a safety risk, which means changed conditions for commercial fishing. The consequences for commercial fishing will be further investigated in the upcoming EIA, including through a desk study.

7.13 Sites for extraction and raw material

7.13.1 Description of the current situation

Sites for extraction of raw materials are aimed at the extraction of sand or gravel from the seabed. According to the marine spatial plan for the area (Ö249), there is no sand extraction at the Ymer wind farm. The area is also not located in an area where the conditions for the extraction of marine sand and gravel exist. (Havs- och Vattenmyndigheten, 2022) (SGU, 2017)

The Ymer wind farm is also not within the possible area for carbon dioxide storage. (Havs- och Vattenmyndigheten, 2022)

7.13.2 Possible effects

The planned wind farm is not expected to have any impact on raw material extraction sites. This will be investigated further in the upcoming EIA.

7.14 Infrastructure and other activities

7.14.1 Description of the current situation

Electricity and telecommunications cables, as well as the Nord Stream 1 and 2 gas pipelines run through the Ymer wind farm (Figure 20). The wind farm area does not overlap with the Minimum Sector Altitude (MSA) area of any airport. (EMODnet, 2024)

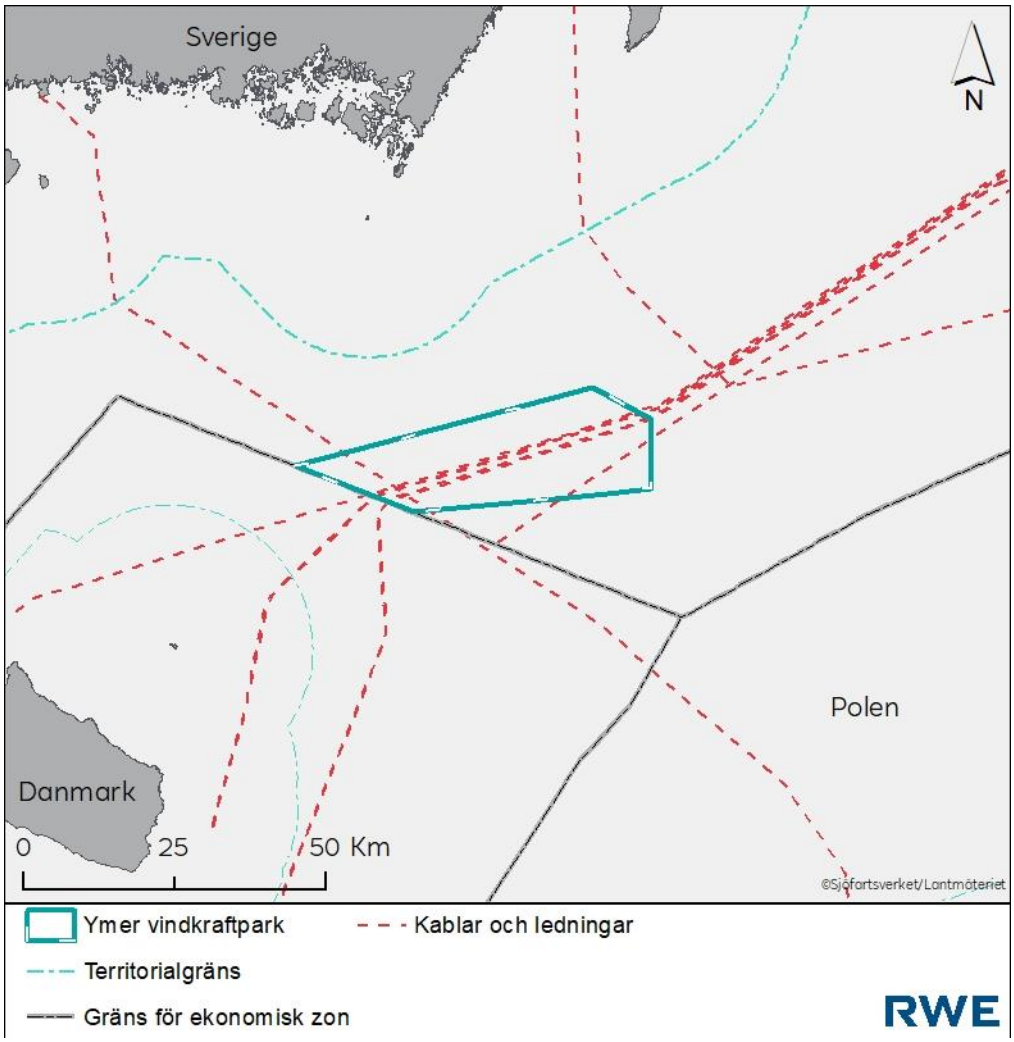

Figure 20. Infrastructure, cables, and pipelines in relation to the Ymer wind farm. Kablar och ledningar = Cables and pipelines.

7.14.2 Possible effects

Wind farms have the potential to affect existing cables and pipelines during the construction and decommissioning phases. The impact can be reduced, among other things, through dialogue with pipeline owners and through a risk analysis regarding marine infrastructure. This will be investigated further in the upcoming EIA.

8 Natura 2000 – Hoburgs bank and Midsjöbankarna

The wind farm is located about 10 km west of the Natura 2000 site *Hoburgs bank and Midsjöbankarna* (SE0330308) (Figure 11). The Natura 2000 site is designated in accordance with the Habitats Directive (SCI) and the Birds Directive (SPA).

Natura 2000 site *Hoburgs bank and Midsjöbankarna* (SE0330308) is about 10,500 km^2 in size and the sea depth in the area varies between 17 and 80 m. Designated species in the area are long-tailed ducks, black guillemots, eiders and harbour porpoises, and designated habitats are reefs (1170) and sublittoral sandbanks (1110). The banks are important feeding and nursery areas for fish and seabirds, and together they form the most important wintering area in the Baltic Sea for long-tailed ducks and the core area of the Baltic harbour porpoise population. The offshore banks consist of a mosaic of shallow sandbanks and reefs. The area also includes deep areas with sedimentation bottoms located between the banks. (Naturvårdsverket, 2021)

8.1 Designated habitats

8.1.1 Reefs (1070)

The reef habitat type consists of biogenic or geological formations of hard substrate that rise above the surrounding seabed. Typical reef habitat species include blue mussels, feather licks, cod, herring, and eelpout. The conservation status of the reef habitat type is unfavourable within the Natura 2000 site. The conservation objectives for the habitat type include that the area within the Natura 2000 area should not decrease and that the water quality in the area should be good.

8.1.2 Sublittoral sandbanks (1110)

The sublittoral sandbanks (sandbanks permanently covered by seawater) consist mainly of sandy sediments, but can also contain clay, gravel, rocks, and boulders. Typical species of sandbanks include long-tailed duck, black-throated diver, red-throated diver, common scoter, velvet scoter, eider, eel, herring, cod, flounder, and sprat. The conservation status of the sandbank's habitat type is unfavorable in the Natura 2000 site. The conservation objectives include, among other things, that the area within the Natura 2000 area should not be reduced, that the species composition should be natural, and the populations of typical species should be present in viable populations.

8.2 Designated species

8.2.1 Harbour porpoises (1351)

The harbour porpoises that occur in the Natura 2000 area belong to the critically endangered Baltic Sea population with only an estimated 500 individuals and stay here throughout the year. The Natura 2000 area is also an important site for the reproduction of Baltic Sea porpoises. The porpoises gather in the

area from May to October. The conservation status of harbour porpoises within the Natura 2000 site is unfavorable. The conservation objectives for harbour porpoises mainly include limiting external disturbances from human activities and not affecting the harbour porpoises.

8.2.2 Long-tailed duck (A064)

The Natura 2000 site is an important wintering site for long-tailed ducks. The long-tailed duck is one of the few marine species that is dependent on marine areas within Sweden's exclusive economic zone for its survival. The conservation status of long-tailed ducks within the Natura 2000 site is considered unfavorable and the conservation objectives mainly include ensuring that long-tailed ducks are not displaced from their wintering sites.

8.2.3 Black guillemot (A202)

Hoburgs Bank and Midsjöbankarna are also an important wintering site for the black guillemot. The black guillemot has an unfavorable conservation status in the Natura 2000 site. The conservation objectives include that the number of individuals must not be reduced and that the wintering area in the Natura 2000 site must not be reduced or deteriorated.

8.2.4 Eider

Like the long-tailed duck, the common eider feeds mainly on blue mussels, but the importance of the Natura 2000 area as a wintering site is considerably less. Over the past decade, the common eider population has declined in the Baltic Sea region. There are no conservation objectives for the common eider.

8.3 Possible effects

Due to the great depth, the wind farm area is not expected to be important for foraging seabirds. The wind farm is also not expected to affect the access of designated bird species to the Natura 2000 area through barrier effects. Designated or typical bird species within the Natura 2000 area Hoburgs bank and Midsjöbankarna are therefore not expected to be affected by the operations.

Marine mammals and fish (typical species of reefs and sandbanks) can potentially be affected by underwater sounds. Fish and benthic fauna can also be affected by sediment dispersal.

Based on modelling in a number of other wind power projects, as well as on Hammar et al. (2009) and Karlsson et al. (2020), sediment dispersion in connection with the construction phase cannot result in problematic concentrations and durations of turbidity and levels of sediment accumulation for fish and benthic fauna and flora at a distance of 10 km, i.e. within the Natura 2000 area. Even less will the impact be on and around the important offshore banks, which are located at a much greater distance than that.

Geophysical surveys and piling of monopiles or jacket foundations (with protective measures) do not cause noise levels that can cause hearing damage to marine animals at distances as great as 10 km and rarely cause noise levels that can give rise to behavioral effects on marine mammals at a distance of

more than 10 km. Also the impact on fish at these distances is expected to be insignificant. (van der Knaap; Slabbekoorn H.; Moens, T; Van den Eynde, D.; Reubens, J., 2022)

During the operational phase, the wind farm may result in a change in the sound image below the surface of the water. Operational noise is not expected to be detectable by harbour porpoises at a distance outside the wind farm, or be perceived by harbour porpoises within the Natura 2000 area. (Nehls, G.; Harwood, A.J.P; Perrow, M.R., 2019; Tourgaard, J.; Hermannsen, L.; Masden, P.T., 2020)

During the operational phase, a so-called reef effect can also be formed because of the addition of new fixed structures such as foundations. The structures create a new habitat where fish can find food and seek shelter.

Given the great distance, 10 km to the boundary of the Natura 2000 site, designated habitat types or species within the Natura 2000 site *Hoburgs bank and Midsjöbankarna* are not expected to be affected regarding sound propagation, sediment dispersion and any other impact factors during construction, operation and decommissioning. This will be described in more detail in the EIA.

9 Climate

Wind power is a renewable source that can contribute to more sustainable electricity production. Wind power can also help Sweden achieve its energy policy goals. The Swedish government has set goals to achieve 100% fossil-free electricity production by 2040 and that Sweden by 2030 will have 50% more efficient energy use compared to 2005. (Regeringskansliet, u.å)

Wind power is emission-free in electricity production, but elements such as manufacturing, transport and construction contribute to emissions. The Swedish Energy Agency has produced a report on the use of resources by wind power, with a focus on a life cycle perspective. The report describes that a life cycle assessment for a wind farm takes into account the manufacture of a wind turbine, the extraction of the metals and materials used in the wind turbine and dismantling and restoration. (Energimyndigheten, 2021)

10 Marine Strategy Framework Directive

The Marine Strategy Framework Directive (2008/56/EU) is the EU's common framework for the marine environment and aims to achieve or maintain good environmental status in Europe's seas. Marine waters from the coast to the outer border of the exclusive economic zone are covered by the Directive. The Marine Strategy Framework Directive was transposed into Swedish law in 2010 via the Marine Strategy Framework Ordinance (2010:1341). (Havs- och Vattenmyndigheten, u.å.a)

The Swedish Agency for Marine and Water Management's regulations on what characterizes good environmental status and environmental quality standards with indicators for the North Sea and the Baltic Sea (HVMFS 2012:18), establish the conditions that characterize good environmental status in the North Sea and the Baltic Sea, and establish environmental quality standards with associated indicators. The Ymer wind farm is located in the *Baltic Sea* management area, the sea basin *Bornholm Sea and Hanöbukten*, as well as in the *Bornholm Sea and offshore waters of Hanöbukten*.

Any impact on the good environmental status of the marine environment will be addressed in the upcoming EIA.

11 Risk and safety

RWE will carry out risk analyses to identify risks in the construction, operation and decommissioning of the Ymer wind farm. Descriptions of risks and safety measures will be included in the upcoming EIA.

The western parts of the Ymer wind farm are located within a larger contiguous area where chemical weapons have been dumped. To investigate potential risk within the wind farm, an investigation regarding munitions will be carried out. (EMODnet, 2024)

The Ymer wind farm is in an area with extensive shipping. A nautical risk analysis, including a so-called HAZID (Hazard identification), will therefore be conducted.

12 Cumulative effects and transboundary impacts

Cumulative effects refer to effects that could arise from the planned activity in combination with other projects or activities.

Identification and assessment of cumulative effects will be made in the upcoming EIA. Activities with which planned activities could potentially give rise to cumulative effects include, for example, shipping, cables and licensed or existing wind farms.

At present, there are no existing or licensed wind farms within a radius of 50 km from Ymer wind farm. However, there are plans for several wind farms in the sea area in question, which, depending on whether they have obtained a permit at the time of the environmental assessment, should be considered when assessing cumulative effects (Figure 21). The Baltic Offshore Beta, Neptunus and Cirrus wind farms are planned in part of the same area as Ymer. Less than 10 km southeast of the Ymer wind farm, the Baltic Edge wind farm is planned, and about 20 km east of Ymer, the Södra Victoria wind farm is planned. The wind farms Njord and Öland-Hoburg 1 are planned about 15 km and 30 km north of Ymer

wind farm, respectively. Several wind farms are also planned in Poland south and east of Ymer. However, there are no planned wind farms in Denmark within 50 km of the Ymer wind farm. (4COffshore, 2024)

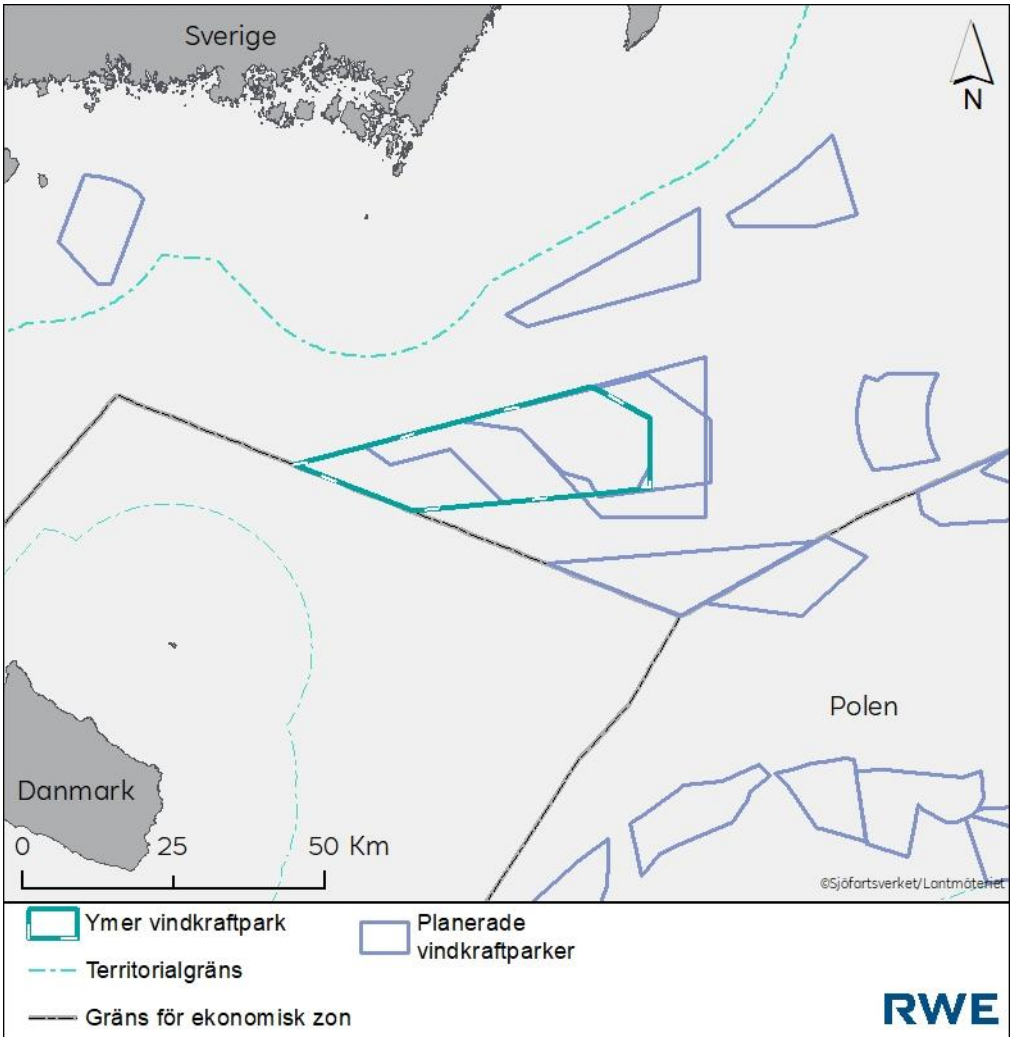

Figure 21. Planned wind farms (planerade vindkraftparker) in the vicinity of Ymer wind farm.

As the wind farm borders the Danish EEZ and is located about 21 km from the Polish EEZ, transboundary impacts may potentially occur. The aspects that are considered relevant to investigate further in the EIA linked to transboundary impacts are marine mammals, birds, commercial fishing and shipping.

13 Scope of EIA and consultation

13.1 Scope of environmental impact assessment

Chapter 6 §§ 35, -36 of the Environmental Code state what an EIA must contain. The information that is to be included in an EIA must have the scope and level of detail that is reasonable with regard to current knowledge and assessment methods and that is needed to provide an overall assessment of the significant environmental effects that the activity or measure can be assumed to have (Chapter 6 § 37 of the Environmental Code).

Preliminarily, the EIA is proposed to have the following content:

- Non-technical summary
- Administrative information
- Introduction
- Methodology and delimination
- Location and site description (including description of Natura 2000 site)
- Description of the activities
- Alternatives
- Description of current situation and environmental impacts (including Natura 2000)
- Cumulative effects and transboundary impacts
- Risk and safety
- Marine Strategy Framework Directive
- Overall assessment
- Monitoring and follow-up
- Declaration of expertise
- References

13.2 Surveys and investigations

Several surveys and investigations will be produced and form the basis for the assessments made in the EIA. Below is a description of the investigations the company plans to carry out based on the current state of knowledge.

- Modelling of underwater noise
- Modelling of sediment dispersion
- Desk study of oceanography, hydrography, and currents
- Desk study of contaminants in sediments
- Desk studies of biological values (benthic fauna and flora, marine mammals, fish, birds, and bats)
- Desk study of marine archaeology
- Nautical risk analysis (including HAZID)
- Risk analysis UXO dumped ammunition
- Marine infrastructure risk analysis
- Desk study of fishing
- Landscape image and visual impact including photomontage
- Flight obstacle analysis

13.3 Stakeholders

RWE proposes that the stakeholders, that will be contacted by e-mail or letter, should consist of the following parties.

State and municipal authorities	
County Administrative Board of Blekinge	County Administrative Board of Kalmar
Region Blekinge	County Administrative Board of Gotland
Ronneby Municipality	Karlskrona Municipality
Municipality of Sölvesborg	Karlshamn Municipality
Swedish Agency for Marine and Water Management	Environmental protection agency
Armed forces	The Swedish Museum of Natural History

Coast guard	Swedish Maritime Administration
Civil Aviation Administration	Geological Survey of Sweden (SGU)
The Swedish Transport Agency	Swedish National Heritage Board
Swedish Energy Agency	The National Board of Housing, Building
National Defence Radio Establishment	Swedish Defence Research Agency
Swedish Board of Agriculture	The Legal, Financial and Administrative Services Agency
Coast guard	Swedish Civil Contingencies Agency (MSB)
Police authorities	The Swedish Post and Telecom Authority
Swedish Geotechnical Institute (SGI)	Swedish Meteorological and Hydrological Institute (SMHI)
National Maritime and Transport Museums	The Swedish Transport Administration
Svenska kraftnät	
Associations, organisations and activities	
Swedish Pelagic Federation Producer Organisation (SPFPO)	Coalition Clean Baltic
Swedish Boat Union	The Swedish Shipowners' Association
Swedish Cruising Club	The Swedish Fishermen's Producer Organisation (SPFO)
Greenpeace	Ports of Sweden
Producer Organisation of Sea and Coastal Fishermen (HKPO)	The Swedish Society for Nature Conservation
Chamber of Commerce and Industry of Southern	Telenor
Hi3G Access AB (Tre)	Kalmar/Öland airport
Telia	Anglers
Ronneby airport	Cinia Ltd
World Wide Fund for Nature (WWF)	OX2
Statkraft	Örsted
Freja offshore	Eolus Vind
Equinor	Nordstream AG
Landinfra Alpha 2 AB	The Scuba Divers
Birdlife Sweden, Swedish Ornithological Society	

Other	
Maritime Academy	Linnaeus University
Swedish Institute for the Marine Environment	World Maritime University
Stockholm University Baltic Sea Centre	Swedish University of Agricultural Sciences
Lund University	Property owners at Utlängan and Utklippan
Blekinge Institute of Technology	

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