OÜ UTILITAS WIND

SAARE-LIIVI
OFFSHORE WIND FARM
ENVIRONMENTAL IMPACT ASSESSMENT

EIA programme for public display
26 July 2022

ROHE plaan

Contracting Entity: Utilitas Wind OÜ

EIA carried out by: Roheplaan OÜ

EIA lead expert: Riin Kutsar (EIA licence no. KMH00131)

1. Introduction

Utilitas Wind OÜ (hereinafter Utilitas Wind) desires, in accordance with an application for a superficies licence, to establish a wind power plant with a maximum of 299 wind turbines – also referred to as the **Saare-Liivi[1] offshore wind farm [2]** in the Pärnu County maritime area in the Gulf of Riga. The planned location is in an area suitable for development of wind energy in the county spatial plan of the maritime area adjoining Pärnu County.

Utilitas OÜ (register code 12205523) submitted to the Consumer Protection and Technical Supervision Authority (TTJA) on 18 February 2021 an application for superficies licence and on 5 July 2021, a supplemented application for burdening a public body of water for the establishment of the Saare-Liivi offshore wind farm in the Gulf of Riga. By decision no. 1-7/21-521 of 23 December 2021, the TTJA initiated proceedings on a superficies licence along with EIA (see Annex 1). On 14 January 2022, Utilitas OÜ and Utilitas Wind OÜ notified the TTJA that the rights and responsibilities of the applicant for proceedings on the Saare-Liivi offshore wind farm superficies licence and EIA in their capacity as party to the proceedings have, along with the Utilitas OÜ renewable energy production installation, been transferred to another Utilitas group company, OÜ Utilitas Wind. In letter no. 16-7/21-02502-036 of 29 March 2022, TTJA confirmed that it would treat Utilitas Wind OÜ as the applicant in further proceedings on the Saare-Liivi offshore wind farm superficies licence and EIA.

The objective of the EIA is to assess the possible environmental impacts that could result from carrying out the planned activity and its alternatives.

Environmental impact is direct or indirect impact on the environment, human health and well-bring, cultural heritage or assets, expected to result from activity. Environmental impact is significant if it is expected to exceed the environmental tolerance of the influence area, cause irreversible changes in the environment or pose a danger to human health and well-being, cultural heritage or assets [3].

The developer of the planned activity is Utilitas Wind OÜ. The EIA is conducted by Roheplaan OÜ in cooperation with Hendrikson&Ko OÜ, the University of Tartu Marine Institute and other experts involved (see Chapter 9). The lead expert of the EIA is Riin Kutsar (EIA licence no. KMH0131).

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1 In the application for superficies licence, the planned offshore wind farm was termed the "Saare-Liivi 5" wind farm because applications for superficies licence were also submitted on 29 April 2020 for the "Saare-Liivi 1-4" wind farms in the Gulf of Riga. On the basis of the applications submitted on (29 April 2020), proceedings on the superficies licence have not yet been commenced, and the chronological numbering used previously is no longer relevant, as it is misleading. For the above reason, the wind arm formerly known as "Saare-Liivi 5" is now termed "Saare-Liivi" wind farm.

2 The planned wind power plant, which will burden a public body of water, is also synonymously termed offshore wind farm.

3 https://www.riigiteataja.ee/akt/103012022010, § 21 and 22

2. Planned activity

2.1. Objective and need for the planned activity

The objective of Utilitas Wind under the application for superficies licence is to plan a wind farm with a maximum of 299 wind turbines in the Gulf of Riga in Pärnu County. The purpose of use of the structure is to generate power and/or hydrogen via the offshore wind power plant infrastructure.

The need for the planned activities stems from climate goals, to achieve which generation from renewable energy sources, including offshore wind energy, and energy performance and adoption of other sustainable solutions that will help achieve reduction in carbon emissions must be increased. The establishment of a offshore wind farm is also very important for achieving national energy security and security of supply.

2.2. Location of the planned activity

The location of the offshore wind farm is the inland maritime waters to the west of the island of Kihnu – the coastal sea region (coastal waters of the north-eastern part of Gulf of Riga and the central part of the Gulf of Riga) and an area partially located in territorial waters (see figure 2-1) in the maritime area adjoining Pärnu County.

The planned offshore wind farm is located in an area defined in the national spatial plan Estonia 2030+ [4]for establishing offshore wind farms and in a possible development area for wind energy in accordance with the county plan for the maritime area adjoining Pärnu County [5] (see Figure 2-1).

4 https://www.rahandusministeerium.ee/sites/default/files/Ruumiline_planeerimine/eesti2030.pdf

5 https://maakonnaplaneering.ee/maakonna-planeeringud/parnumaa/parnu-mereala-maakonnaplaneering/

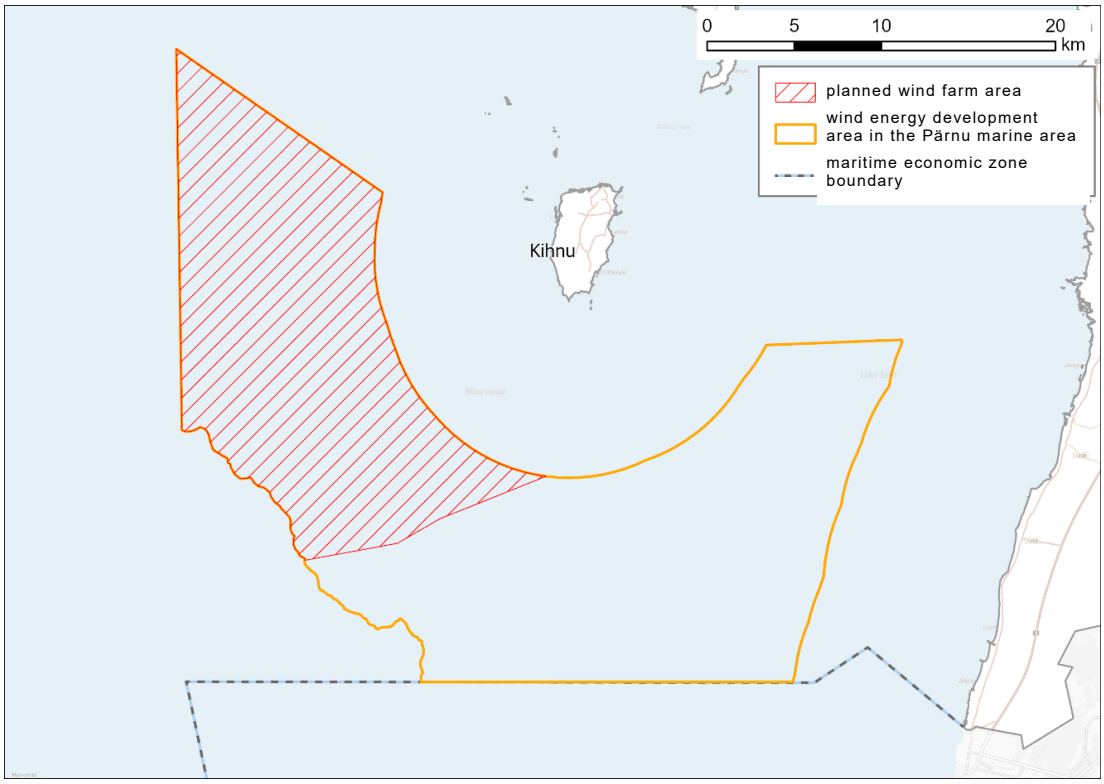

Figure 2-1. *The planned location of the offshore wind farm is in the county spatial plan area of the maritime area adjoining Pärnu County. Source: Main drawing in the county spatial plan of the offshore wind farm adjoining Pärnu County.*

2.3. Brief description of the planned activity and realistic alternatives

Under the application for superficies licence, Utilitas Wind desired to plan an offshore wind farm consisting of a maximum 299 turbines with a spacing of an estimated 1 km between turbines.

As of the preparation of the EIA programme and based on the environmental restrictions that had become evident at the time of the preparation of the programme (based inter alia on the environmental information published during the Estonian maritime spatial plan on the birds and bats), of the realistic (main) alternatives, the EIA will look at main alternative 1, which is an offshore wind farm area with up to 160 wind turbines and a spacing between the turbines of an estimated 1 to 1.25 km [6].

As "sub-alternatives" to main alternative 1, the EIA will look at and evaluate alternative technical solutions to different components:

- **number of electrical turbines**

  The final potential number of turbines and their positioning depends on the environmental restrictions that become evident in the course of studies carried out in the superficies licence area and the specific technical parameters of the turbine selected. Based on main alternative

6 1,25 km is a spacing that corresponds to a turbine with a 5x250 m rotor

1 of the EIA, the **maximum number of wind turbines to be evaluated and planned is up to 160**.

- **peak height of the turbine and rotor diameter**

The precise type of turbines to be adopted will become evident during the operational building design documentation stage. **During the EIA, the power rating of the turbines will be evaluated in the range of 14-20 MW and the maximum peak height studies will range up to 400 m.**

The world's most common and largest offshore wind farm producers at the time the EIA was initiated were Siemens Gamesa, Vestas and GE Renewable Energy. They currently meet the requirements in Europe and are certified as offshore wind farm producers. The largest turbines openly offered by these producers for offshore use are as follows:

- Vestas V236-15.0 MW™, rotor diameter 236 metres and with an output of 15 MW,
- SiemensGamesa SG 14-236 DD, rotor diameter 236 metres and with an output of 14 MW,
- GF Haliade X 14 MW, rotor diameter 220 metres and with an output of 14 MW,

More powerful turbines are being developed by the producers, with an expected power range of 14-20 MW, rotor diameter 250 to 290 m and a peak height of up to 320 m.

In recent years, wind turbine technology has developed in leaps and bounds and based on that, we expect that even bigger and more powerful turbines will be available on market by the construction of the planned offshore wind farm. This EIA will be prepared on the assumption of offshore wind farm turbines with the biggest dimensions and still as yet hypothetical but which might be adopted for use by the construction of the offshore wind farm, i.e. turbines with a peak height above sea level of max. 400 m (larger than the ones currently in production).

If, by the time of the design of the wind farm, there are additional producers who meet valid European requirements and are certified, the turbines offered by them will be considered, provided that they are not inferior in terms of the parameters to the abovementioned turbines.

- **foundation type**

Various types of foundations are in use for building turbines in offshore use. The most common foundation type is monopile and gravity foundations, with tripod and jacket foundations used less often. See Figure 2-2.

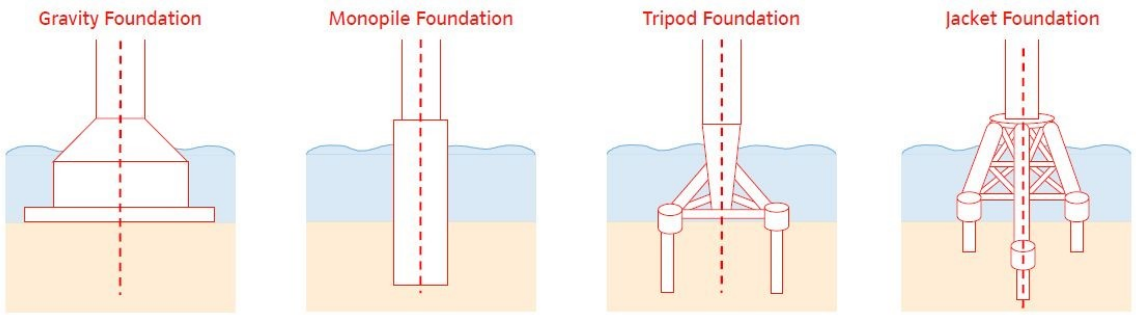

Figure 2-2. *Types of electricity turbine foundations used in offshore wind farms*[1][7]

the foundation type used for the planned power turbines will be determined after more detailed studies and above all it depends on the geology of the seabed. Since the sea depth ranges 10-30 m in the planned area, it is **likely that various kinds of foundations will be used.**

The foundation types chosen and the related impacts will be addressed in the report.

- **transmission system and locations of objects (cables)**

The power grid for operating the offshore wind farm and directing the electricity generated necessarily requires the establishment of a submarine cable system and connection to the transmission system. This EIA also addresses the various technical solutions and spatial solutions for the offshore wind farm's power transmission system in the marine area, which will be connected to the general power system.

On 11 April 2022, Utilitas Wind submitted an application for superficies licence on the basis of subsection 218 (1) of the Water Act for establishing the submarine cable needed to connect Saare-Liivi offshore wind farm to the transmission system. Utilitas Wind also expressed the desire that on the basis of subsection 11 (7) of the Environmental Assessment and Management Act, the EIA proceedings on establishing of the Saare-Liivi offshore wind farm, launched on 23 December 2021 be merged with the proceedings on EIA for establishing the submarine cable.

The location of the area sought for establishment of the submarine cable and potential locations for the cable are shown on Figure 2-3. The path of the cable through the sea will be clarified as a result of the investigations conducted as part of the superficies licence process in the submarine cable locations and the assessment of impacts.

7 Miceli F. Offshore wind turbines foundation types; 2012 (https://www.windfarmbop.com/tag/monopile/)

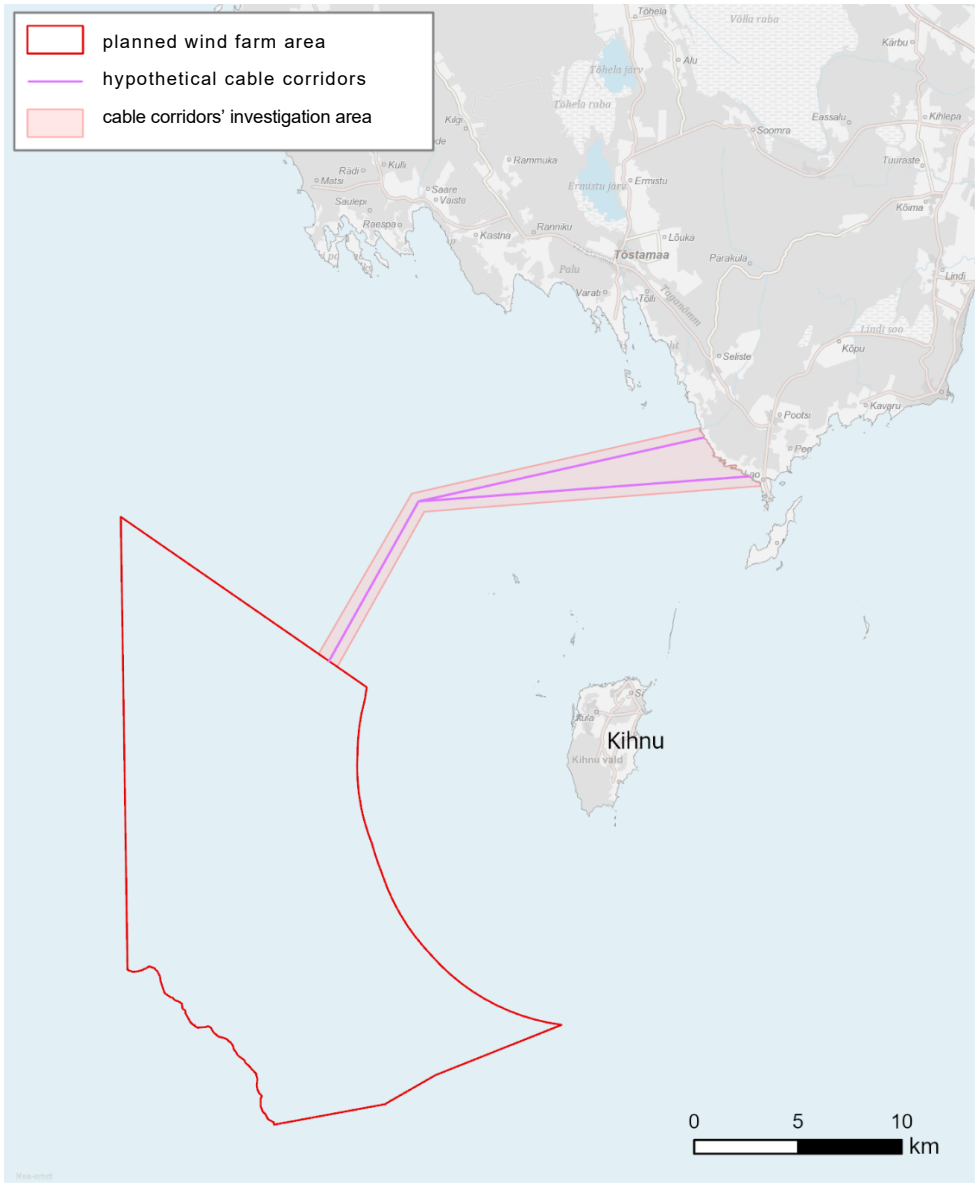

Figure 2-3. *The hypothetical cable corridor locations in the sea for connecting the planned Saare-Liivi wind farm*

The estimated length of the submarine cable depending on the specific landing point is about 25 km and the width of the corridor at sea is estimated at 6 to 20 km, depending on how far the cables are apart and their positioning. The depth of the submarine cable specially installed on the seabed from the cable laying ship corresponds to the depth of the seabed.

Either 6 three-lead cables in a common approx. 50 cm diameter reinforced sheath or 18 one-lead cables in approx. 25 cm diameter reinforced sheath., of up to 400 kV will be installed. The precise parameters of the cables (type, number, and capacity etc.) will be determined in further detailed design of the cable and offshore wind farm. To avoid mechanical damage to the submarine cable (such as caused by ridged ice), the cable will run along the seabed and if necessary, anchored or some other method used to avoid possible damage (such as covering with soil). The installation equipment and technology used to install the submarine cable on the seabed (including dumping, dredging, amount of solid substances to be submerged etc.) will be clarified in the course of design work and this EIA.

In addition, at least one collector substation will be established in the offshore wind farm, where medium-voltage cables will meet and where the voltage will be transformed to a suitable level for connection to the power grid. Since the wind farm involves very high amounts of power, the expected voltage level needed for connecting to the power grid is 330 kV. A submarine cable system within the offshore wind farm will be established as well, running from the turbines to the substation. The locations of the offshore wind farm's substation(s) and the submarine cables will be clarified in the course of the further process. The power cables within the offshore wind farm will be installed, if necessary, in the seabed soil.

The locations selected for the submarine cable and the attendant impacts will be evaluated in combination with the impacts stemming from the planned offshore wind farm, including the infrastructure within the wind farm (substation and cables within the wind farm).

Analysis of the main alternative and sub-alternative solutions and clarifying them will take place in the subsequent EIA report process (among other things, as a result of the data from investigations conducted in the planned area) and in developing the technical solution in cooperation with the agencies involved in the process and experts in the corresponding field. Alternative solutions that arise during the EIA process and/or determining of the best alternative solution (including drafts in regard to the locations of wind farms and parameters) will be described in the EIA report.

The alternatives for the planned activity will be analysed in the course of the EIA in comparison with the 0-alternative – i.e. the preservation of the existing situation in the marine area without the offshore wind farm being planned.

Hydrogen technology. As of the time of preparation of this EIA programme, Utilitas Wind does not plan specific (technical) solutions at the offshore wind farm for dealing with the hydrogen topic, e.g. production of hydrogen in the wind farm and transport via pipeline to the mainland. At the same time, the planned offshore wind farm will be developed such that it could be connected to hydrogen technology solutions with minimal modifications. The EIA report thus considers specific development options related to the hydrogen topic at the conceptual level (i.e., technical solutions not planned in detail).

Producing hydrogen from the power generated at Saare-Liivi offshore wind farm can be arranged in various ways if it proves upon more detailed design development whether the hydrogen production unit can be cost effectively established in the immediate proximity to the offshore wind farm cable clearance or on the territory of the offshore wind farm. If, during the EIA process, solutions arise that are parts of the offshore wind farm, the planned activities at sea will be evaluated in the context of this EIA.

Initial analysis shows that production of hydrogen on land may prove more cost effective than building a unit for hydrogen production at the offshore wind farm and piping it to the mainland. At the same time, the solutions for production of hydrogen depend on technological development and the hydrogen infrastructure and demand in the region at the time the project is realized. if a connection of the offshore wind farm to a hydrogen plant on e.g. the mainland is considered, a separate project will be drawn up along with an EIA.

3. Connections between the planned activity and strategic planning documents

3.1. Climate and energy policy framework up to 2030

In 2014, the European Union adopted the Climate and Energy Policy Framework up to 2030[8], which was prepared based on the principle that goals are to be fulfilled collectively and using measures that are as cost effective as possible.

The three main goals of EU climate and energy policy up to 2030

- Increasing the share of renewable energy to 27% of energy end consumption by 2030;
- Increasing energy efficiency by 27%;
- Reducing GUG emissions by 40% by 2030 compared to 1990.

The planned activity is in direct concordance and contributes to achieving the goals of the climate and energy policy framework.

3.2. European Green Deal

On 11 December 2019, the European Commission adopted the "European Green Deal"[9].

The European Green Deal is an umbrella strategy aimed at achieving a resource-efficient and competitive economy in Europe where by 2030 climate neutrality will have been achieved along with sustainable use of resources along with sufficient economic growth. The goal must be achieved while preserving the natural environment and protecting citizens from dangers and impacts related to environmental pollution.

At the core of the Green Deal are three primary principles for the transition to clean energy, which will help to reduce GHG emission and improve quality of life for the population:

1. ensuring stable and affordable EU security of supply;
2. achieving an EU energy market that is fully integrated, mutually cross-connected and digitalized;
3. making energy performance the priority, Improving energy performance in buildings and developing an energy sector that is largely renewable-based.

The goals set for achieving the abovementioned principles that are relevant in the context of this EIA are:

- creating interconnected energy systems and better integrated power grids to support use of renewable energy sources;
- promoting innovative technologies and contemporary infrastructure;

8 https://energiatalgud.ee/Energiatalgud.ee%3A_EL-i_kliima-_ja_energiapoliitika_raamistik_aastani_2030

9 https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_et

- promoting EU energy standards and technology at a global level;
- tapping Europe's full offshore wind energy potential.

The planned activity will directly contribute to achieving transition to pure energy – a goal at the core of the European Green Deal.

3.3. The European Union's biodiversity strategy up to 2030

On 20 May 2020, the European Commission adopted the European Union Biodiversity Strategy up to 2030 "[10], which attempts to contribute to European biodiversity being able to recover by 2030, generating benefits for humans, climate and our entire planet.

The most Important topics in the context of this EIA are set out in Chapter 2.2 of the strategy. (EU nature restoration plan: restoring land and marine ecosystems):

- 2.2.5. Win-win solutions for energy generation. To achieve climate neutrality and EU recovery after COVId-19 crisis and to achieve long-term well-being in the EU, it is extremely important to reduce carbon dioxide emissions from the energy system. More sustainably procured renewable energy is very important for fighting both climate changes and reduction of biodiversity. The EU prioritizes solutions connected to, e.g., ocean energy, offshore wind farms (which also enable fish stocks to recover), solar parks (which support the growth of vegetation cover that promotes biodiversity) and adoption of sustainable bio-energy.

- 2.2.6. Restoring the good environmental status of marine ecosystems. Restored and properly protected marine ecosystems bring substantial health and socio-economic benefits, notably to coastal communities and the EU as a whole.. The need for stronger measures is all the more urgent considering that global warming is greatly increasing the reduction of biodiversity in marine and coastal ecosystems. Achieving good environmental status of marine ecosystems, including through creation of strict protection areas, must include restoration of carbon-rich ecosystems and key spawning and nursery areas. Some of today's sea uses are recognized as endangering food security, fishers' livelihoods, and fishery and seafood sectors. Marine resources must be harvested sustainably, and there must be zero-tolerance to illegal practices. The full implementation of the EU's Common Fisheries Policy, the Marine Strategy Framework Directive, and the Birds and Habitats Directives will deliver an important part of these objectives and benefits.

The planned activity is in harmony with the EU Biodiversity Strategy.

3.4. National strategy "Sustainable Estonia 21"

The national strategy Sustainable Estonia 21, adopted by Parliament on 14 September 2005, defines sustainable development principles.[11] Estonia's objectives up to 2030 were articulated in

10 https://ec.europa.eu/environment/strategy/biodiversity-strategy-2030_et

11 https://www.riigiteataja.ee/akt/940717

conformity with global (Agenda 21) and the European Union's long-term development visions. Among other things, the need to plan steps for a transition to a post-oil shale energy sector was mentioned.

The planned offshore wind farm is in conformity with the national strategy.

3.5. "Estonia 2035" national strategy

Adopted by Parliament on 12 May 2021, "Estonia 2035"[12] is a long-term development strategy that aimed to grow and support Estonian people's wellbeing to make Estonia the best place to live and work 20 years from now. "Estonia 2035" is a strategic management tool for coordination of the country's long-term strategic planning and financial management, taking into accounts the possibility of state finances. It is a strategy that facilitates cooperation between Parliament and the Cabinet for ensuring common management of Estonia's development and strengthens the connections between various strategic policy documents. "Estonia 2035" is implemented mainly through sectoral development plans and programmes in the corresponding fields. "Estonia 2035" sets five long-term strategic goals that are values-based targets and are a basis for making the country's strategic choices, with implementation supported by all of Estonia's strategic development documents:

- The people of Estonia are smart and active and care about their health.
- Estonian society is compassionate, cooperation-minded and open.
- The Estonian economy is strong, innovative and mindful of its responsibilities.
- Estonia is considerate of everyone's needs, safe and secure and a high-quality living environment.
- Estonia is an innovation-minded, trustworthy and human-centred country.

To stay on course in terms of the core principles of Estonia, achieve strategic aims and meet development needs, changes are needed in various fields.

The following is relevant in the context of this EIA:

- Transition to climate-neutral energy generation while guaranteeing energy security. The transition to climate-neutral energy generation that ensures good air quality requires alternatives to be weighed and choices made. We must ensure continuity of energy security and security of supply both during and before transition to climate neutral energy generation. We will find solution for increasing the share of renewable energy that takes into account security; environmental protection and the interests of the population. We are open to and support new solutions such as offshore wind energy.

- We will adopt a safe, environmentally clean, competitive, need-based and sustainable transport and energy infrastructure. We are open to and support new technologies such as hydrogen use. Transition to climate-neutral energy generation requires the establishment of support infrastructure. To do so, we will synchronize the power grid

12 https://valitsus.ee/strateegia-eesti-2035-arengukavad-ja-planeering/strateegia/materjalid

with the continental Europe frequency area, create the necessary network connections for generation of renewable energy and adopt smart networks, short and long term energy storage possibilities.

Based on the above, the planned offshore wind farm will directly contribute to fulfilling the set goals of ensuring sustainable and climate-neutral energy generation.

3.6. "Estonia 2030+" national spatial plan

On 30 August 2012, the Cabinet established the national spatial plan, "Estonia 2030" [13]. In accordance with the spatial plan, among the most important fields for increasing the local renewable resource based energy generation capacity are wind energy and bio-energy. In accordance with the plan; the share of other energy sources in the country's energy balance will have to be increased. The Western Estonian coastal sea is suitable for establishing offshore wind farms. The main objectives of "Estonia 2030+" in the energy sector are:

1. In developing electricity generating capacity, it is necessary focus on supplying Estonia with energy. New energy generating units must be positioned in space rationally and sustainably. It is noted that power generation in Estonia has thus far been based mainly on oil shale, which will not be competitive in the long term (e.g. because of higher environmental charges). Due to energy security and environmental considerations, it is not expedient for one fossil energy source to have such a high proportion in the country's energy balance, because it is connected to security of supply, the energy market and environmental protection risk. Because of that, other energy sources must also be increased in proportion and infrastructure developed to trade more extensively with other European Union member states in the energy field.
2. The possibilities of Estonian energy supply Must be broadened, creating international connections with energy networks in the Baltic Sea region.
3. Undesirable impacts for the climate must be avoided. Renewable energy must make up a higher proportion of energy supply, and implementation of energy efficient measures must be ensured. Attention is drawn to the fact that "possibility and need to establish new land or offshore wind farms must be considered, because Estonia's good wind potential allows a noteworthy part of electricity to be generated using turbines."

The planned offshore wind farm is in conformity with the energy goals in the national spatial plan Estonia 2030+.

3.7. Fundamentals of climate policy up to 2050

The "Basic Fundamentals of Climate Policy up to 2050", [14] adopted by the Parliament on 5 April 2017, is a vision document in which the principles and policy directions are implemented through sectoral development plans. The fundamentals set a goal to achieve, by 2050, a competitiveness low-carbon-emissions economy in Estonia. Making progress toward this goal means restructuring the economic and energy system to be more resource-efficient, productive and

13 https://www.rahandusministeerium.ee/et/ruumiline-planeerimine/uleriigiline-planeering

14 https://envir.ee/kliimapoliitika-pohialused-aastani-2050

environmentally clean. Estonia's aim is to reduce by the year 2050, GHG emissions by close to 80% compared to the 1990s level.

The planned activity is in harmony with the goals of the Basic Fundamentals of Climate Policy up to 2050.

3.8. Estonian environmental strategy up to 2030

The "Estonian Environmental Strategy up to 2030"[15] is an environmental development strategy that is based on the principle of sustainable Estonia 2021 and is the overarching strategy for all sectoral development plans in the field of the environment, which must, when prepared or supplemented, be based on the principles given in the environmental strategy.

The purpose of the Estonian Environmental Strategy up to 2030 adopted by Parliament decision of 14 February 2007, is to define the long-term development areas for maintaining the good status of the natural environment, proceeding from the connections between the environmental field and the economic and social field and their impacts on the surrounding natural environment and humans. The objective of the environmental strategy in regard to climate change and air quality is as follows: generate electricity in a volume that satisfies Estonian demand, and develop diverse sustainable production technologies that are based on various energy sources and have low environmental load and which allow electricity to be generated for export as well.

The environmental strategy implementation plan, Estonian Environmental Action Plan for 2007-2013" envisioned the following activities for alleviating climate change and improving air quality in regard to wind farms: establishing compensating equipment for increasing the potential for harnessing wind energy and establishing additional wind farms for achieving Estonia's renewable energy objective.

The planned activity is in harmony with the goals of the Estonian Environmental Strategy up to 2030.

3.9. Estonian Climate Change Adaptation Development Plan up to 2030

On 2 March 2017, Parliament adopted the Climate Change Adaptation Development Plan 2030" [16], the strategic objective of which is to increase the Estonian state regional and local level readiness and capability for adapting to the impacts of climate change.

For preparing the climate change development plan, researchers determined the impact of climate changes in eight key fields for Estonia: planning and land use, human health and rescue capability, natural environment, bio-economy, infrastructure and structures, energy and energy supply, economy, society, awareness and cooperation.

In terms of the energy and energy supply field, which is relevant for this EIA, the following is set as a sub-objective: despite climate change, energy independence, energy security, security of

15 https://www.riigiteataja.ee/aktilisa/0000/1279/3848/12793882.pdf

16 https://valitsus.ee/strateegia-eesti-2035-arengukavad-ja-planeering/arengukavad/muud-arengudokumendid

supply, and suability of renewable energy resource shave not decreased and the volume of end consumption of primary energy will not increase. The overarching idea of energy independence is autonomy from import of energy carriers, relying on domestic fuels and above all renewable fuels for producing energy, and use of renewable energy source and diversification of the energy generation portfolio. Energy security of supply is best ensured by the existence of sufficient and responsive generating capacities and dispersion of energy generation. It is important that the planning the long-term future of energy sector factor in not only the existence of resources, the cost of technologies and energy and other aspects that impact the energy sector, but also changing climate conditions and their impact on energy generation and delivering electricity to consumers also be considered.

The planned activity is in harmony with the goals of the Estonian Climate Change Adaptation Development Plan up to 2030, supporting the fulfilment of goals set for ensuring energy and energy supply.

3.10. Estonian National Energy and Climate Plan up to 2030

On 19 December 2019, the Cabinet approved the "Estonian National Energy and Climate Plan up to 2030 "[17] (REKK 2030), which consists of the Estonian energy and climate policy goals and the 71 measures developed for implementing the goals. The broader goals of REKK 2030 is to give Estonian people, companies and other EU member states as detailed as possible information about the measures the Estonian state intends to use to achieve the energy and climate policy goals agreed in the European Union.

The main objectives of REKK 2030 that are significant in the context of this EIA are the following:

- Reduction of Estonian GHG emissions by 80% by 2050 (including by 70% by 2030)
- By 2030, renewable energy must make up at least 42% of total end consumption: in 2030, renewable energy will make up 16 TWh – 50% – of final <consumption. Of this, renewable electricity is 4.3 TWh (2018 = 1.8 TWh), renewable heat 11 TWh (2018 = 9.5 TWh), and transport 0.7 TWh (2018 = 0.3 TWh).
- Guaranteeing energy security, keeping the level of dependence on imported energy as low as possible: the use of local fuels will be kept as high as possible (among other things, the use of fuel-free energy sources will be increased), and biomethane production and use potential will be harnessed.

The planned activity makes a direct contribution to fulfilling the Estonian national energy and climate goals by supporting an increase in the proportion of renewable energy.

3.11. Energy Sector Development Plan 2030

The "Energy Sector Development Plan 2030" approved by the Cabinet on 6 October 2016 (ENMAK 2030)[18] consolidates future activities related to heat, power and fuel economy, energy use in the

17 https://www.mkm.ee/et/eesmargid-tegevused/energeetika/eesti-riiklik-energia-ja-kliimakava-aastani-2030

18 https://www.mkm.ee/sites/default/files/enmak_2030.pdf

transport sector and housing sector. In addition, ENMAK 2030 determines the points of departure for the following development plans that must be submitted to the European Commission:

- Renewable energy action plan on the basis of the renewable energy directive 2009/28/EC.
- Energy savings action plan on the basis of the energy conservation directive 2012/27/EU.
- Building renovation plan on the basis of the energy conservation directive 2012/27/EU.

The general objective is to ensure for consumers a market-based price and available supply of energy that is in harmony with the European Union's long-term energy and climate policy goals, while contributing to improving the Estonian economic climate and environmental status and long-term competitiveness growth. According to the development plan, the state's main activities in ensuring energy security infrastructure and ensuring current and future cross-border electricity and gas supply connections, ensuring the liquid fuels and gas stocks for Estonia set forth in legal requirements, the existence of heat production capacity to cover base and peak demand, ensuring legislative drafting for promoting dispersed and micro generation. Energy supply for vital services must be guaranteed. Power generation takes place in conditions of an open electricity market. New power generation capacities are established based on the conditions of the electricity market, where government intervention takes place for fulfilling the power generation capability criterion or for incentivizing the market launch of new innovative technologies.

The share of fossil-fuel-free energy sources in end consumption will be at least 10% by 2030. Wind energy may cover one-third of the country's electricity demand by 2050. As a general trend in power generation, it can be forecasted that the share of renewable energy sources as wind and biomass will increase in future depending on technologies coming down in price and the price of CO_2 allowances rising. The renewable energy sources that see the most use for power generation in Estonia today are biomass and wind.

The planned activity is in harmony with and makes a direct contribution to fulfilling the Energy Sector development plan's goals by supporting an increase in the proportion of renewable energy.

3.12. Estonian Maritime Strategy

The Estonian Maritime Strategy [19] and the Estonian Marine Strategy's Programme of Measures were prepared at the behest and under the auspices of the Ministry of the Environment in order to achieve and maintain the good environmental status of the Estonian maritime area. The first phase included an initial assessment of the environmental status of the Estonian maritime area, socioeconomic analysis, definition of good environmental status of the maritime area and the targets set for 2020 for achieving a good environment status for the maritime area. The first stage was ready in September 2012.

The second phase of the maritime strategy included preparation of a monitoring programme. The objective of maritime monitoring is to gather data for the periodic assessment of the environmental status of the Estonian maritime area, including on achievement or non-

19 https://envir.ee/keskkonnakasutus/merekeskkonna-kaitse/merestrateegia

achievement the environmental targets established on the basis of the framework directive and for assessing the effectiveness of the plan of measures to be established. The objective is to gather data on human activities that directly or indirectly impact the maritime environment, including use of wind energy.

As the third stage, the Estonian Maritime Strategy plan of measures was prepared, and approved by the Cabinet on 23 March 2017. The Ministry of the Environment initiated, by directive no. 1-2/21/390 on 15 September 2021, the preparation of the Estonian Maritime Strategy plan of measures 2022-2027 and strategic assessment of the environmental impact.

In the context of this EIA; it is important to note that the plan of measures proposed measure D11 (Undersea noise and energy), the objective of which is articulated as follows: directing of energy into the environment, including underwater noise, is at a level that does not harm the maritime environment. There is a recommendation for assessing underwater noise through two indicators: (1) Distribution of strong, low and medium frequency short-sounds in time and space; (2) Constant low-frequency noise. The proposed measure is in turn related to other impacted criteria and by the measures and investigations planned there, e.g. the conducting of priority studies has been cited for D3 (fish), the experimental assessment of the impact of noise generated by wind farms on Baltic herring migration and functioning of spawning areas ". In addition to the abovementioned factors, attention must be devoted to other criteria potentially impacted by offshore wind farms, such as D1, D4 (biological diversity and food network), D6 and D7 (integrity of the seabed and hydographic changes), D8 (hazardous materials) and related planned measures for achieving a good environmental status for the maritime area.

The planned activity is in harmony with the Estonian Maritime Strategy.

3.13. County plan of the maritime area adjoining Pärnu County.

The county plan for the maritime area adjoining Pärnu County [20] was established by order no. 1-1/17/152 of the Pärnu county governor of 17 April 2017.

In the course of the public planning process, the county plan of the maritime area adjoining Pärnu County determined the use of the maritime space, which strikes a balance in considering the interests of users of the maritime area. The spatial planning of the maritime area makes it possible to avoid or reduce conflicts between activities currently taking place or planned at sea and nature.

The county plan defines the potential development areas for wind energy installations. Some exclusions exist in the defined development area due to environmental or technological reasons or interest groups. These will be clarified and determined as part of proceedings on the superficies licence.

20 https://maakonnaplaneering.ee/maakonna-planeeringud/parnumaa/parnu-mereala-maakonnaplaneering/

In selecting a location for wind energy development area, the following principles were envisioned in accordance with part 3.6 of the explanatory memorandum:

- location of the area in the national spatial plan;
- the area does not contain with protected natural objects;
- the maximum depth of the sea is 30 metres;
- the distance from the mainland and permanently settled islands is at least 10 km.

The feasibility and specific locations of the wind farm to be established will be determined as a result of more detailed investigations. The impact must be studied in the scope of the significant zone, not only in the development area itself.

In accordance with the county spatial plan, the following principles must be adhered to in developing and operating the potential development area:

- In regard to establishing the wind farm, the area defined for this purpose in the county spatial plan of the maritime area adjoining Pärnu County must be preferred.
- To minimize the visual impact, the wind turbines must be grouped in farms/clusters that are as compact as possible. The line of sight must be broken up and a visualization from different points on the mainland must be prepared as part of the EIA.
- The impact on fish migration and spawning, birds and bats must be specified. Significant fish spawning areas must be preserved when conducting the EIA.
- Previously compiled study results must be taken into account in the EIA.
- As part of the EIA, the impacts present during construction work must be evaluated, including the impact of activities taking place on land, impacts during operation, and appropriate measures developed.
- The best possible realistic solution must be selected for establishing the wind farm. Among other things, possible harm to fish stocks arising from the undersea cables must be minimized.
- The socioeconomic impacts must be evaluated and the necessary alleviatory measures envisioned.
- The impact on underwater objects of cultural value must be assessed.
- Wind turbines must not be planned closer than 5.2 nautical miles (about 10 km) to the mainland and permanently settled islands.
- It is preferable for the wind farm not to be established closer than 2.6 (approx. 5 km) to the Republic of Latvia border. This distance may be reduced with notification to the Republic of Latvia.
- In order to ensure navigational safety, wind turbines shall not be established in shipping lanes. The locations of the turbines with respect to shipping lanes are to be coordinated with the Transport Board (former wording: Maritime Administration, Veeteede Amet) in developing further more detailed technical solutions.
- The most promising sea depth for development of the wind turbines (in stage I) is an estimated up to 20 m).
- If there is a person interested in developing aquaculture, a co-use of the wind energy area with aquaculture will be considered/analysed at the initiative of that person.
- Wind farms must not cause reduced operational capability of national defence maritime surveillance and national defence air surveillance systems. If the wind turbines are

established in radar systems' operating zones, they must be positioned so that the communication systems operate faultlessly.
- Development of wind farms at a distance of 10-12 km from shore is allowed with an agreement between developer and local government. The agreement is entered into in a free form and this does not constitute the approval granted in the proceedings on the superficies licence in accordance with the Water Act.
- Rammed pile foundations (which cause major noise during construction) may not be used for establishing wind turbines.

The planned activity is in conformity with the county spatial plan for the maritime area adjoining Pärnu County and the principles set forth in the plan have been taken into consideration in planning the EIA. The environmental elements to be assessed in the course of the EIA process and the investigations necessary for assessing them are shown in Table 5-1.

3.14. Estonian maritime spatial plan

The Estonian maritime spatial plan is the most recent and strategic spatial planning document that includes all sectors[21]. This is a thematic plan that is part of the national spatial plan, and encompasses all Estonian maritime areas excluding the maritime areas in Pärnu County and Hiiumaa that were previously prepared as county spatial plans.

The objective of maritime spatial planning is to agree on the principles of use of the Estonian maritime plan in the long term to contribute to achieving and preserving the good status of the maritime environment and to promote the maritime economy. The spatial plan determined which parts of the maritime area activities can be implemented and on what conditions. In the course of preparing the maritime spatial plan, the combined effect of the activities already taking place in the maritime area and still in the planning stage were treated. Their impact on the maritime environment and economy and the activities' social and cultural impact were also assessed. Among other things, the spatial plan also determines the suitable areas, guidelines and conditions for developing wind energy.

In preparing this EIA programme and planning the content of the EIA as a process, the best practices set forth in the Estonian maritime spatial plan and latest principles have been taken into account.

21 http://mereala.hendrikson.ee/

4. Description of the environment expected to be impacted

4.1. Natural environment

4.1.1. Geological conditions

In describing the initial general geological situation in the Gulf of Riga, maps consolidated based on archive materials can be considered, e.g. those in the EMODnet system [22]. No recent broad-based geological investigations have been performed in the Gulf of Riga.

According to the analysis performed and classification used in the EMODnet project, muddy sediments are the most common in Estonian maritime areas. Glacial till, sand and coarse-grained sediment (pebbles) are also found. To a lesser degree, there are areas with rocky surfaces (exposed bedrock) or areas have been classified as mixed-sediment areas[23].

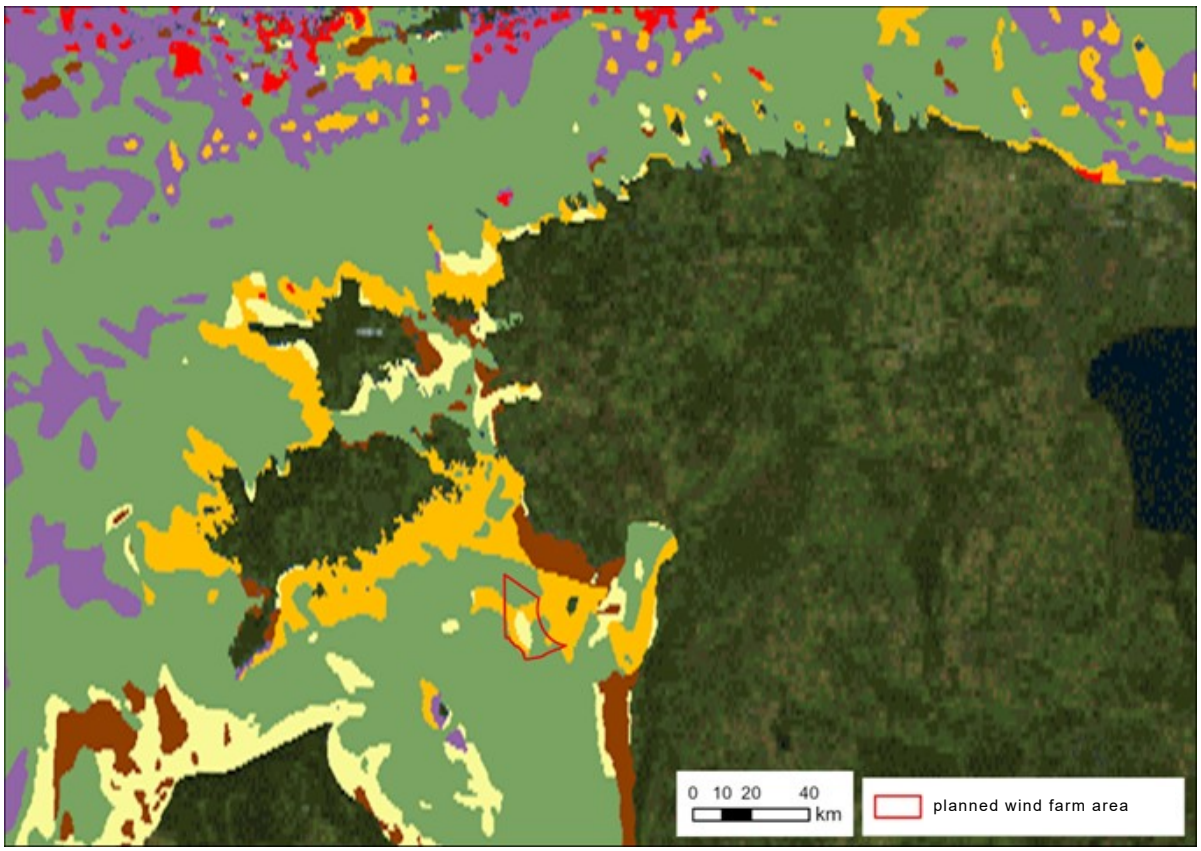

Figure 4-1. *Estonian maritime area and neighbouring areas seabed substrate based on data from the EMODnet pilot project [24]. Categories: green – mud to sandy mud); light yellow – sand to muddy sand; brown– coarse-grained sediment; violet –mixed sediment; dark yellow – till; red bedrock.*

22 https://emodnet.ec.europa.eu/en/emodnet-data-layers-catalogue-within-atlas

23 Tallinn University of Technology Institute of Marine Systems, OÜ Alkranel. The Estonian Marine Strategy plan of measures for achieving and maintaining the good environmental status of the Estonian maritime area, strategic environmental impact assessment. Report 2015-2016.

[24] The map was published by the University of Tartu Marine Institute (2012) and it was used in the Estonian Marine Strategy plan of measures for achieving and maintaining the good environmental status.

Devonian rock is found in the upper part of the bedrock in the planned offshore wind farm area – on the southern side, dolomites, domerites and aleurolites of the Narva Formation, and to the north, sandstones of the Pärnu Formation. The bedrock is covered by various Quaternary sedimentary layers, of which the most widespread are mud, till, sand and pebble, with varved clay as well.

4.1.2. Climatic conditions

Temperature and salinity. Of the seas of the world, the Baltic Sea has one of the lowest exchange of water, which causes low salinity that decreases as distance from the Straits of Denmark increases. The average salinity of the world's oceans is 35 parts per 1000, the Baltic is generally less than 10 parts per thousand. Salinity also varies by depth. Saltier water is found in deeper layer of water, and the more sudden change in salinity occurs in the 50-80 metre zone – the halocline The more saline water migrates to deeper layers due to its higher specific gravity. The less saline surface water flows out of the Baltic Sea.[25]

In the open parts of the Baltic Sea, salinity can reach 10 g/kg while in smaller inlets of bays, the water is essentially non-saline. At the same time; the variation of salinity in this specific maritime area over time is relatively low; and generally not more than a few units.

Water temperature values in the Estonian coastal sea are usually highest at the end of July and August. In calm and sunny weather, the shallow near-coastal areas can warm quickly and the water temperatures can occasionally reach 25 degrees, but with higher winds, the coastal water mingles with cool open-sea water or is replaced completely with water from the open sea. In the autumn, when the sea loses warmth to the atmosphere, the opposite occurs: calm and cool weather cool the coastal water faster, but over a certain period of time, currents bring in warmer water again to the coast. In the coldest month, the water temperatures in the coastal water generally remain under 5 degrees.[26]

Wind. Estonia's wind climate is determined by the frequent alternation of low pressure and high pressure systems that characterizes the northern part of the temperate zone – cyclonal activity that causes windy weather. The intensity of cyclonal activity in the Baltic Sea area depends on the general circulation of the atmosphere above the Atlantic Ocean and Eurasia, determining the primary speed and direction of the wind in Estonia as well as the seasonal variability – stronger winds and more frequent storms characterize the period from October to January while the period from May to August has lighter winds and more days of calm.

In the Gulf of Riga, southwest winds are predominant an in the open central gulf, the annual average wind speed is 8–8.5 m/s, with gusts up to 26–28 m/s.

The long-term wind energy (energy density, W/m^2) at an elevation of 150 m in the central part of the Gulf of Riga averages 700–780 W/m^2 and to the west of Saaremaa in the open sea, 810–

25 The Estonian Marine Strategy's Programme of Measures for achieving and maintaining the good environmental status of the Estonian maritime area, strategic environmental impact assessment, 2015 (editors: Tallinn University of Technology Institute of Marine Systems, OÜ Alkranel)

26 Aquaculture in the Estonian maritime area, basic data and studies, University of Tartu Marine Institute (https://pta.agri.ee/media/2129/download)

880 W/m^2, near Hiiumaa Island 800–840 W/m^2, while in the Gulf of Finland, the energy density decreases in the western part (750 W/m^2) going east (550 W/m^2).[27]

Wind conditions are good in the planned Saare-Liivi offshore wind farm area. South-westerly winds are most common, and this direction is also the most energy-dense.

Waves and currents. The wind climate also determines the nature of waves and currents. The flow of water along the coast of Estonia is most frequently eastward. The typical speed of the current in the surface layer of the Estonian maritime area is 10–20 cm/s. The maximum current speeds, which exceed 1 m/s, were registered in the straits (e.g. Suur Väin strait) and along the coast (e.g. in the Gulf of Finland) in the event of periodically occurring strong coastal jets. Wave height is mostly 1–2 m, while in the open sea, the wave height during a storm is 5–6 m, and up to 10 m during an extraordinary western storm. Wave height ranges up to 6 metres in the Gulf of Finland and 3–4 metres in the Gulf of Riga.[28]

Ice conditions. In the Estonian maritime areas, ice cover forms each year at least in Pärnu Bay and Väinameri Sea. In extremely mild winters (such as 2007/2008) ice is found only in Pärnu Bay and Väinameri Sea bays. In cold winters (e.g. 2010/2011) the entire Estonian maritime area is covered with ice and even the western coast of Hiiumaa and Saaremaa experience ice for 30 days.

The open part of the Gulf of Riga is characterized by dynamic ice conditions (0.02-0.045 m/s) and a shorter duration of ice cover (averaging less than 60 days). In cold winters, the entire gulf may be ice-covered for 3 months and ridge ice can be found throughout the open part of the Gulf of Riga. Damage caused to stationary offshore infrastructure by drifting ice is most likely in the western and central Gulf of Finland and the open part of the Gulf of Riga. In these areas, ice fields tens of square kilometres can drift 30–40 km within 48 hours at a speed of 0.23 m/s.[29]

4.1.3. Quality of seawater

Quality off seawater is the aggregate values and status assessments used for assessing the status of seawater. The composite status used to characterize coastal water consists of two components: ecological status and chemical status.

Transparency is an important indicator of the quality of the marine environment. The availability of light determines the initial possibility of photosynthesis in water. In general, transparency is greater in the open sea (in the Estonian maritime area, this includes the East Gotland basin and the northern part of the Baltic Sea) and lowest in the Gulf of Riga and Gulf of Finland.

The ecological status of the three coastal bodies of water in 2020 was deemed moderate and the chemical status as poor (Environmental Agency, 2021). The reason for the moderate ecological

27 Estonian maritime area spatial plan impact assessment report, to be established in 2021 (https://mereala.hendrikson.ee/dokumendid/Planeeringulahendus/Kehtestamisele/4_MSP_M6jude_hindamise_aruanne.pdf)

28 Aquaculture in the Estonian maritime area, basic data and studies, University of Tartu Marine Institute (https://pta.agri.ee/media/2129/download)

29 "Analysis of ice conditions and preparation of maps", TTÜ Institute of Marine Systems, 2016 (https://www.rahandusministeerium.ee/et/system/files_force/document_files/mrp_jaaolud_final.pdf)

status is the concentrations of nutrients and phytoplankton parameters, while the reason for the poor chemical status is the mercury concentration in fish.

According to Ministry of the Environment data, most of the Estonian maritime area has not, pursuant to the most recent maritime area environment status assessment, attained good Environmental status level. Good environmental status level has been achieved only with regard to the criteria for "Seabed habitats" and "Change in hydrographic conditions " [30]. Data from the Estonian national maritime environment monitoring show that both the winter anorganic nitrogen and phosphorus compound concentrations and the summer average total nitrogen and total phosphorus levels are far above the desired level.

No water quality measurements have been taken in previous years in the planned wind farm area and its near vicinity. No regular national monitoring stations are located in the area of the planned activity. The closest such stations are permanent monitoring station K2 (located 10 km to the east of the planned offshore wind farm area) and the coastal sea bodies of water monitoring programme station 125 (located to the northwest of the planned offshore wind farm).

4.1.4. Habitats and biota

Seabed habitats and biota[31]

Marine habitat types. In the European Union, key habitat types for nature conservation were listed in Annex I to the nature directive (92/43/EEC on the conservation of natural habitats and of wild fauna and flora), which includes habitat types on land, sea and freshwater bodies. Annex I to the nature directive lists a total of eight habitat types related to the sea, of which six are found in the Estonian marine area (the code of Annex I to the nature directive in brackets):

- Sandbanks which are slightly covered by sea water all the time (1110, hereinafter “sandbanks“),
- Estuaries (1130),
- Mudflats and sandflats not covered by seawater at low tide (1140, hereinafter "flats“),
- coastal lagoons (1150),
- large shallow inlets and bays (1160),
- reefs (1170).

Of the ones mentioned, sandflats and reefs can be considered wholly benthic habitat types, as their definition is not in any way related to the shoreline or mainland. It is impossible for estuaries, flats, lagoons and large shallow inlets and bays to be present far from the coast, in the open sea, as all these habitat types are directly connected to the shoreline.

30 Environmental status of the Estonian maritime area 2019 (https://envir.ee/keskkonnakasutus/merekeskkonna-kaitse/merestrateegia#i-etapp-eesti-merea)

31 The chapter draws on the Estonian maritime area spatial plan study entitled “Benthic biota and habitat study for assessing range of Natura and HELCOM habitat types and determining the CO2 sequestration potential of the sea “, University of Tartu Estonian Marine Institute, 2020

Mapping of benthic habitats started in Estonia in 2005 and as of spring 2019, inventories cover approximately one-third (38%) of the entire Estonian maritime area.

Inventories of benthic biota and habitats have not been previously conducted in the planned offshore wind farm area. The range of species and habitats of benthic biota have been modelled on two occasions in the course of pan-Estonian modelling (University of Tartu Marine Institute 2018; TÜ Estonian Marine Institute 2021). On the basis of these model studies, the possibility of the range of 16 HELCOM HUB level 5 habitat types in the planned wind farm area was described (Figure 4-2 and Table 4-1).

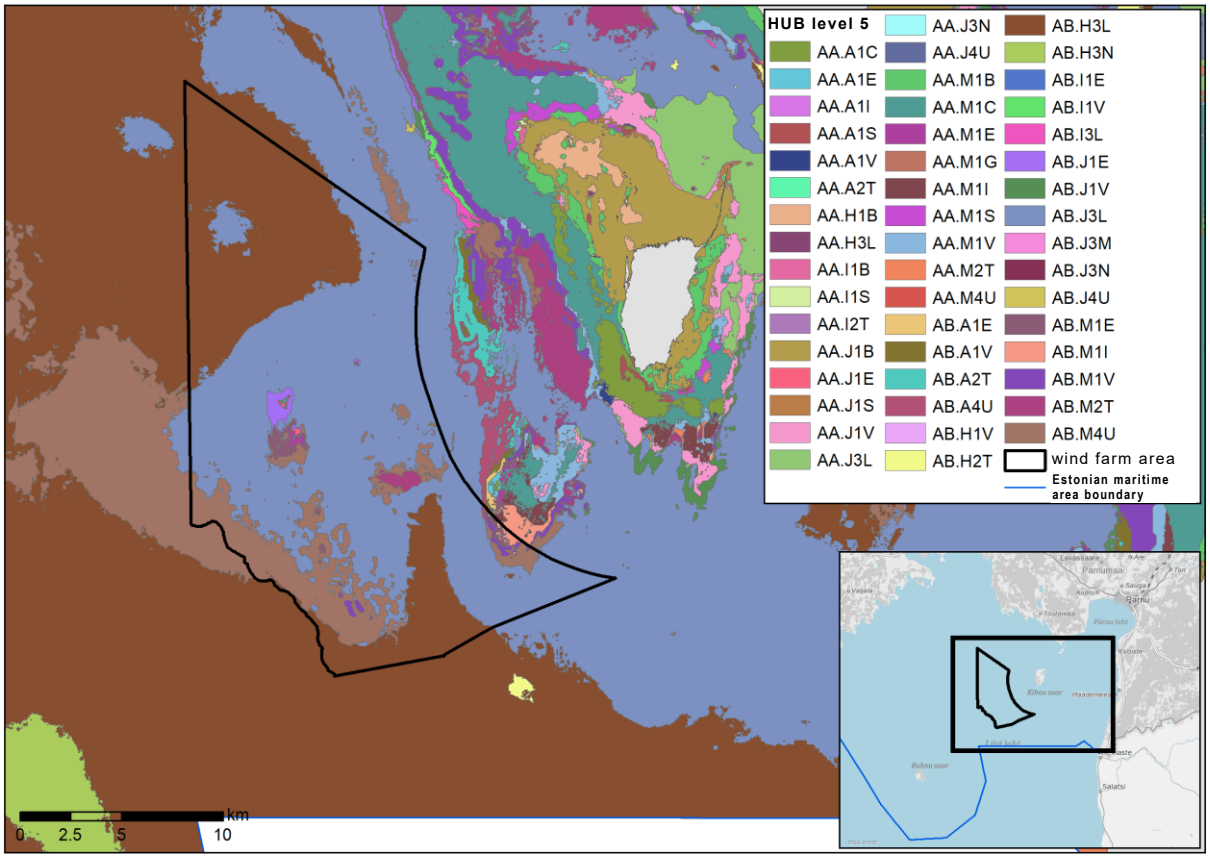

Figure 4-2. *Modelled range of HELCOM HUB level 5 benthic habitats in the project areas and its immediate vicinity (University of Tartu Estonian Marine Institute 2021)*

Table 4-1. *Prediction of the range of HELCOM HUB benthic habitats (HUB level 5) in the wind farm area on the basis of 2021 modelling*

Code	*Name*	*Area/km²*	*%*
AB.J3L	Baltic aphotic sand characterized by infaunal bivalves	161.46	53.97
AB.H3L	Baltic aphotic muddy sediment characterized by infaunal bivalves	95.46	31.91
AB.M4U	Baltic aphotic mixed substrate characterized by no macroscopic biotic structures	34.22	11.44
AB.M1E	Baltic aphotic mixed substrate characterized by epibenthic bivalves	2.19	0.73
AB.J1E	Baltic aphotic sand characterized by epibenthic bivalves	1.83	0.61
AB.M2T	Baltic aphotic mixed substrate characterized by sparse epibenthic macrocommunity	1.39	0.46
AB.M1V	Baltic aphotic mixed substrate characterized by mixed epibenthic macrocommunity	1.15	0.39

Code	Name	Area/km^2	%
AB.M1I	Baltic aphotic mixed substrate characterized by epibenthic crustacea	0.57	0.19
AA.M1E	Baltic photic mixed substrate characterized by epibenthic bivalves	0.38	0.13
AA.J1E	Baltic photic sand characterized by epibenthic bivalves	0.18	0.06
AA.M1C	Baltic photic mixed substrate characterized by perennial algae	0.11	0.04
AB.A4U	Baltic aphotic rock and boulders characterized by no macrocommunity}	0.12	0.04
AA.M1I	Baltic photic mixed substrate characterized by epibenthic crustacea	0.05	0.02
AB.A1E	Baltic aphotic rock and boulders characterized by epibenthic bivalves	0.02	0.01
AB.A1V	Baltic aphotic rock and boulders characterized by mixed epibenthic macrocommunity	0.04	0.01
AA.M4U	Baltic photic mixed substrate characterized by no macrocommunity	0.01	0

On the basis of the existing information, HELCOM Red List habitats have not been described in the planned offshore wind farm area, but based on analogy with other maritime areas, it is possible that certain Red List habitats are present (see Table 4-2).

Table 4-2. *HELCOM Red List biotopes (HELCOM, 2013b) that can be presumed to exist in the wind farm area's region, but whose incidence there has not been proved on the basis of current point data*

Code	Name
AA.H1Q2	Baltic photic mud dominated by stable aggregations of unattached Fucus spp. (dwarf form). *EN, L, A1*
AA.I1Q2	Baltic photic coarse sediment dominated by stable aggregations of unattached Fucus spp. (dwarf form). *EN, L, A1*
AA.J1Q2	Baltic photic sand dominated by stable aggregations of unattached Fucus spp. *EN, L, A1*

Benthic biota and vegetation. The vegetation in macroscopic benthic biota (macroalgae and higher plants) and zoobenthos make up benthic biota in the Estonian maritime area. In terms of species, the biota is quite varied, with both marine origin and freshwater species.

On basis of data for 1992–2018, 60 macrophyte taxons have been recorded in the Estonian maritime area (including 57 species and taxons *Ulotrix*, *Pseudolithodermaja Fontinalis* designated up to genus level). The most common species in the Estonian maritime area are *Vertebrata fucoides*, *Cladophora glomerata* and *Ceramium tenuicorne*. s The greatest number of species/taxons in the Estonian maritime area are in the brown algae phylum. The differences between HELCOM marine subbasins in regard to species/taxons of plants are relatively minor, with the species-richest basin being the Gulf of Riga.

There are no previous high-quality data concerning the species composition of the phyto- and zoobenthos in the planned offshore wind farm area. Some individual data originate from the second half of the 20th century. There are no marine environmental monitoring stations in the offshore wind farm area.

Invertebrates. On basis of data for 1992–2018, 92 zoobenthos taxons have been recorded in the Estonian maritime area (including 73 species and 19 taxons).

The invertebrate most frequently found in the Estonian maritime area is bay mussel (*Mytilus trossulus)*, the Baltic macoma (*Limecola balthica*), and the *bay* barnacle (*Amphibalanus*

improvisus). A total of 59% of the zoobenthos species/taxons are in the phylum Arthropoda. Species diversity is highest in the Gulf of Riga sub-basin and lowest in the Eastern Gotland Basin[32].

Fish[33]

The Baltic Sea, including the Gulf of Riga, has low and variable salinity, thus curtailing the range of both marine and freshwater fish and resulting in a number of species lower than in a sea with normal salinity. Yet Baltic Sea fish populations are numerous. A significant share of Estonia's Baltic Sea fish catch is caught in the Gulf of Riga. Coastal fisheries yields from this region make up over 80% and close to 50% of Baltic herring trawl yields are caught in the Gulf of Riga.

Approximately 30 fish species of marine origin are found in Estonia's Baltic Sea waters, 10 species of diadromous fish and about 20 species of freshwater fish. All these species can also be found in the Gulf of Riga. By species, the preferences of the fish for habitat and spawning areas are very different: some of the species in the Gulf of Riga need deeper areas in the Baltic for spawning, depending on the prevalent oxygen and salinity conditions there; while other species depend on open access to spawning ground in fresh water or spawn in coastal areas at different depths, having various temperature, salinity and substrate etc. preferences.

Similarly to the rest of the world and the Baltic Sea as a whole, Estonian fish stocks are also impacted mainly by human activity, as a result of which species richness and the abundance of most fish species is down. Alongside fishing, other human activities likewise impact the abundance of fish in the Baltic Sea: for example, migratory barriers in rivers that flow into the Baltic Sea and pollution of rivers. The anoxia that extends in the Baltic's deeper areas is mainly impacted by the influx of nutrients from land use, but the percentage of pollution load from use of the marine area is this far small.

In general; the shallower (max. 15 m) coastal waters and shallows are more important for fish from marine areas. Shallower coastal areas (max. 5 m) are where the majority of dish species' spawning areas and nurseries are found, and are crossed by anadromous species heading to fresh water to spawn. Areas of open sea that are at least 5 m deep may be spawning areas for Baltic herring and Baltic flounder. The deeper areas of the Gulf of Riga are not suitable as fish spawning areas, since they lack the conditions needed for marine fish (cod, European flounder, sprat): the necessary salinity and oxygen regime. As part of the HELCOM PanBalticScope project[34], information has been compiled for a number of fish where scientists from countries on the Baltic Sea littoral have on the basis of existing data contributed and mapped for major fish species significant habitat and spawning areas using models [35], which take into consideration species-specific criteria for the various species, such as salinity, depth, openness to waves, extent

32"Compilation of species lists of macrophytes and invertebrates ", Georg Martin, University of Tartu Estonian Marine Institute, 2018.

33 The chapter was compiled using the Estonian maritime spatial plan impact assessment report, version: to be established 2021 (https://mereala.hendrikson.ee/dokumendid/Planeeringulahendus/Kehtestamisele/4_MSP_M6jude_hindamise_aruanne.pdf)

34 https://helcom.fi/helcom-publishes-maps-on-fish-habitats/

35 The maps compiled on the basis of the models were validated by experts on the respective species and from the respective countries.

of the photic zone, transparency of water and other parameters (see the following figures). These are modelled map payers that indicate the potential spawning areas, based on existing studies and knowledge that these places have the natural preconditions for spawning.

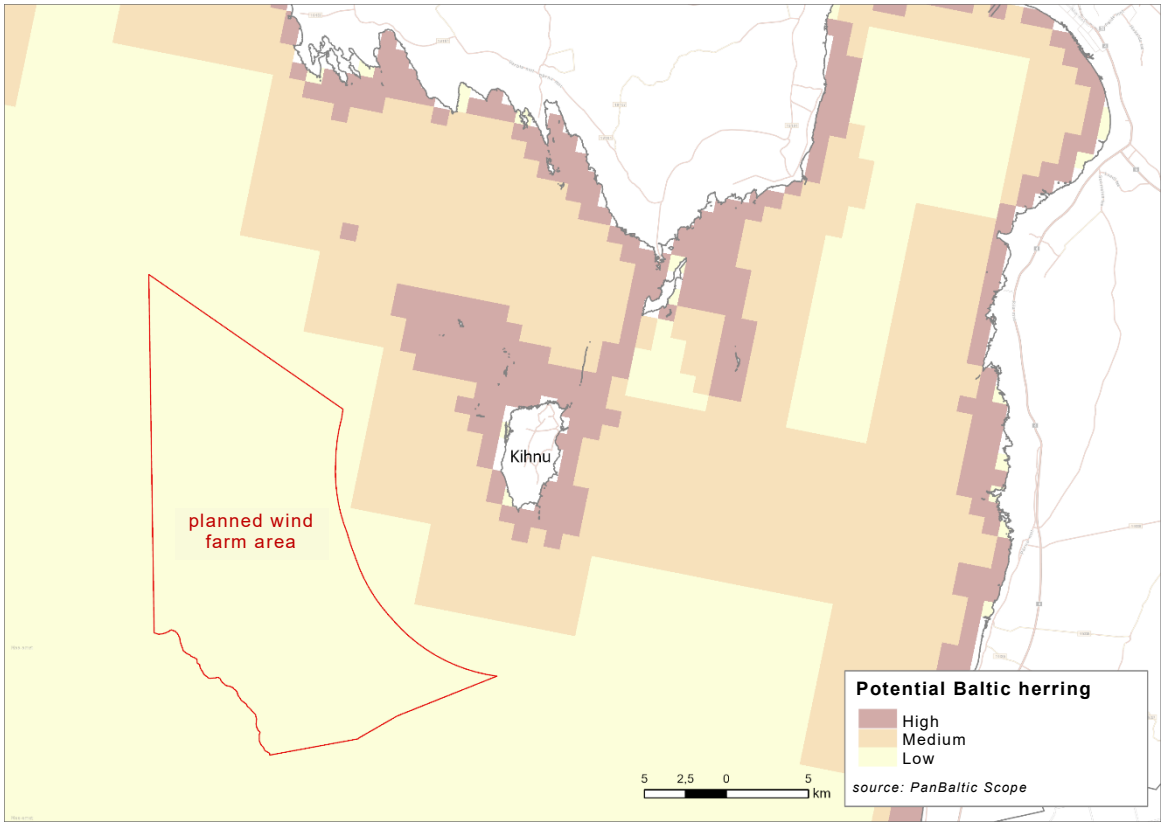

Figure 4-3. *Potential Baltic herring spawning areas (source: Pan Baltic Scope)*

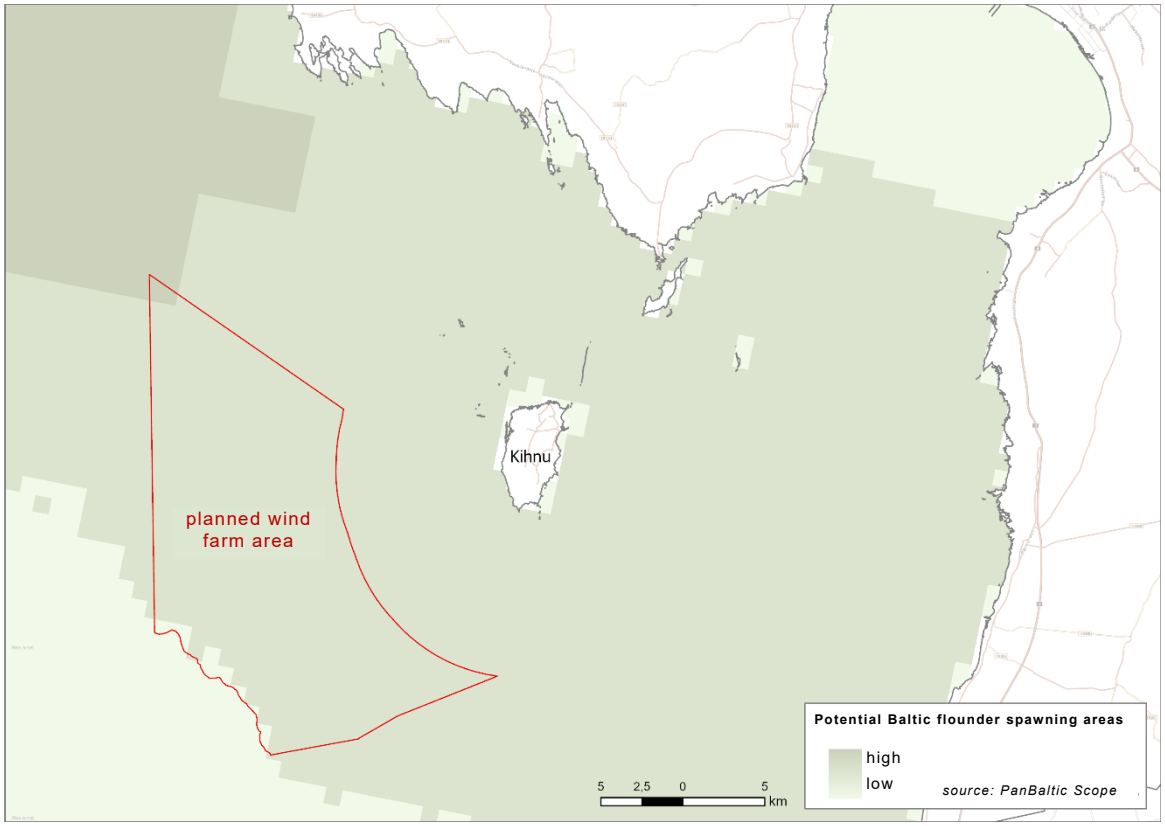

Figure 4-4. *Potential Baltic herring spawning areas (source: Pan Baltic Scope)*

Marine mammals

The Gulf of Riga is a semi-enclosed marine area populated by two species of seal – grey seal (*Halichoerus grypus*) and ringed seal (*Pusa hispida*). Due to the gulf's geography, the main rest areas for seals north of the line running between Kolka (Latvia) and Kihnu Island, but both species are abundant in the entire gulf. In the Kihnu shoals/Sangelaid area, the north-eastern part of the gulf has the only resting areas permanently inhabited by seals. Both grey and ringed seals are found there.

Telemetry has identified the use of the southern part of the gulf as an important feeding area for ringed seals.

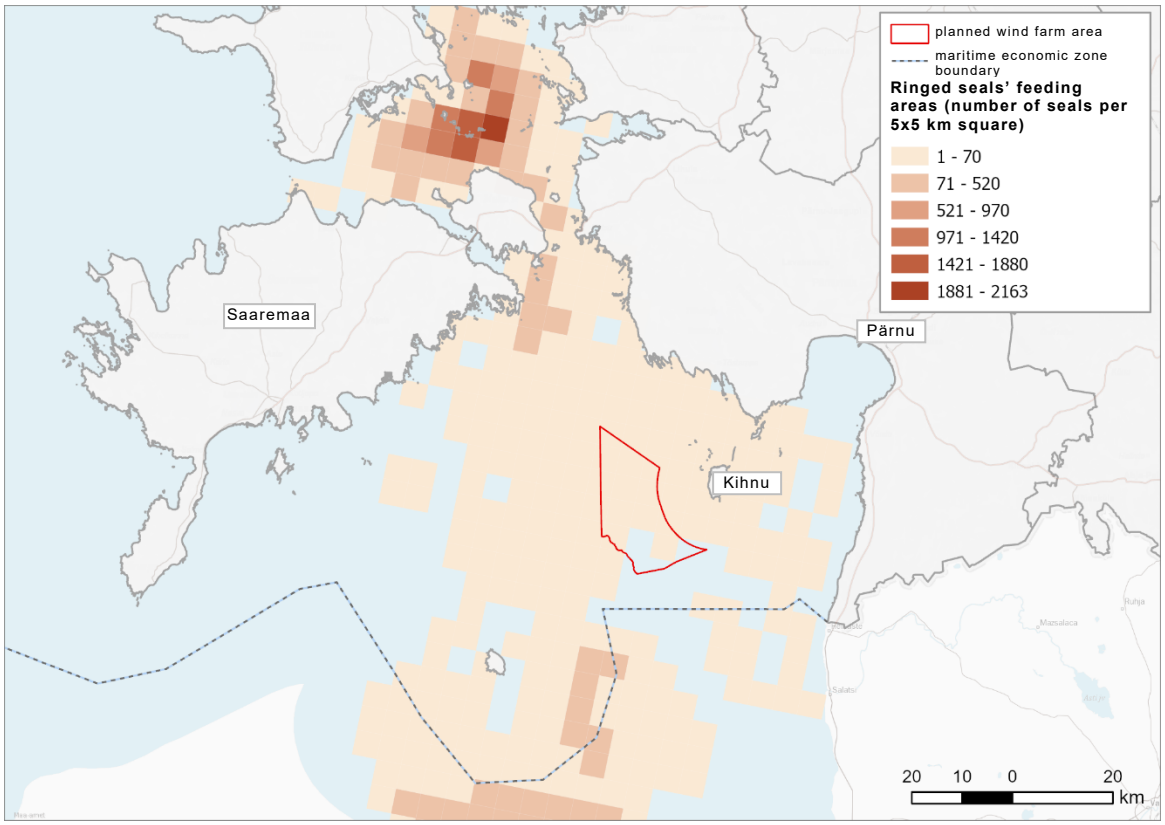

Figure 4-5. *Ringed seals' feeding areas in western Estonia. Intensity of feeding behaviour in a 5x5 km network, according to telemetry data*[36].

Both seal species are ice-breeding. Ringed seals can indeed only give birth on ice while for grey seals it is a preferred platform. When Gulf of Riga ice forms, telemetry data indicates the vast majority of the Väinameri Sea's ringed seal population and even individual seals from the Gulf of Bothnia breed on the ice. An important winter habitat is Pärnu Bay, since ice cover forms there even in warmer than average winters and there are abundant ringed seals on the spring ice. In winters with ice, observations of seal offspring from the icebreakers that serve the port of Pärnu are frequently reported.

36 "Estonian maritime spatial plan: Range of seals and assessment of sea use". Mart Jüssi, MTÜ Pro Mare, 2019

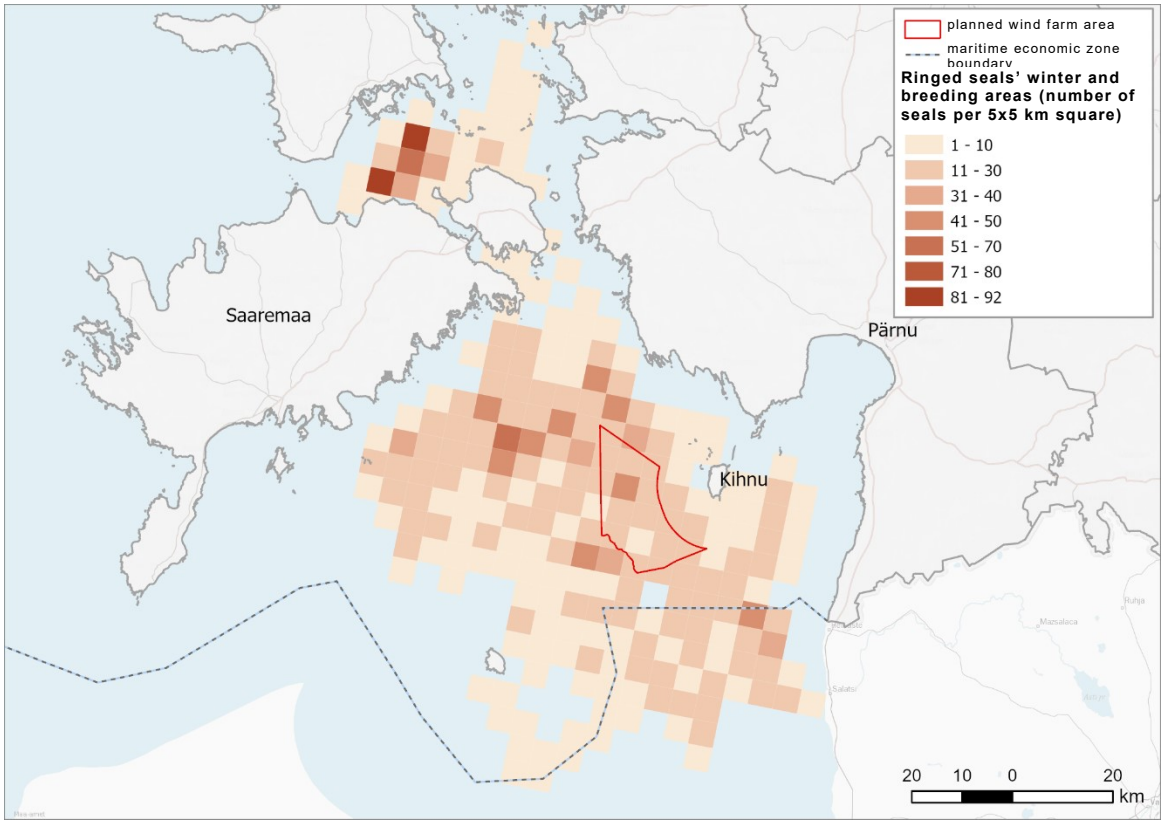

Figure 4-6. *Winter and breeding areas for ringed seals. Winter and breeding areas in a 5x5 km network, according to telemetry data[37].*

With regard to grey seals, there is largely a lack of data, but the northern part of the Gulf of Riga is home to Estonia's biggest grey seal resting area, where as many as 3500 grey seals have been counted in springtime monitoring, which is over 60% of the spring grey seal population counted in the entirety of Estonia's coastal sea. As to how many grey seals are in the bay in summer, it is not known. A limited telemetry study showed that one of every two tagged grey seals in the Gulf of Riga used two clearly defined feeding areas, one of which was the Kihnu shallows.

The good environmental status of the Baltic Sea grey seal has been achieved, considered according to abundance, range and distribution pattern criteria. Good environmental status has not been attained for the ringed seal [38].

Birds

The significance of the Estonian coastal sea for waterfowl comes primarily from the fact that it is a stop on one of the most important migratory routes in the region, which is called the Eastern Atlantic migratory route. It is used by the majority of Arctic waterfowl en route from Arctic nesting areas in Eurasia to wintering areas, which may extend all the way to southern Africa (e.g. for the Arctic tern). Estonian marine shallows are known to be suitable migratory stopovers for waterfowl, where they replenish fat stores for the onward migration. Many Arctic waterfowl use

37 "Estonian maritime spatial plan: Range of seals and assessment of sea use". Mart Jüssi, MTÜ Pro Mare, 2019

38"Environmental status of the Estonian maritime area 2018 (https://envir.ee/keskkonnakasutus/merekeskkonna-kaitse/merestrateegia#i-etapp-eesti-merea)

the Estonian coastal sea to overwinter. Some parts of the Estonian coastal sea have become important waterfowl moulting areas (e.g. eider and scoters). In addition, a number of bird species whose habitat is the coast and coastal sea nest on the coast and sea islands. In addition to waterfowl, many mainland birds are also connected to the maritime area through migration.

As part of the preparation of the Estonian maritime spatial plan, two thorough overviews were carried out concerning birds and potential impacts related to the sea that may come from various ways of using the sea [39]. These were large-scale studies that presented a thorough overview of the behavioural patterns of various bird species. The figures below present schematic migratory rotes for all migratory birds, the "bottlenecks" for waterfowl and land-based birds and sensitive areas.

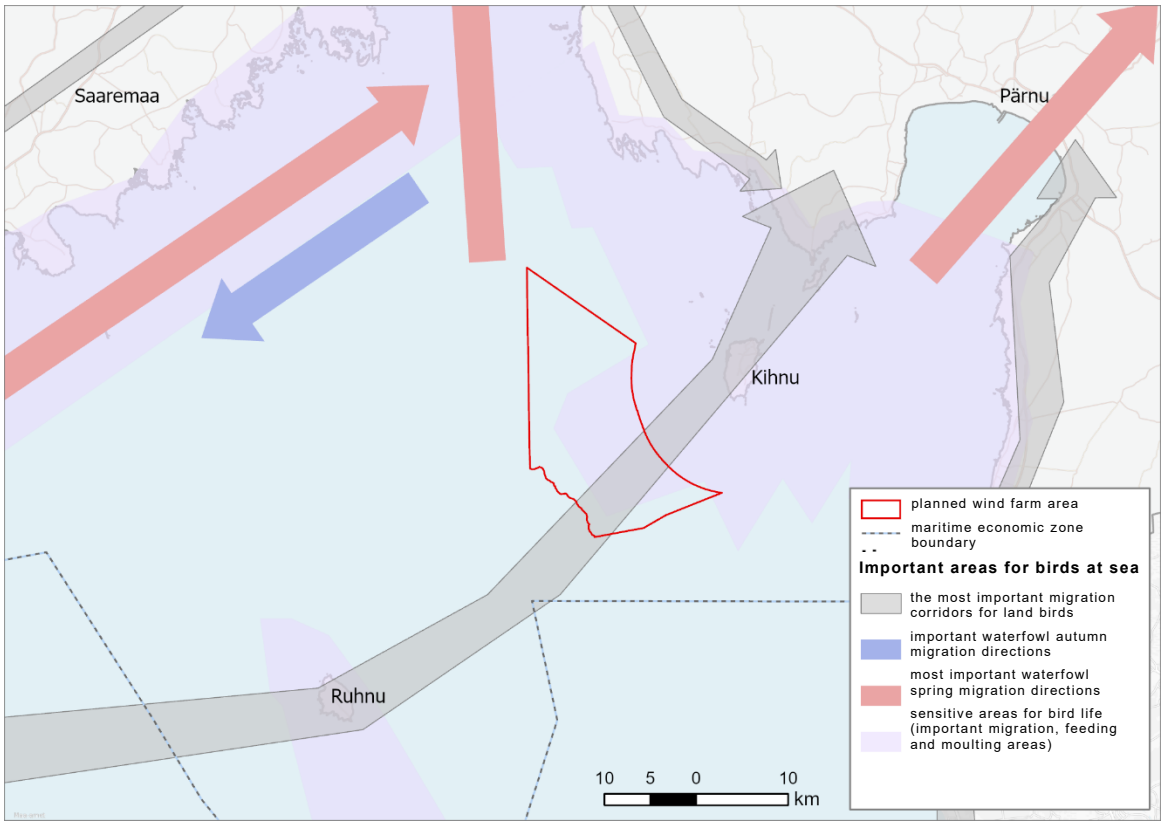

Figure 4-7. *Sensitive areas for birds*

Aspects related to seabird protection can be divided into four topics, following the example of BirdLife International (2004):

1) **Staging and wintering areas for migratory waterfowl** Waterfowl can be classed as either benthivorous and or fish-eaters. Benthivorous waterfowl, which feed from the bottom of the sea, feed on shoals with a suitable depth for diving, up to 20 metres. There are many such shoals in the Gulf of Riga, starting from Gretagrund around the island of Ruhnu to Kihnu shoal. The best-known bottom feeders are long-tailed ducks, scoters and diving ducks in the *Aythya* genus.

39 „Consolidation of existing data on migration corridors of birds located in the Estonian maritime area and preparation of an analysis of the impact of wind farms on birds' feeding areas" Estonian Ornithological Society 2016 and "Analysis of birds' stopover areas" Estonian Ornithological Society 2019.

2) **Important areas for pelagic species.** Such areas are often associated with special hydrological conditions (upwelling, fronts between masses of water), which result in high biological productivity. Internationally, pelagic species include species from the order *Procellariiformes*, which has high protection value. The only *Procellariiformes* birds found in Estonia are chance visitors; pelagic species found here are seagulls, terns and skuas. Of these *Hydrocoloeus minuta*, which is not widespread in the Gulf of Riga, has the highest protection value. Nor is the Gulf of Riga very attractive to other pelagic bird species, since it is nevertheless a bay, not the open sea.
3) **"Bottleneck" areas on the migratory route.** A significant part of the populations of many species pass through Estonia on migration. The migration of land birds often follows the shoreline, which causes massive staging at the tips of capes and narrow straits. This concentration takes place because land birds rely on updrafting and avoid crossing the sea (birds of prey and storks). The sea is also an obstacle for diurnal and nocturnal active migratory birds (passerines, woodpeckers etc.). A large part of the migratory flow that follows the Estonian coast is aligned with the line Munalaid-Kihnu-Ruhnu-Kolka (Figure 4-7). The topic of bottleneck areas has become extremely salient in connection with plans to develop wind farms in these areas (Väinameri Sea, Sõrve Peninsula, Kihnu-Ruhnu).
4) **Nesting colonies.** Birds that nest on islands use the sea around the islands as a food source. In earlier materials published by BirdLife International, species have been divided into three groups on the basis of their feeding radiuses: 5 km (little tern, black guillemot), 15 km (Arctic tern, common term and sandwich tern, common gull, cormorant) and 40 km (lesser black-backed gull, razorbill); (BirdLife International, 2004). The closest nesting islands to Kihnu are located in Kihnu Strait.

To study waterfowl that stop over in the Gulf of Riga, a number of flight censuses were carried out as part of the GORWIND project, on the basis of which various waterfowl density maps have been modelled, showing where waterfowl are situated in the Gulf of Riga. As an example, we provide an image of the range of waterfowl including the data from all observation flights taken during the project (see Figure 4-8).

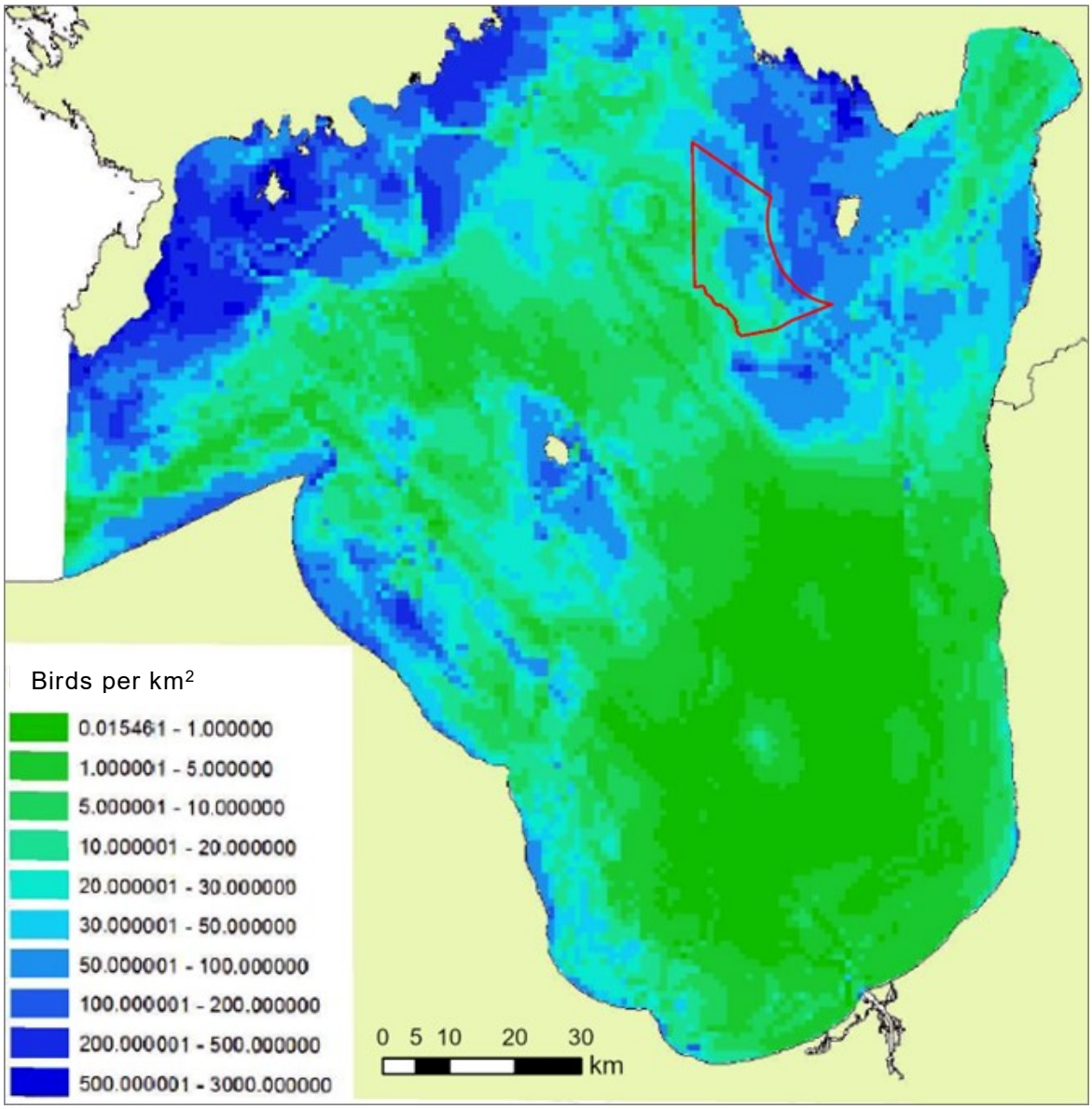

Figure 4-8. *Situation of waterfowl and modelled maximum settlement density (2 spring, 1 summer, 1 autumn and 1 winter census in the years 2010-2011)*

In the course of inventory of wintering areas, the entire Estonian coastal sea has been covered in two winters (2016, 2020) by flight censuses (up to 50 m to the depth line). Since relatively extensive ice forms on the Gulf of Riga during normal winters (particularly in the eastern part), the Gulf of Riga is not a very important wintering area for waterfowl (Figure 4-9, 4-10).

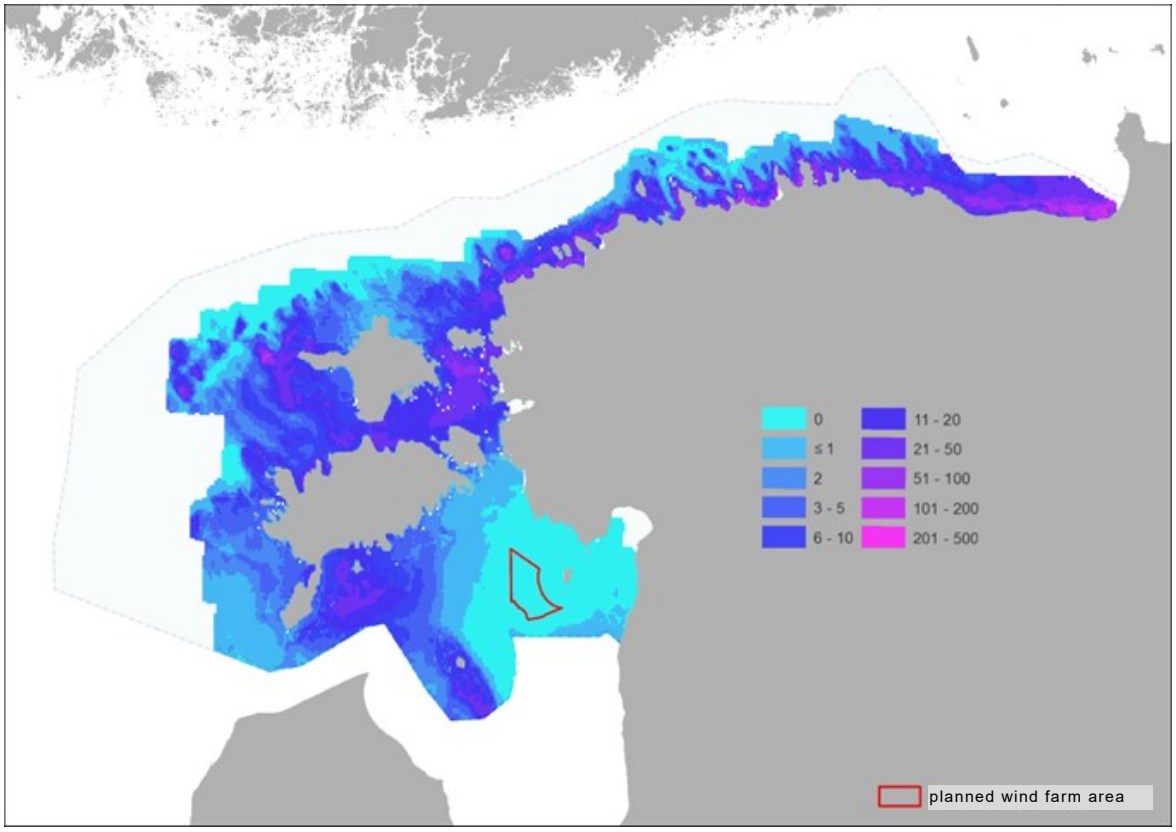

Figure 4-9. *The winter range of the long-tailed duck in 2016 (white areas are those covered by ice)*

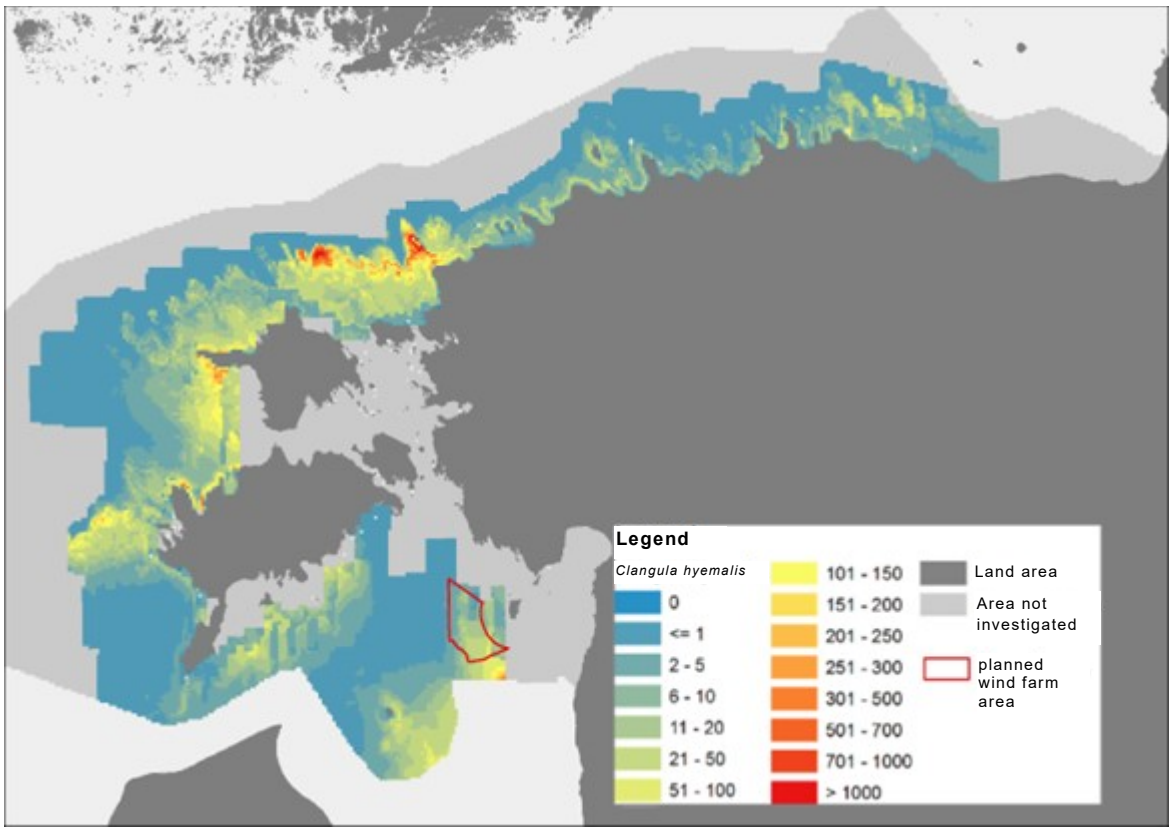

Figure 4-10. *The winter range of the long-tailed duck in 2020 (grey areas are those covered by ice)*

Bats[40]

Estonia has 14 proved species of bats, seven spend the winter here and are considered non-migratory. Five are in the genus *Myotis*, and the other species are *Eptesicus nilssonii* and *Plecotus auritus*.

The following species have been proved by investigations to be found in the open sea part of Estonia: *Eptesicus nilssonii*, Nathusius's pipistrelle and the common noctule (Lutsar, 2016; Lutsar, 2019).

Bats are known to cross extensive marine areas. A few bats that have flown across the sea have been found on the Faroes, Iceland and on oil rigs and ships in the North Sea. Some of them have even been species from the Americas. To get from the Shetland Islands to the Faroe Islands, bats must cross at least 290 km above the ocean, and it is 430 km from the Faroes to Iceland. In the Estonian context; to cross the Gulf of Riga, bats do not need to undertake such long flights. The distance to be crossed at the narrowest part of the Kura Strait is only 29 km. It can be supposed that in this place, bat activity during migration is higher than, for instance, above the Baltic Sea between Hiiumaa and Sweden.

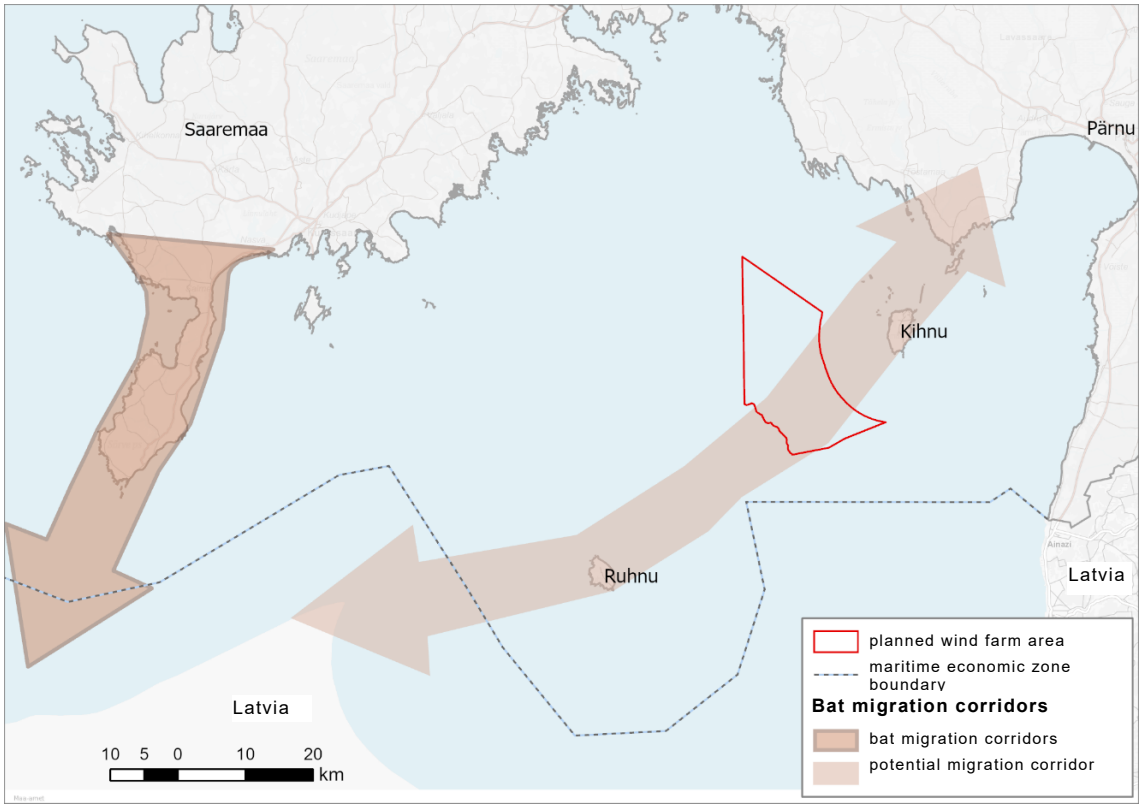

Figure 4-11. *Sensitive areas for bats*[41]

40 The chapter relies largely on fundamental research for the Maritime Spatial Plan, "Study of bats at sea in the area of Saaremaa from July to October 2018" Estonian Fund for Nature, 2019

41 Draft Estonian maritime spatial plan impact assessment report. OÜ Hendrikson & Ko, version 3 July 2020

To the best of current knowledge, it can be presumed that migratory species in autumn above the Gulf of Finland are rare and their relative abundance is lower than in the area of Saaremaa. Bats cannot be expected to concentrate in the northern European peninsulas, because the migratory direction across the sea is from Finland to Estonia. It is likely that bats flying across the Gulf of Finland to Estonia fly in a dispersed manner to near the Estonian islands and coast. It can be presumed that bats will concentrate in autumn along the southern coast of Saaremaa, especially Sõrve peninsula (the main direction of autumn migration is to the southwest) where they will wait suitable weather to arrive to cross the Gulf of Riga. Movement to the west toward Sweden is less likely but cannot be ruled out, either. Based on current knowledge, it can be presumed that the autumn migration of bats is active precisely in the Kura Strait. On a few favourable nights, migrating bats may head from Saaremaa to the west. Little is known about the spring migration of bats. The bat population is lower in spring than it is in autumn, because not all individuals survive the winter. Thus, the likelihood of encountering bats during the spring migration is also lower at sea than it is in the fall. To this point, observations have focused mainly on the autumn bat migration, since during this time, the population can be presumed to be highest and it can be supposed based on the migration direction which places at sea the bats can be found flying in greatest numbers.

In the case of mat migration, it is important to note that bats usually fly up to 10 m above the surface, but when approaching objects at sea (masts, wind turbines etc.) bats rise much higher, also flying around the turbine blades. Bats, especially migratory species, may gather in certain places near the coast where they await better weather for crossing the sea. Migration is possible only during relatively calm weather and favourable wind direction. On the basis of the bat study[42], bats flew above the sea when the wind speed was 0.3–7.7 m/s (the 2020 study reported 0.4...7.1 m/s). At the same time, bats were mainly found above the sea at wind speeds of less than 5–6 m/s.

4.1.5. Protected natural objects ,including Natura 2000 network areas

Protected natural objects

Pursuant to the Nature Conservation Act (Section 4) protected natural objects are: protected areas, special conservation areas, protected species and fossils, species' protection sites, individual protected natural objects, natural objects protected at the local government level.

There are no protected natural objects in the planned offshore wind farm area. The following protected areas are found in the zone of influence of the planned offshore wind farm and cable: Pärnu Bay special conservation area (KLO2000286), Kihnu special conservation area (KLO2000298), Kihnu islands nature conservation area (KLO1000628), Sorgu nature conservation area (KLO1000627), Manija landscape protection area (KLO1000316), Lao marsh angelica species protection site (KLO3000327) and the white-tailed eagle species protection sites on Kihnu Island (KLO3002042; KLO3001508). The locations of protected natural objects are illustrated by the following Figure 4-12 and descriptions are given in Table 4-3.

42 "Study of bats at sea in the area of Saaremaa from July to October 2018", Estonian Fund for Nature, 2019

Besides the ones listed here, the zone of influence also includes registered places in which various species are found (e.g. grey seal (LK III), ringed seal (LK II), tundra swan (LK II) bird species etc.).

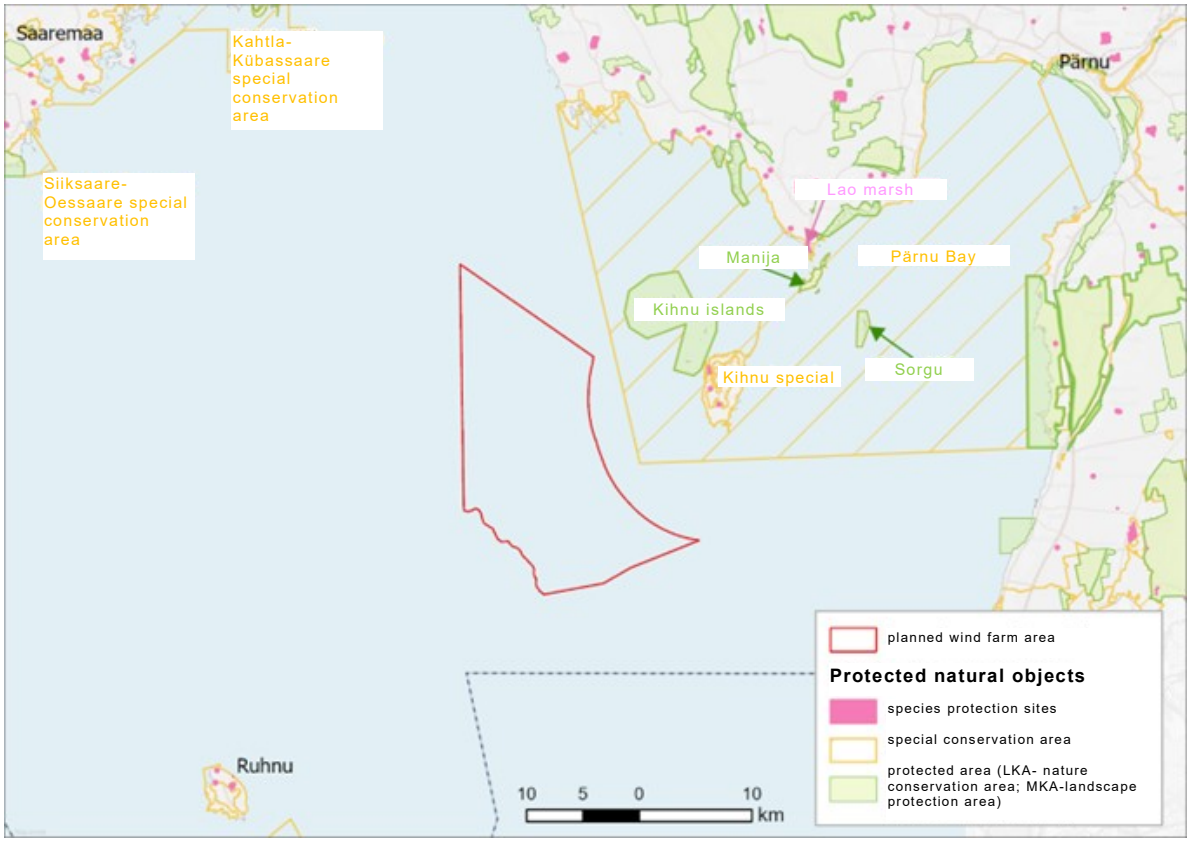

Figure 4-12. *Overview of the protected natural objects in the zone of influence of the planed wind farm (Source: Land Board and EELIS, 2022)*

Table 4-3. *Protected natural objects in the area or planned cable corridor of the planned wind farm and in their zone of influence*

Protected natural feature	*Description of the area*
Pärnu Bay special conservation area (KLO2000286**)**	Protection established by Cabinet regulation no. 154 of 18 May 2007, "Establishing protection for special conservation areas in Pärnu County". The area is 101,605 hectares and it includes extensive maritime areas in Pärnu Bay and in the vicinity of Kihnu. The aim of protection of the limited conservation area is the protection of habitats of species specified in Annex I to Regulation 2009/147/EC of the European Parliament and of the Council and migratory bird species not specified in Annex I. The species whose habitat is protected are: great crested grebe (*Podiceps cristatus*), cormorant (*Phalacrocorax carbo*), Bewick's swan (*Cygnus columbianus bewickii*), whooper swan (*Cygnus cygnus*), mute swan (*Gygnus olor*), bean goose (*Anser fabalis*), greater white-fronted goose (*Anser albifrons*), greylag goose (*Anser anser*), barnacle goose (*Branta leucopsis*), common shelduck (*Tadorna tadorna*), Eurasian wigeon (*Anas penelope*), gadwall (*Anas strepera*), Eurasian teal (*Anas crecca*), mallard (*Anas plathyrhynchos*), northern pintail (*Anas acuta*), garganey (*Anas querquedula*), northern shoveler (*Anas clypeata*), tufted duck (*Aythya fuligula*), greater scaup (*Aythya marila*), common eider (*Somateria mollissima*), long-tailed duck (*Clangula hyemalis*), common scoter (*Melanitta nigra*), velvet scoter (*Melanitta fusca*), common goldeneye (*Bucephala clangula*), red-breasted merganser (*Mergus serrator*), common merganser (*Mergus merganser*), smew (*Mergus albellus*), wwhite-tailed eagle (*Haliaeetus albicilla*), Western marsh harrier (*Circus aeruginosus*), spotted crake (*Porzana porzana*), corn crake (*Crex crex*), common ringed plover (*Charadrius hiaticula*), northern lapwing (*Vanellus vanellus*), dunlin

Protected natural feature	*Description of the area*
	(*Calidris alpina schinzii*), ruff (*Philomchus pugnax*), black-tailed godwit (*Limosa limosa*), bar-tailed godwit (*Limosa lapponica*), spotted redshank (*Tringa erythropus*), common redshank (*Tringa totanus*), wood sandpiper (*Tringa glareola*), ruddy turnstone (*Arenaria interpres*), black-headed gull (*Larus ridibundus*), common gull (*Larus canus*), lesser black-backed gull (*Larus fuscus*), common tern (*Sterna hirundo*), Arctic tern (*Sterna paradisaea*), little tern (*Sterna albifrons*), great reed warbler (*Acrocephalus arundinaceus*) and red-backed shrike(*Lanius collurio*).
Kihnu special conservation area (KLO2000298)	Protection established by Cabinet regulation no. 154 of 18 May 2007, "Establishing protection for special conservation areas in Pärnu County". The area is 1102 hectares and it includes extensive land areas on Kihnu Island. The aim of protection for this special conservation area is protection for the habitat types listed in Council directive 92/43/EEC annex I – sandbanks which are slightly covered by sea water all the time (1110), coastal lagoons (1150*), annual vegetation of drift lines (1210), Boreal baltic islets and small islands (1620), boreal baltic coastal meadows (1630*), boreal baltic sandy beaches with perennial vegetation (1640), Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) (2120), fixed coastal dunes with herbaceous vegetation (grey dunes) (2130*), Juniperus communis formations on heaths or calcareous grasslands (5130), semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (6210), Fennoscandian lowland species-rich dry to mesic grasslands (6270*), Nordic alvar and precambrian calcareous flatrocks (6280*), Molinia meadows on calcareous, peaty or clayey-silt- laden soils (*Molinion caeruleae*) (6410), hydrophilous tall herb fringe communities of plains and of the montane to alpine levels (6430), Fennoscandian wooded meadows (6530*), alkaline fens (7230), Western taiga (9010*), Fennoscandian wooded pastures (9070) and Fennoscandian deciduous swamp woods (9080*) and protection of habitats of species listed in Annex II – grey seal (*Halichoerus grypus*), ringed seal (*Phoca hispida bottnica*), marsh angelica (*Angelica palustris*) and the fen orchid (*Liparis loeselii*).
Kihnu islands nature conservation area (KLO1000628**)**	Formed in 2014 by Cabinet regulation no. 31 of 4 March 2014, "Formation of the Kihnu islands nature conservation area and protection rules"). It has a total area of 4199 ha and includes the maritime area to the northwest of Kihnu Island along with the islets located there. The aim of protection of this protected area is to protect and preserve: habitats and spawning areas for marine and coastal species; the appearance of the landscape on small islands; species, which are listed in Annex I of the Regulation 2009/147/EC of the European Parliament and of the Council and migratory on the protection of bird life. These species are the greylag goose (*Anser anser*), common shelduck (*Tadorna tadorna*), gadwall (*Anas strepera*), shoveler (*Anas clypeata*), tufted duck (*Aythya fuligula*), greater scaup (*Aythya marila*), common eider (*Somateria mollissima*), long-tailed duck (*Clangula hyemalis*), common scoter (*Melanitta nigra*), velvet scoter (*Melanitta fusca*), common goldeneye (*Bucephala clangula*), red-breasted merganser (*Mergus serrator*), common merganser (*Mergus merganser*), smew (*Mergus albellus*), white-tailed eagle (*Haliaeetus albicilla*), Eurasian oystercatcher (*Haematopus ostralegus*), common ringed plover (*Charadrius hiaticula*), common redshank (*Tringa totanus*), black-headed gull (*Larus ridibundus*), common gull (*Larus canus*), lesser black-backed gull (*Larus fuscus*), common tern (*Sterna hirundo*), Arctic tern (*Sterna paradisaea*), little tern (*Sterna albifrons*), sandwich tern (*Sterna sandvicensis*), razorbill (*Alca torda*), short-eared owl (*Asio flammeus*), vööt-põõsalind (*Sylvia nisoria*); habitat types that are listed in Annex I of Council directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora. These habitat types are sandbanks which are covered by water (1110) and Boreal baltic islets and small islands (1620); the ringed seal (*Phoca hispida*).
Sorgu nature conservation area (KLO1000627)	Formed in 2014 by Cabinet regulation no. 35 of 7 March 2014, "Formation of the Sorgu nature conservation area and protection rules"). The area is 2.7 km^2 and includes Sorgu Island and the surrounding marine area. The aim of protection of this protected area is to protect and preserve: habitats and spawning areas for marine and coastal species and moulting areas and migration stopovers for birds; the appearance of the landscape on

Protected natural feature	*Description of the area*
	small islands; species, which are listed in Annex I or II of the directive of European Parliament and of the Council on protection of wild birds and migratory birds not listed in Annex I. These species are the smew (*Mergus albellus*), Caspian tern (*Sterna caspia*), sandwich tern (*Sterna sandvicensis*), common tern (*Sterna hirundo*), Arctic tern (*Sterna paradisaea*), little tern (*Sterna albifrons*), barred warbler (*Sylvia nisoria*), mute swan (*Cygnus olor*), greylag goose (*Anser anser*), tufted duck (*Aythya fuligula*), common eider (*Somateria mollissima*), velvet scoter (*Melanitta fusca*), red-breasted merganser (*Mergus serrator*), common merganser (*Mergus merganser*), Eurasian oystercatcher (*Haematopus ostralegus*), ruddy turnstone (*Arenaria interpres*), razorbill (*Alca torda*), common ringed plover (*Charadrius hiaticula*), common redshank (*Tringa totanus*) and common gull (*Larus canus*); habitat types listed in Annex I of Regulation 2009/147/EC of the Council directive on natural habitats and wild flora and fauna: Boreal baltic islets and small islands (1620).
Manija landscape protection area (KLO1000316)	Formed in 2006 by Cabinet regulation no. 127 of 29 March 2006, "Formation of the Manija landscape protection area and protection rules"). The area is 204 ha and includes Manija Island and nearby Hanilaid. The aim of protection of the area is: preserving the appearance of the landscape on islets and small islands; preserving semi-natural heritage landscapes; protection of the protected natural object Ko(t)kakivi and protected species; protection of species listed in Annex I or II of the council directive on protection of wild birds, which are also category I or II protected species, or the following, which are also category III protected species – the velvet scoter (*Melanitta fusca*), little tern (*Sterna albifrons*), Arctic tern (*Sterna paradisaea*), common redshank (*Tringa totanus*), common tern (*Sterna hirundo*), Western marsh harrieri (*Circus aeroginosus*) and red-backed shrike (*Lanius collurio*); protection of habitats types listed in Annex I of the council directive on protection of natural habitats and wild flora and fauna – coastal lagoons (1150*), Boreal baltic islets and small islands (1620), boreal Baltic coastal meadows (1630*) and Fennoscandian wooded meadows (6530*); protection of habitats of species listed in Annex II of the directive which are also either category I or II protected species.
Lao marsh angelica species protection site (KLO3000327**)**	The Lao species protection site for marsh angelica was placed under protection by Minister of Environment regulation no. 1 of 2 January 2006, "Placing the hairy agrimony and marsh angelica species protection sites under protection and protection rules", to protect species habitats and ensure favourable status of the species. Adjoining the area of the species protection site on the mainland is the wind farm submarine cable investigation area.
White-tailed eagle species protection sites on Kihnu Island (KLO3002042 and KLO3001508)	The closest white-tailed eagle species protection sites are on Kihnu Island, over 10 km away from the planned wind farm area.

The Natura 2000 areas are covered in more detail in chapter 6 of the EIA programme, Natura preliminary assessment.

4.2. Cultural environment

4.2.1. Underwater cultural heritage

The Estonian maritime area contains shipwrecks registered as cultural monuments, as well as ones that lack cultural monument status. At the same time, all of the objects have a significant role in Estonian maritime cultural heritage.

According to Transport Board hydrographic database data (see Figure 4-13), three shipwrecks are within the planned offshore wind farm area:

- Id 1468 NIMETU-536. The depth of the wreck is 22.36 m, the length 27.0 m, the width 7.4 m, height 4.82 m. The L-Est coordinates of the wreck are 483201.38; 6446765.33.
- Id 1366 Sivutš. The depth of the wreck is 22.64 m, the length 27.0 m, the width 10.97 m, height 3.12 m. The L-Est coordinates of the wreck are 486179.70; 6440602.96. It is the artillery ship of the Russian imperial Baltic fleet and sank in 1915.
- ID 1470 NIMETU-537. The depth of the wreck is 21.81 m, the length 27.0 m, the width 7.0 m, and the height 4.25 m. The L-Est coordinates of the wreck are 488110.78; 6431993.08.

A number of underwater obstacles are found in the planned offshore wind farm area. In the north-eastern corner of the area is an obstacle at a depth of 25.68 m (L-Est coordinates 484902.08; 6446022.41). In the central part of the area are three obstacles, one of which is at a depth of 10.17 m (L-Est coordinates 481378.46; 6436229.37), another obstacle is at a depth of 10.49 m with L-Est coordinates (481393.02; 6436228.75) and the third is at a depth of 10.04 m (L-Est coordinates 481356.51; 6436219.00).

In the south-eastern part of the area three underwater obstacles have likewise been identified, one of which is at a depth of 25.35 m (L-Est coordinates 488232,18; 6431356,53), another obstacle is at a depth of 24.92 m (L-Est coordinates 488241.52; 6431357.77) and the third is at a depth of 25.62 m (L-Est coordinates 488237.37; 6431344.90).

About 700 m from the northern boundary of the planned offshore wind farm are two underwater obstacles, one of which is at a depth of 26.52 m (L-Est coordinates 484461.14; 6448759.01), and another obstacle is at a depth of 26.45 m (L-Est coordinates 484471.43; 6448753.60).

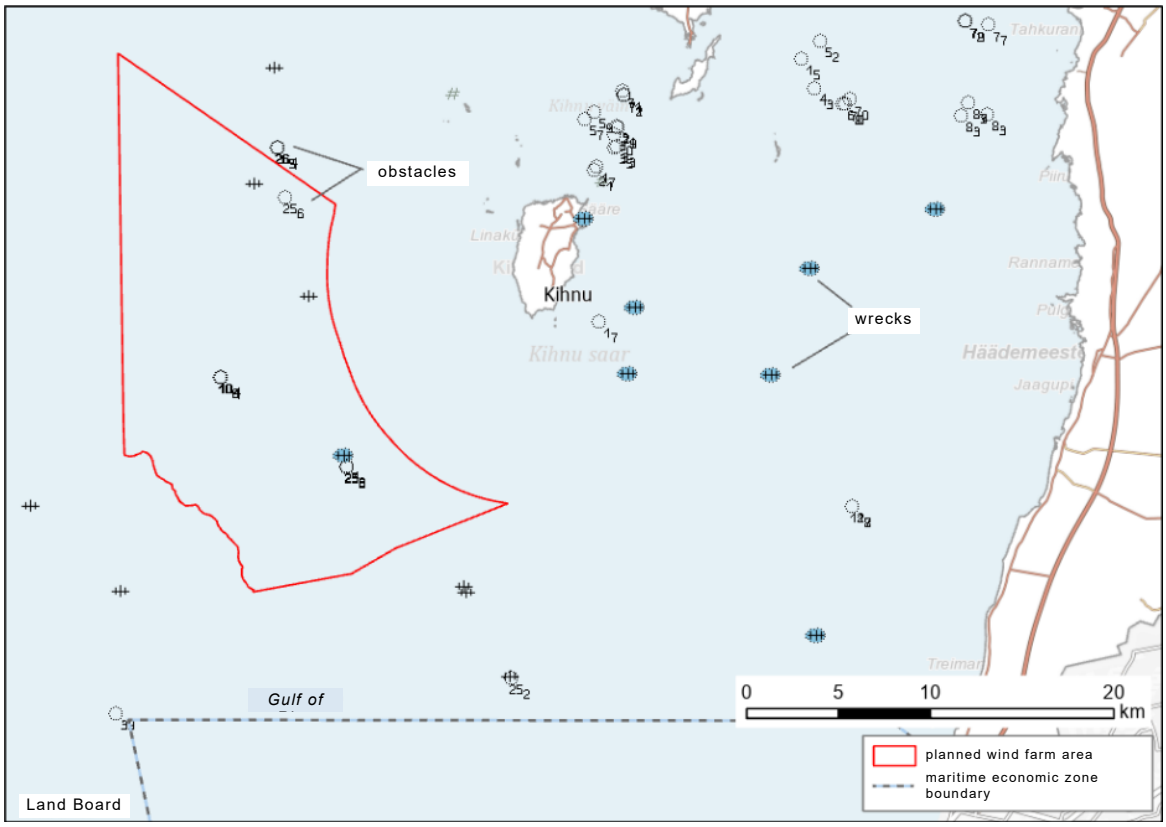

Figure 4-13. *Shipwrecks and obstacles identified in the vicinity of the planned offshore wind farm* [43]

4.3. Social and economic environment

4.3.1. Settlement

The entirety of the planned activity will be within the maritime area and the closest settled mainland area is about 10 km to the east – Kihnu Island (according to Statistics Estonia data, 690 inhabitants as of 1 January 2021). The nearest points in mainland Estonia are about 16 to the northeast on the territory of Tõstamaa rural municipality district under the administration of the city of Pärnu and Lääneranna rural municipality.

4.3.2. Land use

The maritime area is used in many different ways – for recreation, tourism, fishing and transport. The planned offshore wind farm area overlaps with a number of water traffic areas – a 4 km wide water traffic area in the south, 2 km wide in the west and 400 m wide in the northeast. These water traffic areas pass through the planned offshore wind farm area and in the course of the offshore wind farm planning process, the most suitable locations will be found for the wind turbines considering the need to ensure water traffic areas with a safe width and appropriate lanes of travel in both the southern and western part of the area.

43 Basic map Transport Board (former Maritime Administration) hydrographic database

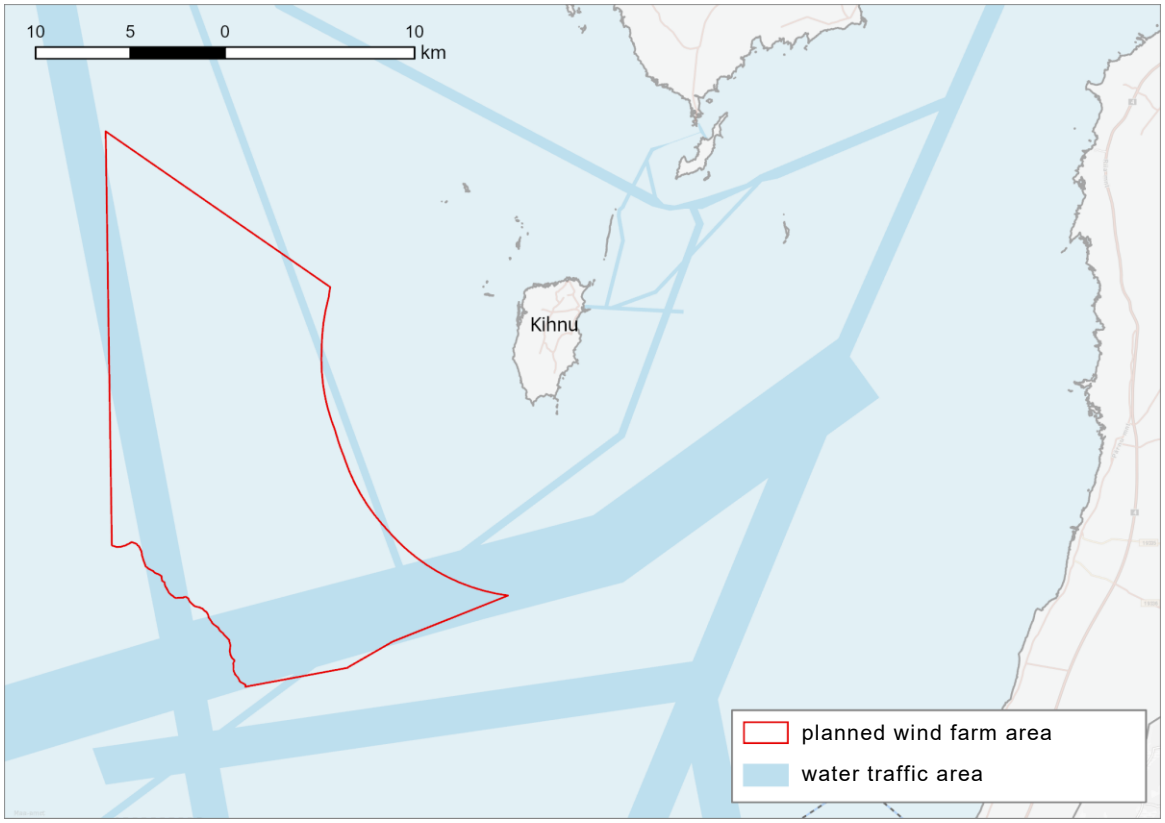

Figure 4-14. *Water traffic areas found in the planned offshore wind farm area*

In addition, the air traffic corridor between the mainland and Ruhnu Island passes through the planned offshore wind farm area, with a necessary expert analysis to be conducted to determine the width necessary for ensure the functioning of the corridor.

4.3.3. Fishery

Fishing, which has been an important source of subsistence for coastal dwellers throughout history, takes place in the entire Estonian maritime area, except for areas with fishing restrictions. Fishing in the Baltic Sea can be divided into trawling and coastal fishing. Coastal fishing at sea generally takes place in a 12 nautical mile zone or up to the 20 m isobaths and fishing is served by small fishing harbours and loading places with significance on the local level Pursuant to Cabinet regulation no. 65 of 16 June 2016, Fishing Rules, trawling can only take place in waters deeper than 20 metres.

Among other things, the maritime spatial plan website set up as part of the maritime spatial planning process (http://mereala.-hendrikson.ee/) presents information on coastal fishing and trawling areas and their intensity.

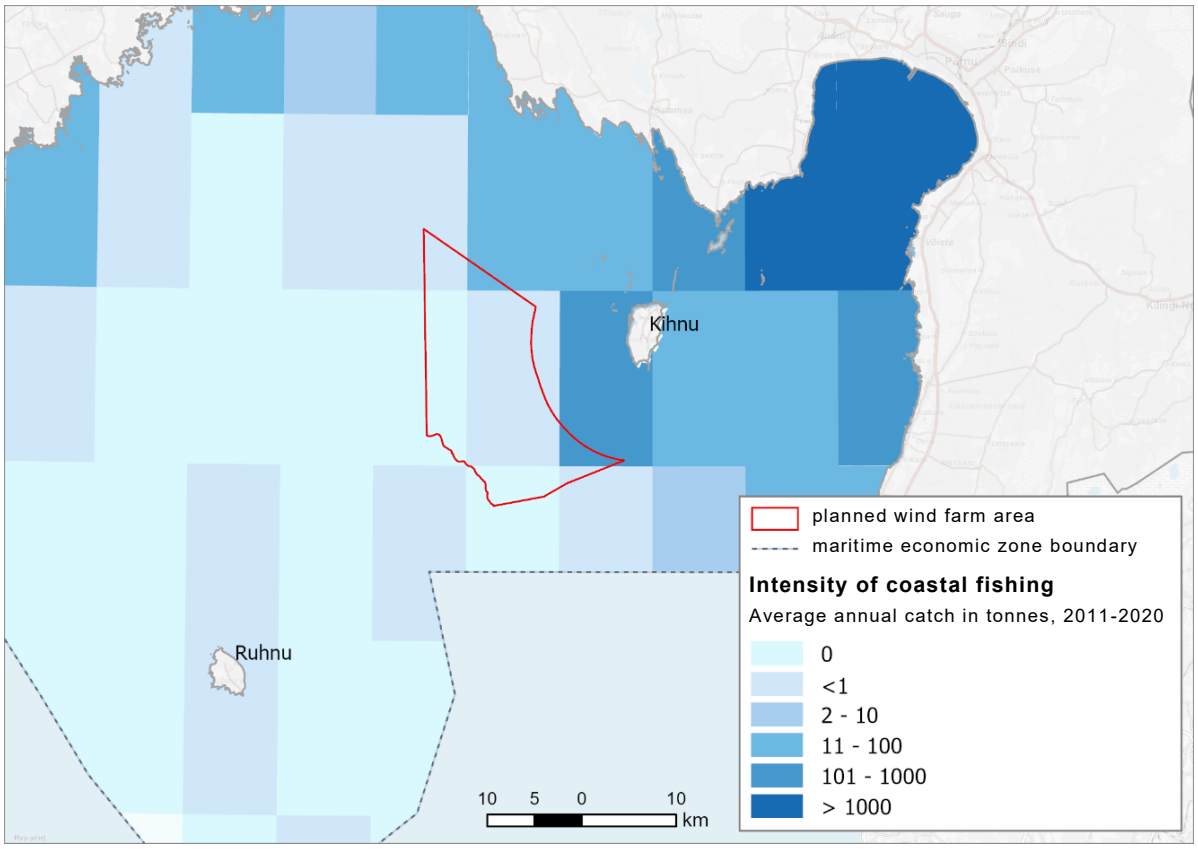

Figure 4-15. *The planned offshore wind farm area and intensity of coastal fishing, 2011-2020*

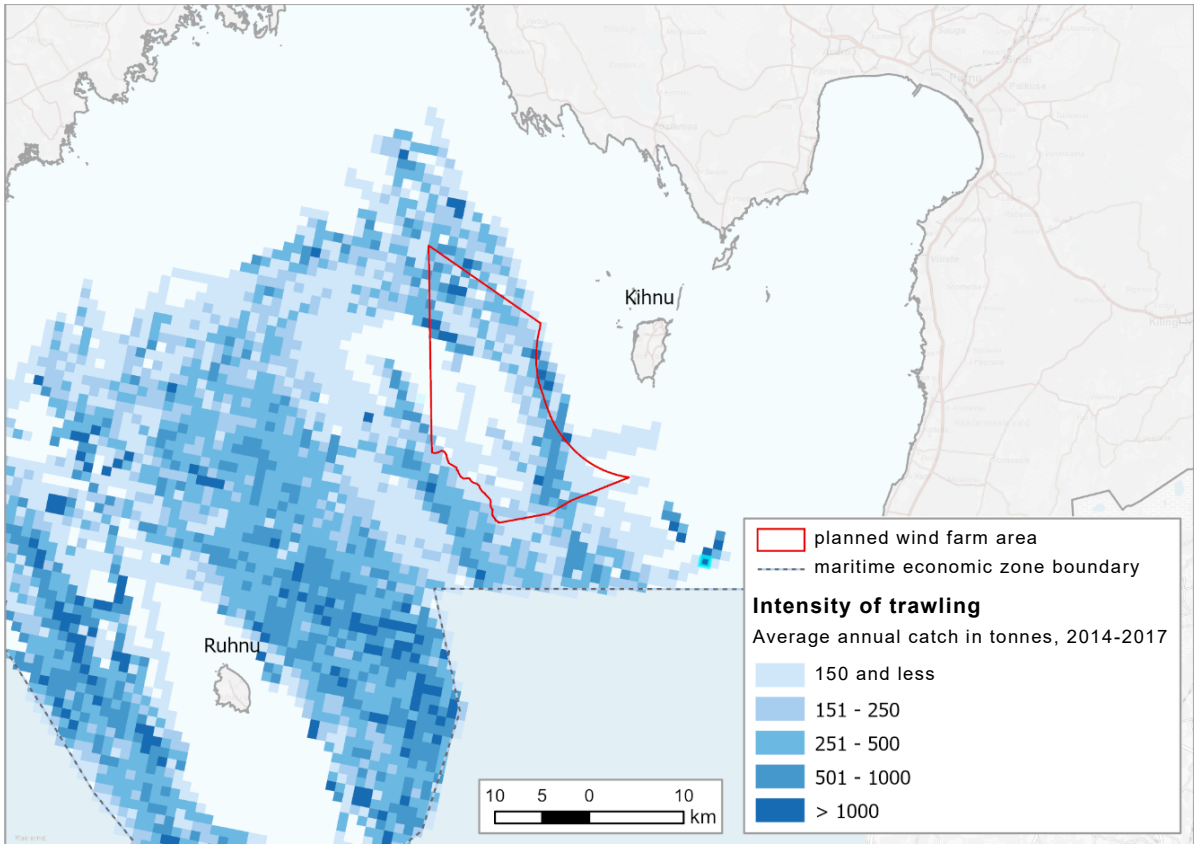

Figure 4-16. *The planned offshore wind farm area and intensity of trawling, 2014-2017*

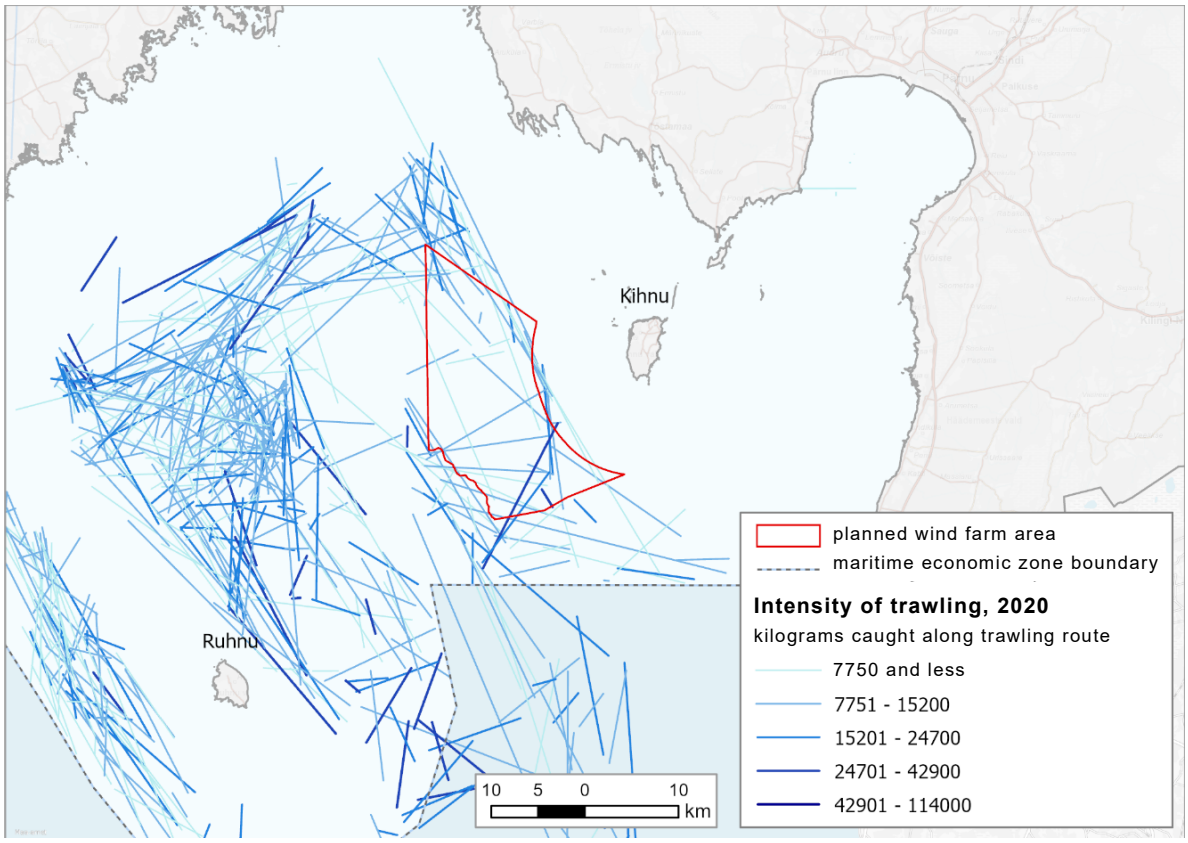

Figure 4-17. *Intensity of trawling in the planned activity area, 2020*

The planned wind farm area overlaps partially with existing coastal fishing and trawling areas, thus there is cooperation with associations that represent fishers' interest (see table 9-1).

5. Significant environmental impact expected to result from the planned activity

5.1. Assessment methodology

In assessing environmental impact and preparing the report, the expert group proceeds from the valid Environmental Impact Assessment and Environmental Management System Act and its implementing acts and follows good practices in environmental impact assessment [44]. Valid environmental legal acts and the restrictions provided for therein are taken into consideration in carrying out the EIA.

The environmental impact assessment process has two phases: Preparation of the EIA programme; and carrying out the EIA and preparation of the report. The stages of the process arising from the Environmental Impact Assessment and Environmental Management System Act are set forth in Chapter 7.

The EIA programme (this document) is a part of the planning stage – a plan as to how the EIA is to be conducted, including a description of the planned activity area, highlighting expected key impact areas, the schedule for carrying out the assessment and plan for communication with the various parties in the EIA Process.

The environmental impact report is the final document that summarizes the whole process. The report is prepared in consideration of the requirements of the Environmental Impact Assessment and Environmental Management System Act and the decision to initiative EIA, as well as documents related to the offshore wind farm as an integral object (i.e., permits and licences necessary for land-based structures and infrastructure etc.) and environmental matters.

The purpose of the EIA is to assess and describe significant environmental impacts expected to result from the implementation of the planned activity, analyse possibilities for avoiding and/or alleviating its impact and make a proposal for the selection of a more suitable alternative (including for size of area, volume and technological aspects). The alternatives covered are described in the EIA report. Environmental impact is a direct or indirect impact expected to result from the planned activity, in regard to the environment, human health and well-being, cultural heritage and property

The following Table 5-1 presents the environmental elements, impact sources, significant impacts expected to result from executing the planned offshore wind farm and related infrastructure (if necessary, the sizes of the impact areas is specified) and the methods used to forecast the impacts, including the need for preparing studies/expert analysis necessary for evaluating the impacts and methodologies for such studies/analysis. The expected environmental impact is assessed in connection to the construction and use of the offshore wind farm and submarine

44 Good practices for environmental impact assessment personnel. Estonian Environmental Impact Assessment Association (www.iaea.eu). Annex 1.

cable and the impact of removal of wind turbines as a rough assessment is also examined to the degree afforded by the existing information.

Impacts are assessed based on the principle that changes in the environment resulting from the implementation of the planned activity are to be assessed. To do this, it is important to know the consequences (aspects) related to the activity that may lead to changes in environmental elements. The spatial extent of the environmental impact is additionally assessed in the area surrounding the planned activity area – in so doing, it is assessed in regard to various impacts in differing spatial extent where a specific impact can be considered significant. If possible and necessary, this environmental impact assessment is carried out in an appropriate level of detail in regard to activities planned in the mainland as well. For example, where possible, the impacts related to location and establishment of submarine cable in the transition areas between sea and the mainland and in their immediate vicinity to determine the potential for functioning of the network connection for the developer and the rough locations of activities taking place on land. As such, redundancy of essentially unnecessary procedures that pointlessly burden administration is to be avoided.

The expected zone of influence is made up of the wind farm development area and the submarine cable corridor, i.e. the direct area for the planned activity and its immediate vicinity. The size of the zone of influence depends on the specific impact factor (e.g. noise, disturbances during the time of construction, visual impact etc.). The zone of influence also varies depending on the natural environment component being influenced (aquatic environment, seabed habitats, marine biota, etc.).

Both a quantitative and qualitative (comparative) analytical method are used to assess environmental impact, according to which activities and alleviatory measures are analysed by each of the various environmental elements (e.g. conformity to a specific standard). If there are no objectives or indicators for given environmental elements, subjective experiential (opinions of members of the EIA expert group and expert analysis) and objective opinions (research and other results) is used.

The EIA methodology consists of comparing the forecasted environmental impacts (including alternative solutions) with the limits established in legal acts and giving recommendations for implementing the optimum/best option. Data sources used to prepare the EIA report include the Land Board's map application and EELIS (Estonian Nature Information System – Environmental Register, Environmental Agency) data, professional and scientific literature, previously gathered study data, analogies, strategic documents and Republic of Estonia legal acts and other available (relevant) information that allows the adequacy of the conclusions to be ensured. Consultation takes place with various relevant institutions, organizations and persons.

Additional studies and modelling will be performed in the course of the superficies licence and EIA, and expert opinions described in Table 5-1 will be prepared. Carrying out studies/expert analyses and dealing with the topics that arise can also takeplace In the context of other projects or activities (such as merger with other development projects, national study and monitoring etc.) and as an integrated part of the EIA (i.e., not as a standalone study). In carrying out various studies, cooperation between scientists and research groups takes place for creating interdisciplinary value added and achieving higher-quality research results.

A Natura assessment will be carried out as part of the EIA, and this EIA will rely principally on the guidelines entitled "Juhised Natura hindamise läbiviimiseks loodusdirektiivi artikli 6 lõike 3 rakendamisel Eestis" (Instructions for carrying out Natura assessment in regard to implementation of Article 6 (3) of the nature directive in Estonia"[45]. Chapter 6 describes in more detail the process of Natura assessment and the methodology used.

The environmental impact assessment is a public process. All parties who feel that their interests may be impacted by the planned activity can intervene and present reasoned recommendations, proposals and comments. At minimum, interested parties can participate in the public release of the EIA programme, the assessment process and the public release of the report. The decision-maker, developer and environmental impact assessment staff can be contacted with proposals, objections and questions.

5.2. Environmental elements impacted and studies conducted

The methods used to forecast the impacts on each field impacted and all environmental elements (which the planned activity may impact through impact sources) are described in Table 5-1.

The Consumer Protection and Technical Regulatory Authority superficies licence and EIA initiation decision (see annex 1) calls for a number of studies and/or expert analysis. In this EIA programme, the list of studies provided for in the initiation decision has been taken into account in its entirety, the methodologies of studies and expert analysis supplemented and updated in as great an extent as is known as of the current juncture in preparation of the EIA programme.

Table 5-1. *Expected significant impacts of the planned activity, methods for their forecasting and assessment, and studies to be conducted*

No.	*Impact field (i.e., environmental elements impacted)*	*Expected significant impacts (including zone, sources of the impact)*	*Impact forecasting and assessment methods and description of the necessary studies*
1	**Impact on the natural environment**		
1.1	Impact on hydrodynamics (including currents) and wave action, risks related to icing	The Impact that establishing a wind farm will have on hydrodynamics lies in changes in the wind and wave regime. The impact may also manifest on currents and vertical intermingling. This is expected to be an insignificant impact. Ice-related risks may manifest both during the wind farm construction and usage phase. To buffer the impacts, ice conditions must be taken into account	In regard to the impact of hydrodynamics, theoretical modelling will be carried out. The work is being carried out by Tallinn University of Technology (TalTech), person in charge Taavi Liblik. As to ice risks, an expert opinion will be provided, based on previous fundamental data and studies carried out such as the ice conditions study conducted as part of the Estonian

45 Kutsar, R.; Eschbaum, K. and Aunapuu, A. 2019. Instructions for carrying out a Natura assessment in regard to implementation of Article 6 (3) of the nature directive in Estonia. Customer: Environmental Board. https://www.envir.ee/sites/default/files/KKO/KMH/kemu_natura_hindamise_juhendi_uuendus_2020.pdf

No.	*Impact field (i.e., environmental elements impacted)*	*Expected significant impacts (including zone, sources of the impact)*	*Impact forecasting and assessment methods and description of the necessary studies*
		when selecting and designing the foundation type. Impacts are related to the wind farm area and the immediate vicinity.	maritime spatial plan. In addition, previous experience, studies and research literature from other countries.
1.2	Impact on seawater quality, including suspended solids	The impact of the offshore wind farm on seawater quality may be manifested mainly in the course of Installation of wind turbine foundations and submarine cables by way of suspended solids introduced into water columns from marine sediments. The amount of suspended solids depends mainly on the natural state of the seabed (geotechnical conditions) followed by the number, size, type and installation technology used for foundations as well as on the length of submarine cables and installation technology. The impact on seawater quality and marine organisms may also materialize upon re-contamination of the marine environment, i.e. release of nutrients and hazardous substances into the water column, if such compounds are present in the sediments in significant quantity. During operation of the offshore wind farm, more of a theoretical impact is the impact on the seabed sediments stemming from warming of submarine cables and thereby on water temperature. The cables will be buried in the seabed and the amount of heat given off from the cables is expected to be insignificant even at the local level. Seawater quality can also be impacted if a potential emergency situation occurs, which could lead to the risk of an oil spill. The risk of an oil spill exists both in the	There are no previous data on the state of the water quality parameters in the planned area. Seawater quality study (study carried out by: University of Tartu Estonian Marine Institute, person in charge: Georg Martin) objective is to gather from the study area samples for water quality indicators and carry out measurements of water column parameters to characterize the wind farm area's water quality status before the start of construction and to assess possible changes arising from construction and operation of the wind farm. Monitoring stations will be situated in the wind farm area, the coordinates of which are to be determined during the first series of measurements. The sample collection and measurements of the water column parameters will be conducted during 2022. Monitoring of the water's physical-chemical indicators will be conducted at least six times a year from June to September (pursuant to the Estonian State Environmental Monitoring programme's coastal sea monitoring sub-programme methodology). Water samples will be collected in monitoring locations at depths of 1, 5 and 10 metres, and in shallow-water monitoring locations, at depths of 1

No.	*Impact field (i.e., environmental elements impacted)*	*Expected significant impacts (including zone, sources of the impact)*	*Impact forecasting and assessment methods and description of the necessary studies*
		wind farm construction and usage phase. To prevent an oil spill, safety rules must be followed during construction and maintenance work. The Impacts are related to the area around the wind farm and the submarine cables as well as its near vicinity.	and 5 metres or 1 metre, and in deeper stations from the layer of water near the seabed as well. Nutrient content will be determined from an integrated sample. Electrical conductivity, temperature, dissolved oxygen, oxygen content and pH will be determined in the water column using a CTD probe. A Secchi disc will be used to determine water transparency in the monitoring locations. The parameters to be measured are Ntot, Ptot, No3-N, NO2-N, PO4, O2, pH, CTD profile and Chl-a. Numerical modelling of the water quality parameters; and water column's physical (temperature, salinity, stratification; currents) and biogeochemical (nutrients, chlorophyll a, oxygen) parameters will be compiled. The work is being carried out by Tallinn University of Technology (TalTech), person in charge Taavi Liblik. During the EIA, modelling of the distribution of suspended solids (and possible oil spill, see also 5.3) will be carried out (the creation of suspended solids and distribution in the surrounding maritime area related to establishing the wind farm and installation of the submarine cables). The work is being carried out by Tallinn University of Technology (TalTech), person in charge Taavi Liblik. The EIA report will include a summarized expert opinion on the basis of previous studies, scientific literature and studies conducted during this EIA.

No.	*Impact field (i.e., environmental elements impacted)*	*Expected significant impacts (including zone, sources of the impact)*	*Impact forecasting and assessment methods and description of the necessary studies*
1.3	Impact on habitats and biota on the seabed	The impact of the offshore wind farm on seabed habitats may manifest above all through the wind turbine foundations and submarine cables. The biotic communities and habitats in the immediate vicinity of the wind turbines will be destroyed in the construction phase. Construction activity will impact the communities on the seabed above all through spread of dislodged sediment and changes in water transparency. As a measure that will reduce and alleviate the impact, the turbine foundations must be installed where possible in places where there is no or little (valuable) seabed biota and habitats. The wind turbine foundation will be situated on the seabed and specifically in the foundation area (and the area of material installed for its protection), the existing natural seabed will become anthropogenic. The significance and magnitude of the impact depends mainly on the number, dimensions and types of the foundations (a gravitational foundation for the same kind of wind turbine has a much larger seabed area than a pile foundation) and on the natural state of the seabed (type of seabed). A method frequently used for installing submarine cables on soft seabed substrates is burying the cable in bottom sediments using special equipment that will help to avoid potential damage (economic impact) and which also alleviates the materialization of environmental impacts (reduced transmission of electromagnetic radiation and heat around the cable). Burying submarine cables in the seabed will pose a severe disturbance to the existing seabed at the time of construction, but since after construction the seabed will be in a similar situation as before, it will return to the original situation in a few years. For	A study of the seabed biota and habitats will be conducted in the area of the planned wind farm and submarine cables (study to be carried out by: University of Tartu Estonian Marine Institute, person in charge: Georg Martin), with the aim of mapping the distribution of species and communities of seabed biota (phytobenthos and zoobenthos) and the distribution of seabed habitats and biotopes in the area (Nature directive Annex I habitat types, MSRD broad habitat types, HELCOM HUB biotopes, HELCOM Red List biotopes). The objective of the study is to gather in situ information on the distribution of seabed biota species and communities and habitats and use that information in the planned area to describe (model) the distribution of species, habitats and biotopes. On the basis of the study results, it is possible to assess the exact impact of the technology and choice of location of wind turbine foundations on seabed communities and if necessary; propose measures to minimize potential negative impact. Fundamental measurements of the seabed will be taken in the planned area by way of acoustic remote monitoring (e.g. by fan sonar) where both depth data and backscattering data will be collected, combining them with semi-quantitative (coverage assessments using video systems or diving) and quantitative (biomass assessments) point observation. In addition, an artificial substrate colonization study/experiments will be conducted in the wind farm area (study carried out by: University of

No.	*Impact field (i.e., environmental elements impacted)*	*Expected significant impacts (including zone, sources of the impact)*	*Impact forecasting and assessment methods and description of the necessary studies*
		installing cable in areas sensitive from a nature conservation standpoint, it is also possible to use directional boring of cables under the seabed (above all in the cables' sea-land zone). I.e., before reaching an environmentally sensitive area, the cable will be laid below the cable at a depth of up to 10 m and this can prevent negative impacts from arising to seabed biota. Establishing a wind farm involves placing an artificial substrate throughout the entire water column, which creates an opportunity for various communities of sessile species to arise. Colonization of the free artificial substrate depends on very many different local environmental factors and it is not possible to transpose experience from other maritime areas for assessing the impact of the specific wind farm. To assess the environmental impact of establishing and operating the wind farm, it is necessary to know the local peculiarities of the "reef effect" and assess the importance of the wind farm in promoting the spread of non-native species. The zone of influence can be defined above all as the development area of the specific wind farm and the locations of its cable corridors.	Tartu Estonian Marine Institute, person in charge: Georg Martin) to determine the impact on the surrounding environment related to artificial substrate colonization arising from wind turbine foundations. The in vivo experiment will be conducted in the study area in a station at a depth of 25-30 m, and the specific location for the experiment will be coordinated with the Transport Board. The experiment will be carried out year-round, allowing a permanent community to form on the artificial substrate installed in the marine environment (estimated to be May -June 2022 to August-September 2023). The variables to be assessed are the structure of the colonizing communities and quantitative parameters (coverage, biomass and abundance). Environmental variables to be tracked – salinity, temperature, light climate (3 different depth horizons). Additional parameters to be tracked – structure of plankton communities (sample taking once per season). Substrates tested – concrete and metal (steel). The EIA report will include an summarized expert opinion on the basis of previous studies, scientific literature and studies conducted during this EIA.
1.4	Seabed, seabed sediments	The impact of the wind farm may be manifested in the storm wave regime and dynamics of sediments through changes in the seabed structure. It is not expected to be a significant impact: since the nature of the relief of the seabed will not be modified in the course of the construction for establishing the wind farms (lowering/raising the relief), no significant changes are expected in the hydrodynamic regime that could impact	Measurements of the seabed will be taken as part of the EIA (e.g. seabed habitats) with various equipment (e.g. sonars etc.) during which time bathymetric data more precise than existing ones will be gathered as well. These data are sufficiently precise for covering all of the needs of the studies to be carried out in the framework of the EIA.

No.	*Impact field (i.e., environmental elements impacted)*	*Expected significant impacts (including zone, sources of the impact)*	*Impact forecasting and assessment methods and description of the necessary studies*
		the nature of waves on the surface in the near-coastal area. Bathymetric data (seabed depth data) in the area of the planned offshore wind farm and possible cable lines exist and they are sufficient for ordinary navigation and for providing environmental-related assessments carried out as part of the EIA (fisheries, seals, bird life, water movement and sediment dynamics etc.) Bathymetric data more detailed than the existing information are necessary for the precise technical solution of the offshore wind farm (design and final choice of technology) – i.e. in the post-EIA stage. In the course of construction of the foundations and embedding the cables in the seabed, the sediments will be moved and resuspension will take place. Its impact will be felt In a limited area and for a short term. The estimated volumes of dredging (including dumping or placement of solid materials) depend on both the number of turbines and their foundations, dimensions and the length, location of the submarine cables and the technology selected for installing them. Building the wind farm >10 km from the coast will not impact the nature of coastal processes or their intensification or weakening of the processes since the wind farm is located far enough away. Impacts are related to the wind farm area and the immediate vicinity.	Preparation of a detailed geotechnical site investigation of the seabed is necessary only in the stage of development of the precise technical solution (design and final selection of technology) – a geotechnical site investigation of that level of detail (which also includes sample drilled cores from the seabed etc.) will be executed outside of the scope of the EIA and after the EIA and superficies licence process. The EIA will determine the existence of geotechnical site investigation information that would allow primary conclusions to be drawn regarding the structural solution and technology to be used (e.g. foundation type) and give information on environmental impacts that could potentially materialize. The EIA will proceed predominantly from the existing geotechnical information (past geophysical works in the maritime area) and additional processing and analysis of existing information will be carried out (including expert opinions). During the EIA, some seabed soil samples will be taken and analysed in a lab (to determine content of hazardous materials). If the EIA indicates the need to conduct a geotechnical investigation of the seabed (e.g. in the places where submarine cables some to land in the near-coastal zone) ,the necessary works will be performed in the areas where on the basis of other environmental information it is realistic and possible to install wind turbines or submarine cables. The methodology for the relevant work

No.	*Impact field (i.e., environmental elements impacted)*	*Expected significant impacts (including zone, sources of the impact)*	*Impact forecasting and assessment methods and description of the necessary studies*
			and study conclusions will be summarized in the EIA report. In the course of the EIA, the impact related to the different types of foundation will be assessed and if necessary, environmental measures (including monitoring) developed. The EIA report will include a summarized expert opinion on the basis of previous studies, scientific literature and other studies conducted during this EIA.
1.5	Impact on fisheries	During construction of the offshore wind farm, ship traffic in the area will increase and the installation of offshore wind farm foundations and sea cables in the water environment will take place. Depending on the nature of the seabed, type of foundation and installation technology, the installation of the foundation will involve noise emissions and introduction of seabed sediments into the water column (resulting in suspended solids). Disturbance of the seabed sediments and noise topics are also important when it comes to installation of submarine cables. During operation, a positive impact from offshore wind farms has also frequently been noted. Foundations offer a habitat for marine life, which are a food source for various fish. The level of underwater marine noise from operating turbines and their impact on fish have not proved significant or negative based on the studies conducted on existing operating offshore wind farms. The impact during construction and operation can be avoided and significantly reduced through implementing suitable measures. Technical and organizational techniques that have been used include adapting the construction period to fish spawning, use of noise-mitigating	In the vicinity of the planned activity, a fisheries inventory and studies on spring and autumn Baltic herring will be conducted (study conducted by: University of Tartu Estonian Marine Institute, person in charge: Redik Eschbaum), and the results will be compared to the results of other relevant Marine Institute fisheries studies in open sea and coastal waters. The fisheries inventory will be carried out in spring, summer and late autumn in two consecutive years, 2022-23. The spring Baltic herring studies will be carried out from March to July in two consecutive years, 2022-23. The autumn Baltic herring studies will be carried out from August to November and the duration of the study is one year, in 2022. Based on the study results, an analysis will be conducted of the potential conflicts with nature conservation species need for protection and significant interest in the fisheries sector. The fisheries and spawning area inventory will involve collection and analysis of fish samples pursuant to HELCOM guidelines* and meets the requirements of water quality assessment standard EVS-EN 14757:2015. The study will use gillnet

No.	*Impact field (i.e., environmental elements impacted)*	*Expected significant impacts (including zone, sources of the impact)*	*Impact forecasting and assessment methods and description of the necessary studies*
		measures when installing foundations (such as avoiding pile-driving or use of noise-dampening measures during foundation installation), embedding the submarine cables in the seabed sediments, etc. It is expected that the impact zone can be directly limited to the area encompassing the offshore wind farm and the area intended for establishing the submarine cable.	series (14, 17, 21,5, 25, 30, 33, 38, 42, 45, 50, 55, 60 mm eyelet increments) and standardized (EVS-EN 14757:2015) section gillnets. The objective of the study is to determine the fisheries situation in the area of the planned wind farm and submarine cables, i.e. seasonal incidence of species, abundance, importance of the area for spawning, migration or feeding area for various fish species. Spring Baltic herring migration will be analysed in a hydroacoustic study. The methodology for data collection for the autumn Baltic herring study is the catching of spawning fish with gillnets and catching fish hatchlings with a trawl in the planned wind farm area, comparative data will be gathered in the same study from spawning areas and hatchling nurseries known earlier in the area outside the planned wind farm area. To assess the impact of the electromagnetic field around the connecting cables, an expert analysis will be prepared considering similar projects, studies conducted in their regard, and existing data. In 2022-24, it is planned to conduct a project funded from the state budget which will determine the impact of noise on Baltic herring biology, above all migration and reproductive behaviour. On this topic, the EIA report will be based on the findings of the nationwide study. The findings of this study will determine whether an additional underwater noise model (including infrasound model) should be carried out.

No.	*Impact field (i.e., environmental elements impacted)*	*Expected significant impacts (including zone, sources of the impact)*	*Impact forecasting and assessment methods and description of the necessary studies*
			In the course of the EIA, the impact of noise and vibration during installation of various types of foundation (and other technical solutions) will be evaluated and if necessary, environmental measures (including monitoring) developed. The EIA report will include an overall expert opinion on the basis of previous studies, scientific literature and studies conducted during this EIA.
1.6	Impact on marine mammals (seals)	The main aspect that could impact seal habitats is underwater noise, above all noise during construction. A disturbance for seals may also be a temporary change in seawater quality stemming from disturbing of marine sediments upon installing foundations and submarine cables. The quantity of suspended solids generated depends on the geology of the seabed, the foundation type used and the technological process of installation of the foundation and submarine cable. During the offshore wind farm park operating phase, a disturbance for seals may stem from regular ship traffic used for maintenance. In particular, there are risks related to icebreaking. In conditions of limited ice, seals may congregate for birthing along the shipping lanes maintained by icebreakers, or in the wind farms with stationary ice as a habitat with suitable ice. In ordinary conditions, suitable ice is found in very large areas in the open-sea area or seals reproduce on the islands, which are covered by the existing protection regime. It is expected that the impact zone can be directly limited to the area encompassing	To assess the impacts of the planned wind farm, it is necessary to gather, or supplement in significant part, source data related to seals so that it would be possible to assess the existing situation before the building of the wind farm and the temporal and spatial future impacts of adopting use of the maritime areas. To do this, a seal study will be conducted (carried out by MTÜ Pro Mare, person in charge Mart Jüssi) in the following parts: 1) Seal abundance monitoring to be conducted as a point census in significant seal resting areas in the Gulf of Riga: Allirahu, Kerju and Vesitükimaa resting areas for the grey seal, and in the Väinameri mouth (Viirelaid-Kübasssare) and Kihnu islets nature conservation area for the ringed and grey seal. 2) marine use study with telemetry tags, with the goal of tagging 10 seals. The priorities are to apprehend seals of both species in the Kihnu area or tagging grey seals in the northern part of the gulf. 3) Acoustic applied research study on habitat used, conducted in collaboration with the Tallinn

No.	*Impact field (i.e., environmental elements impacted)*	*Expected significant impacts (including zone, sources of the impact)*	*Impact forecasting and assessment methods and description of the necessary studies*
		the offshore wind farm and the near vicinity.	University of Technology's Mechanics and Fluids and Structures research group (prof. Aleksander Klauson). 4) Seal birthing and ice use applied research study, the method of which is ice and/or islet monitoring and aerial photography in the Gulf of Riga. Field studies will cover one full year, since there are significant seasonal differences in seal locations and activity patterns. The study will be carried out in 2023. In the course of the EIA, the impact of noise and vibration during installation of various types of foundation will be evaluated and if necessary, environmental measures (including monitoring) developed. The EIA report will include an overall expert opinion on the basis of previous studies, scientific literature and studies conducted during this EIA.
1.7	Impact on birds	The potential impact of open-sea wind farms on bird life mainly lies in driving birds out of preferred stopover sites, deaths of birds in collisions with wind turbines and a barrier effect on avian flight routes. Based on the location of the project area, the hazards may have especially significant impact in this case, because: 1) the planned park is at least partially along a significant land bird migratory route (Lao-Kihnu-Ruhnu); 2) based on the summary of the last study on waterfowl stopover areas (EOÜ, in preparation, some of the territory of the planned offshore wind farm may be an important stopover area and requires additional study; 3) the Kihnu islets are approx. 7.5-10.5 km from the area, and the feeding flights of birds nesting on the	To determine the impacts on bird life, a bird migration and feeding area study will be conducted (carried out by the Estonian Ornithological Society, person in charge Kaarel Võhandu). <u>Observations of birds migrating through the area</u>. The observations will be carried out from a ship at anchor at one point in the centre of the study area. The observations will include visual and radar observations of through-migration and nighttime audio recording. The studies will be carried out in spring and autumn. Considering the major variation in migration from year to year, the observations of through-migration

No.	*Impact field (i.e., environmental elements impacted)*	*Expected significant impacts (including zone, sources of the impact)*	*Impact forecasting and assessment methods and description of the necessary studies*
		islets may extend to the area of the planned offshore wind farm. Impacts are related to the wind farm area and the immediate vicinity.	will be repeated over two years, 2022-23. <u>Censuses of waterfowl that make stopovers.</u> This will be conducted as a flight census. The census route will be covered by the planned wind farm area along with near vicinity for obtaining comparison data. Ten censuses a year will be conducted. Considering the major variation from year to year in the number of waterfowl making stopovers, the flight censuses will be repeated over two years, 2022-23. <u>Telemetry study of birds nesting in the Kihnu archipelago.</u> A telemetry study with appropriate GPS devices makes it possible to determine the extent to which food-gathering flights by key species nesting in the Kihnu archipelago extend into the project area. Telemetry studies will also make it possible to obtain additional information on the birds' flight heights, which is an important input for assessing risks of collision. The EIA report will include an overall expert opinion on the basis of previous studies, scientific literature and studies conducted during this EIA.
1.8	Impact on bats	The impact of the offshore wind farm wind farm on bats may materialize if the offshore wind farm is located in a bat feeding area or migratory route. The Estonian maritime spatial plan was compiled taking into account the best known scientific information and on that basis, expected bat migration areas were defined at sea, one of which overlaps with the planned wind farm area. Impacts are related to the wind farm area and the immediate vicinity.	In the course of preparation of the EIA, <u>a bat study</u> will be conducted (carried out by Elustik OÜ, expert in charge Oliver Kalda). As a result of the study, the potential bat feeding areas, migration corridors and movements in the planned wind farm area will be determined. The study methodology will envision two bioacoustic methods of data collection: 1) stationary observation points (3-5 buoys) at sea and on land; 2) ship censuses.

No.	*Impact field (i.e., environmental elements impacted)*	*Expected significant impacts (including zone, sources of the impact)*	*Impact forecasting and assessment methods and description of the necessary studies*
			Field work will cover spring and autumn bat migration periods, and stationary observation points will also be in operation in the summer period; the study period will be 2023. In 2022, autumn migration ship censuses will be conducted together with a stationary comparison point on Kihnu Island. The EIA report will include an overall expert opinion on the basis of previous studies, scientific literature and studies conducted during this EIA.
1.9	Impact on protected natural objects	No protected natural objects are found in the planned wind farm area. A number of protected areas are found in the impact zone of the planned wind farm and thus the impact may affect the protection objectives of the protected areas. The expected cable corridor locations pass through the Pärnu Bay limited-conservation zone; which is Thus in the expected impact zone of the activity. A small part of the cable corridor study area at sea adjoins the Lao marsh angelica species protection site, which depending on the final location of the cable may prove to be within the impact zone. The impacts are related to the location of the wind farm and the submarine cable and their near vicinity.	The map layer analysis and expert opinion on earlier research, Estonian Nature Information System (EELIS), inventories conducted, species protection activity plans, scientific literature and studies performed in the course of this EIA.
1.10	Impact on Natura 2000 areas – Natura assessment	The majority of the protected objects in the maritime area are also internationally protected, being part of the Natura 2000 network of nature and/or bird areas. Potential nature and bird areas of the Natura 2000 network that fall within the planned wind farm or cable corridor impact zone are shown in chapter 6. The impact on Natura areas will be separately	The map layer analysis and expert opinion on earlier research, Estonian Nature Information System (EELIS), inventories conducted, species protection activity plans, scientific literature and studies performed in the course of this EIA. A Natura assessment will be conducted on all Natura 2000

No.	*Impact field (i.e., environmental elements impacted)*	*Expected significant impacts (including zone, sources of the impact)*	*Impact forecasting and assessment methods and description of the necessary studies*
		assessed in the relevant Natural assessment expressed as a separate chapter of the EIA report.	protection objectives that fall within the impact zone. See Chapter 6 on the Natura preliminary assessment.
1.11	Impact on climate	The impact of the wind farm on the climate is positive. The magnitude of the positive impact depends on the final rated output of the offshore wind farm and the amount of electricity this generated. Impacts related to local climate changes such as currents, waves, changes in ice cover are treated in the EIA report.	An expert analysis will be conducted, based on previous studies, scientific literature, professional literature and expert knowledge. Fundamental issues regarding climate change will not be analysed in the context of this EIA. The official position of the European Union and therefore also of the Republic of Estonia will used as the basis in the matter of the existence of climate change, the need to mitigate changes and adapt to changes.
2	**Impact on cultural heritage**		
2.1	Impact on objects under heritage conservation, including shipwrecks	According to Transport Board data, there shipwrecks are found in the planned offshore wind farm area and there may be a number of underwater obstacles in the area. There may be an expected direct physical impact when establishing the offshore wind farm: e.g. activities may jeopardize the preservation of a shipwreck or the good status of a shipwreck. This is expected to be an insignificant impact. An impact may also be manifested through potential destruction, damage or impeded access to cultural heritage and the spread of sediments on to heritage conservation assets. To alleviate the impact, the locations of wind turbines must be chosen so as to guarantee that valuable shipwrecks are preserved and remain publicly accessible. The impact is directly related to the wind farm and submarine cable area (above all, areas under specific infrastructure).	During the preparation of the EIA, first sonar investigations will determine the existence of underwater objects, including underwater objects with potential cultural value, and the cultural layer (at least in the immediate proximity to the planned wind turbine foundations and potential cable corridors). If possible, areas that do not coincide with objects of cultural value are to be preferred for wind turbines' foundation locations and cable corridors. Prior to construction (during the design development), a separate underwater archaeological investigation is to be performed – if the planned construction activity (establishment of wind turbine foundations and cables) and/or their impact zone coincides with objects with cultural value and/or cultural layer determined in advance, and

No.	*Impact field (i.e., environmental elements impacted)*	*Expected significant impacts (including zone, sources of the impact)*	*Impact forecasting and assessment methods and description of the necessary studies*
			could jeopardize the survival of the underwater cultural heritage (subsections 32 (2-3) of the Heritage Conservation Act, section 10 of the Minister of Culture regulation no. 25 of 15 May 2019). In the course of the underwater archaeological investigation, objects of cultural value will be documented and their condition and scope of their preservation will be assessed. In addition, if necessary, impacts (environmental pollution) caused by changes in the potential status of environmentally hazardous wrecks will be assessed. The information collected by sonar investigations will be used if possible in investigations by other disciplines: determining seabed habitats and initial identification of potential historical UXO (and other hazardous objects). On the basis of previous investigations, scientific literature and investigations conducted in the course of this EIA, an expert opinion will be prepared.
3	**Social and economic environment, including impact on human health, well-being and assets**		
3.1	Noise (including infrasound, low-frequency sound) and vibration	The impact on human health from the standpoint of noise and vibration is expected to be insignificant, since the minimum distance of the planned offshore wind farm's closest turbines from the Kihnu shore is 10 km, due to which it is not foreseen that noise and vibration levels will exceed limits or that disturbances within the limits will spread to the nearest homes. During the use of the wind farm, infrasound and low-frequency noise can be expected as well. Infrasound is a term	To assess noise during the operation of the turbines, modelling will be performed and a noise map will be prepared on the grounds specified in Minister of the Environment regulation no. 71 of 16 December 2016, "Regulatory limits of noise in ambient air and methods for measurement, determination and assessment of noise level". The impact of infrasound, low-frequent sound and vibration is

No.	*Impact field (i.e., environmental elements impacted)*	*Expected significant impacts (including zone, sources of the impact)*	*Impact forecasting and assessment methods and description of the necessary studies*
		for acoustic waves with a frequency of less than 20 Hz. Infrasound is not predominantly audible to the human ear. Low-frequency sound is a term for acoustic waves with a frequency of 10-200 Hz.	described on the basis of scientific literature and previous investigations.
3.2	Visual impact	It is not possible to establish a offshore wind farm that is not visible at sea. Large wind turbines are visible from 10 km in good weather, and thus the visual impact will extend to Kihnu. Thus, there will be a change in sea views. The magnitude of the visual impact depends on the physical size of the offshore wind farm, location, spatial solution (e.g. positioning wind turbines in rows etc.) and technical solutions (e.g. the colour of the wind turbines and marking the turbines with lights). The scope of the impact is the closest coastal areas to the wind farm (above all, Kihnu Island).	To determine visual impact more objectively and create additional information, a visualization of the offshore wind farm will be performed from different points of Kihnu Island and mainland, along with a visibility analysis (ZTV – *Zone of Theoretical Visibility)*. To assess visual impacts, the guidelines and methodology developed in the course of the Estonian Maritime Area spatial planning process, "Guidelines on methodological recommendations for visual impact assessment in order to promote the development of offshore wind farms ". Work to be carried out by Kerttu Ots, WSP Global Inc. A static visualization of observation sectors from different viewpoints and assessment of changes in the views will be included in the EIA report.
3.3	Impact on human health and well-being or property Social and economic aspects – employment, fisheries, impact on the local community, tourism, electricity supply.	Impact on human health and well-being The impact of the planned wind farm on human health and welfare can be associated with potential noise and visual disturbance from the wind turbines, described in advance in 3.1 and 3.2 of the table. Impact on (property) economy and employment, including the fisheries sector. The planned offshore wind farm may exert an impact on fisheries and thereby on fisheries both during construction and operation of the	The expert analysis on the basis of scientific literature sources and previous research data, combined with data gathered in the course of focus group encounters and interviews with and surveys of stakeholders. As part of the proceedings on the superficies licence and EIA, cooperation with various interest groups and local governments will take place in addition (Kihnu, Pärnu, Lääneranna etc.). Additional input information will be obtained from proposals received

No.	*Impact field (i.e., environmental elements impacted)*	*Expected significant impacts (including zone, sources of the impact)*	*Impact forecasting and assessment methods and description of the necessary studies*
		offshore wind farm. The territory of the offshore wind farm may also overlap with trawling areas and thus also have an impact on fishermen's income. The impact on fisheries during operation may lie in restrictions to be established on ship traffic in the offshore wind farm area. It is important to find ways of expediently sharing space in the same maritime area, using the wind farm area also for aquaculture, seaweed farming and/or mussel farming (for example, use of turbines or developing new infrastructure solutions to secure aquaculture infrastructure), which have a potential positive impact on the economy and employment. In addition, there will be a need in both the wind farm construction and operation stage for service (or maintenance) centres and ports that could be developed on the basis of some existing harbour (in addition to the existing functions) and thereby contribute to port development by generating additional value added (workforce and sharing of watercraft). In regard to potential infrastructure necessary for development of the wind farm, cooperation is taking place with local governments, and companies in the region, and various possibilities for being considered in the course of the superficies licence and EIA process. A solution that generates benefits at the local level is the fees flowing into the municipality budget through the local benefit model. <u>Impact on the local community, including tourism.</u> The tourism sector makes up a significant part of the Kihnu Island economy. The offshore wind farm may impact the tourism sector in a number of ways and the impact may be both negative and positive. The negative impact on tourism may manifest in case there is such a negative visual impact from	in the course of publication of the EIA programme and meetings with the local community.

No.	*Impact field (i.e., environmental elements impacted)*	*Expected significant impacts (including zone, sources of the impact)*	*Impact forecasting and assessment methods and description of the necessary studies*
		the offshore wind farm being established that it changes the current sea view as it exists in the absence of turbines and the decisions on the part of holiday-makers who view nature and cultural tourism. The impact is not expected to be so extensive and in reality no significant negative impact on tourism will follow. The positive impact materializes when tourism related to visits to wind farms develops, such as field trips to offshore wind farms (a unique positioning pattern of wind turbines may prove a sight for tourists), observation platforms built on to wind turbines (as seal resting areas, or the same for diverse, restaurant etc.). Electricity supply. In cooperation with the developer and local government, the quality of electricity and possibilities of improving it on Kihnu Island. It is expected that the impact zone can be directly limited to the area encompassing the offshore wind farm and the immediate vicinity (above all, Kihnu Island).	
4	**Other impacts**		
4.1	Cumulative impacts	Cumulative impacts refer to the combined effect of one or more activities that may manifest through an accumulation of similar impacts, where there may be many different activities and where a change occurring as a consequence of addition of activities is an important aspect[46]. The cumulative impact may appear if due to the spatial plan(s) and its planned activities, a territorial or temporal overlap between impacts take place, resources are repeatedly removed or added, or the landscape is altered repeatedly[47].	In compiling the EIA report, combined impacts will be assessed both with other plans and projects in the planning and already carried out, in order to avoid cumulative impacts in the maritime area, including to marine life, and the creation of migration bottlenecks and/or obstacles. In preparing the EIA report, it is possible when assessing cumulative impacts to consider similar projects or other planned projects that will

46 Peterson, K., Kutsar, R., Metspalu, P., Vahtrus, S. and Kalle, H. 2017. Strategic environmental impact assessment manual. Ministry of the Environment, 137 pages.

47 Cooper, L. M. 2004. Guidelines for Cumulative Effects Assessment in SEA of Plans. EPMG Occasional Paper 04/LMC/CEA. imperial College London.

No.	*Impact field (i.e., environmental elements impacted)*	*Expected significant impacts (including zone, sources of the impact)*	*Impact forecasting and assessment methods and description of the necessary studies*
		The planned offshore wind farm at Saare-Liivi in the southeast-south direction will be converted into Eesti Energia's Gulf of Riga offshore wind farm. In addition, the wind farm development areas near Ruhnu Island have been established under the Estonian maritime spatial plan. The natural environment may come under cumulative impacts in the vicinity of the Gulf of Riga maritime area, where a number of large-scale activities are planned close together. Simultaneous extensive wind farm construction activity is undoubtedly one of the greatest risks to birds and bats, as well as for other species (seals, fish) as well as to marine habitats and biota. Visual impact could materialize for people on Kihnu Island, since several different wind farms are planned around the island.	lead to accumulation of similar impacts from multiple activities, which have by the time of the preparation of the EIA report have reached at least the same assessment stage – in other words, it is possible to consider the study data gathered and published regarding the other project. This EIA cannot assess cumulative impacts in regard to plans and projects that are still in the superficies licence or EIA programme stage – in other words, where a realistic and feasible alternative solution and volume have not been determined. The EIA report will include an overall expert opinion on the basis of previous studies, scientific literature and studies conducted during this EIA.
4.2	Cross-border impacts	The planned offshore wind farm development area is about 7 km from the boundary of the Latvian territorial sea. Thus, it is an activity that may have cross-boundary impact and a cross-boundary environmental impact assessment must be carried out.	A description of cross-border impacts and proceedings are described in more detail in chapter 9.2.
5	**Other aspects**		
5.1	Impact of historical underwater ordnance	This topic will be treated in the EIA as much as necessary.	In regard to the known locations of historical underwater ordnance and cooperation will take place with the Ministry of Defence (including the Estonian Navy) in the course of the proceedings on the superficies licence and EIA.
5.2	Impact on navigation systems and impact on ship traffic and navigational safety	Use of the wind farm may have an impact on air and ship traffic as well and cooperation will take place with the Transport Board and the Police and Border Guard to map and assess it.	A navigational risk analysis will be carried out (the person to carry it out TBD), which will deal with topics such as the impact of the wind farm on ship traffic, marine communication systems, AIS equipment, ship radars,

No.	*Impact field (i.e., environmental elements impacted)*	*Expected significant impacts (including zone, sources of the impact)*	*Impact forecasting and assessment methods and description of the necessary studies*
			and potential impact to water traffic caused by changes in ice conditions. In addition, an aviation safety expert analysis/risk analysis will be carried out (the person to carry it out TBD) which will deal with the width of the air traffic corridor left in the middle of the wind farm, considering various potential weather phenomena, aircraft types and air speeds. Cooperation with the Transport Board will take place in preparing analyses. The methodology will be introduced to the Transport Board. Specialized literature and expert opinions are the basis for the assessment.
5.3	Potential emergency situations	Impact on seawater quality can also be altered in the event of a potential emergency situation, which could lead to the risk of an oil spill or release of elegas into the environment. The risk of an oil spill exists both in the wind farm construction and usage phase. To prevent an oil spill, safety rules must be followed during construction and maintenance work.	Modelling of the potential spread of oil slick will be performed. The work is being carried out by Tallinn University of Technology (TalTech), person in charge Taavi Liblik. An expert assessment on the potential impact of elegas on the environment and the measures needed to avoid it.

6. Natura preliminary assessment

Natura 2000 is a pan-European network of protected areas, the goal of which is to ensure protection of rare or endangered birds and other animals, plants and their habitats or, if necessary restore favourable status of species and habitats that are endangered Europe-wide. Natura 2000 nature areas and bird areas were formed based on Council of the European Union directives 92/43/EEC (known as the nature directive) and 2009/147/EC (known as the birds directive).

A Natura assessment will be conducted as part of the EIA. The Natura assessment is a procedural process carried out pursuant to Article 6 (3) and (4) of the nature directive, 92/43/EEC. This work draws on European Commission guidance entitled "Assessment of plans and projects significantly affecting Natura 2000 sites. Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC" [48], the guidance "Instructions for carrying out Natura assessment in regard to implementation of Article 6 (3) of the nature directive in Estonia " [49] and the guidance "Wind energy developments and Natura 2000" (European Union, 2021) [50].

On the basis of the Environmental Impact Assessment and Environmental Management System Act and the Nature Conservation Act, a Natura assessment will take place as part of the proceedings on the environmental impact assessment. In accordance with clause 3 (2) of the Environmental Impact Assessment and Environmental Management System Act, environmental impact is assessed if an activity is proposed, which alone or in conjunction with other activities may potentially significantly affect a Natura 2000 site. When it comes to Natura assessment, it is important that assessment is of the impact likely to materialize based solely on the protection objectives of the area. The impacts of the activity are considered to be significant if as a result of carrying out the activity, the status of the protection objectives of Natura 2000 area(s) worsens or as a result of carrying out the activity it is not possible to achieve the protection objectives.

The first stage in the Natura assessment is the preliminary Natura assessment, which is aimed at forecasting the likely impacts of the planned activity, as a result of which it can be decided whether and to what extent it is necessary to progress to the full assessment stage. In the full assessment, a detailed assessment of the likely significant impact on the Natura area is conducted and if necessary, alleviatory measures will be designed.

This preliminary assessment is prepared based on existing information. Existing materials are used regarding the Natura 2000 network area and protection objectives (Natura area standard data form information, Environmental Register databases etc.).

Associations between planned activity and protection management

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48 "Assessment of plans and projects significantly affecting Natura 1 sites. Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC. Brussels, 28 September 2021

49 Kutsar, R.; Eschbaum, K. and Aunapuu, A. 2019. Instructions for carrying out a Natura assessment in regard to implementation of Article 6 (3) of the nature directive in Estonia. Customer: Environmental Board. https://www.envir.ee/sites/default/files/KKO/KMH/kemu_natura_hindamise_juhendi_uuendus_2020.pdf

50 https://op.europa.eu/en/publication-detail/-/publication/2b08de80-5ad4-11eb-b59f-01aa75ed71a1

The planned activity is not associated with the protection management of any Natura 2000 network area and does not contribute directly or indirectly to achievement of the protection objectives of the areas.

Information on the planned activity

This EIA envisions the planned activity – the main alternative – is an offshore wind farm with up to 160 turbines to the west of Kihnu Island. In addition, this work also treats, as one part of the planned activity, the installation of the submarine cable up to the mainland. A more detailed description of the objective, location and planned activity can be found in chapter 2 of the EIA programme (activity location map figure 2-1 and figure 6-1).

Description of the Natura 2000 areas within the impact zone of the planned activity

The following Natura 2000 network areas are found within the potential impact zone of the planned offshore wind farm: Kihnu nature area, Pärnu Bay bird area, Väinameri bird area, Kahtla-Kübassaare bird area (see figure 6-1). The Pärnu Bay bird area is within the impact zone of the planned submarine cable; the expected locations of the planned submarine cable pass through it. On the mainland, one Natura 2000 network area is also within the potential impact zone of the submarine cable– Lao nature area, which is located in the location of the transition of the connection of the cable to the mainland power grid. The establishment of the cable is considered within the scope of the study area and for that reason, it cannot be ruled out that the cable will reach the mainland and continue on the mainland in the nature area or in the immediate proximity to it (figure 6-2).

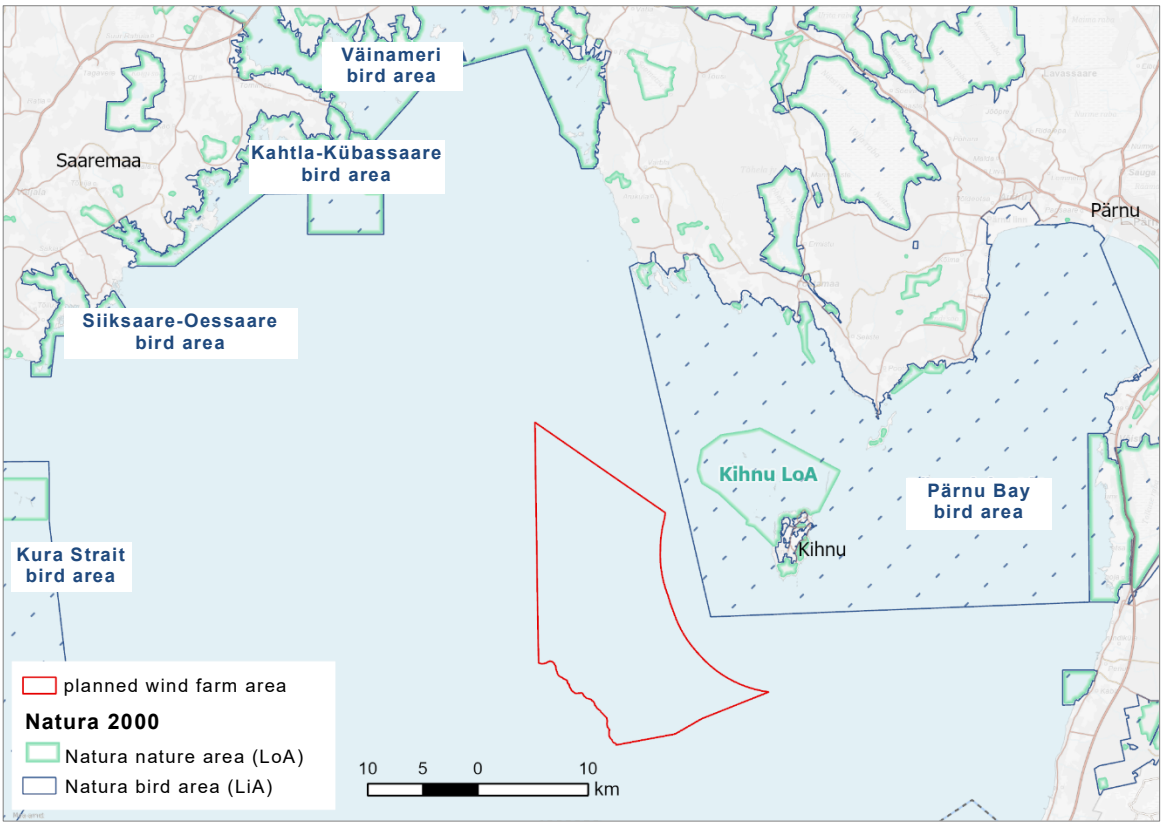

Figure 6-1. *The following Natura 2000 network areas are found within the potential impact zone of the planned offshore wind farm: Land Board and EELIS, 2022)*

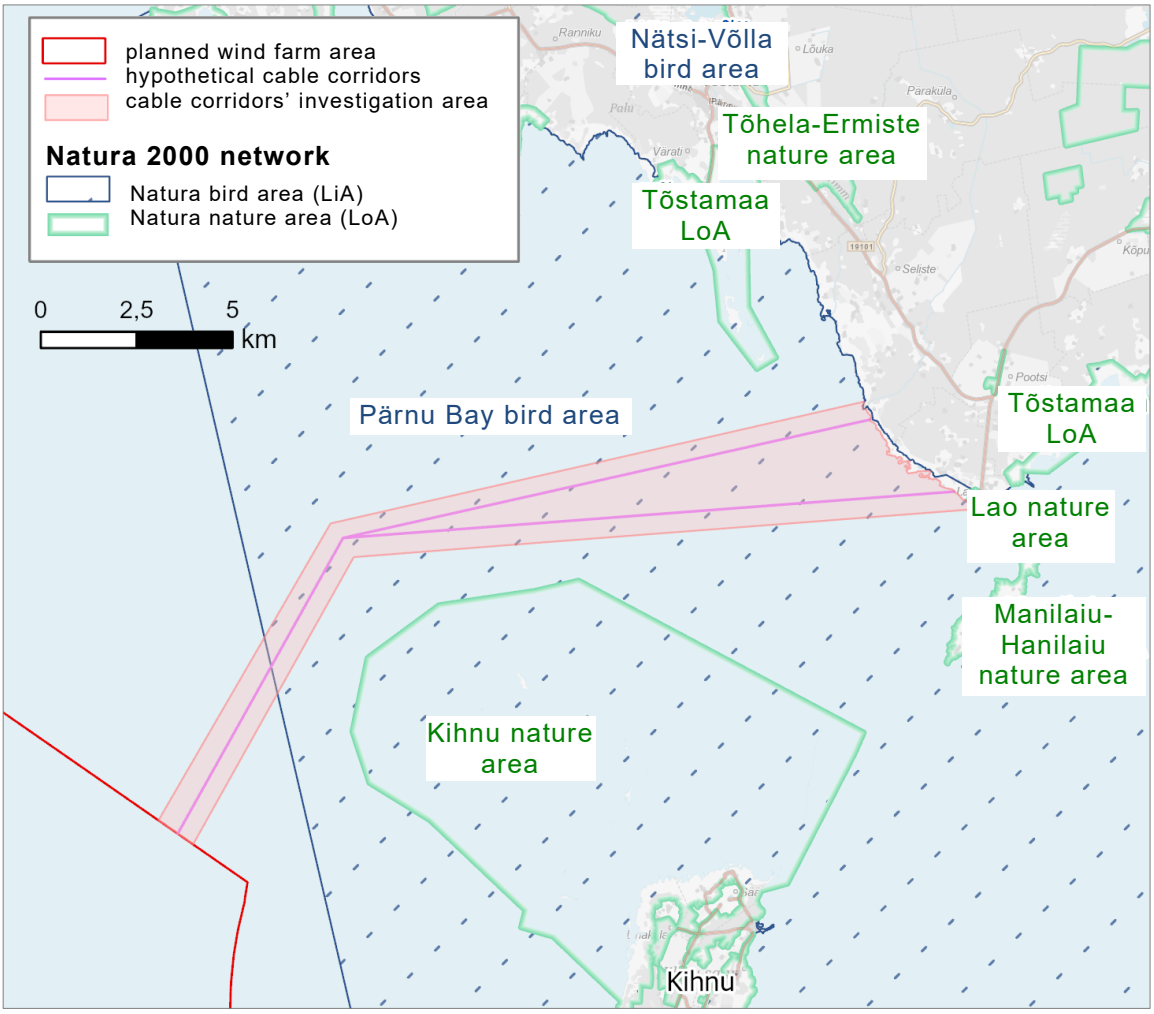

Figure 6-2. *Overview of the Natura 2000 network areas in the area of the planned submarine cable (Basis: Land Board and EELIS, 2022)*

A more detailed description of areas along with forecasting the expected impact for Natura 2000 protection objectives is provided in Table 6-1.

Forecasting likely significant impacts for Natura area(s)' protection objectives

The following table, 6-1, sets out the protection objectives for the Natura areas and a forecast of the impact expected to be manifested.

Table 6-1. *Protection objectives for the Natura 2000 areas and forecasting the impact expected to be manifested.*

Name of natura area	*Protection objectives for the area*	*Forecasting impact*	*Results of the Natura preliminary assessment*
Kihnu nature area (EE0040313)	Habitat types: sandbanks (1110), coastal lagoons (*1150), annual vegetation of drift lines (1210), Boreal baltic islets and small islands (1620), boreal baltic coastal meadows (*1630), boreal baltic sandy beaches with perennial vegetation (1640), Shifting dunes along the shoreline with Ammophila arenaria (white dunes) – 2120), fixed coastal dunes with herbaceous vegetation (grey dunes) – *2130), Wooded dunes of the Atlantic, Continental and Boreal region – (2180), Juniperus communis formations on heaths or calcareous grasslands (5130), semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) – 6210), Fennoscandian lowland species-rich dry to mesic grasslands (*6270), Nordic alvar and precambrian calcareous flatrocks – *6280), Molinia meadows on calcareous, peaty or clayey-silt- laden soils (Molinion caeruleae) (6410), hydrophilous tall herb fringe communities of plains and of the montane to alpine levels (6430), Fennoscandian wooded meadows (*6530), alkaline fens (7230), Western taiga(*9010), Fennoscandian wooded pastures (9070) and Fennoscandian deciduous swamp woods (*9080). Species: grey seal (*Halichoerus grypus*), ringed seal (*Phoca hispida bottnica*), marsh angelica (*Angelica palustris*) and fen orchid (*Liparis loeselii*).	The area of the planned offshore wind farm does not overlap with the Natura nature area; it is more than 4 km from the Natura area at the closest point. The activities therefore do not overlap with the protection objectives of the nature area, which rules out direct physical impacts to the nature area and the protection rules of the area. In certain cases, when the planned turbines are erected near a nature area, there may be temporary/indirect impacts, such as temporary impacts during construction on the protection objectives of the nature area (suspended solids etc.), and disruption to grey and ringed seals. These are likely to be temporary and insignificant for the nature area.	A full Natura assessment has to be carried out as part of the EIA report.
Lao nature area (EE0040323)	Species: marsh angelica (*Angelica palustris*).	Lao nature area is located where the cable will potentially reach the mainland. This is the Lao species protection site for marsh angelica. if the submarine cable should reach mainland at Lao nature area and the clearance corridor passes through the nature area on the mainland, it cannot be ruled out that there will be a significant impact e.g. through physical damage and destruction of plants and population.	A full Natura assessment has to be carried out as part of the EIA report.

Pärnu Bay bird area (EE0040346)	Species: great red warbler(*Acrocephalus arundinaceus*), northern pintail (*c*), northern shoveler (*Anas clypeata*), Eurasian teal (*Anas crecca*), Eurasian wigeon (*Anas penelope*), mallard (*Anas platyrhynchos*), garganey (*Anas querquedula*), gadwall(*Anas strepera*), greater white-fronted goose (*Anser albifrons*), greylag goose (*Anser anser*), bean goose (*Anser fabalis*), ruddy turnstone (*Arenaria interpres*), short-eared owl (*Asio flammeus*), tufted duck (*Aythya fuligula*), greater scaup (*Aythya marila*), barnacle goose (*Branta leucopsis*), common goldeneye (*Bucephala clangula*), dunlin (*Calidris alpina schinzii*), common ringed plover (*Charadrius hiaticula*), western marsh harrier (*Circus aeruginosus*), long-tailed duck (*Clangula hyemalis*), Bewick's swan (*Cygnus columbianus bewickii*), whooper swan (*Cygnus cygnus*), mute swan (*Cygnus olor*), common gull (*Larus canus*), lesser black-backed gull (*Larus fuscus*), black-headed gull (*Larus ridibundus*), black-tailed godwit (*Limosa limosa*), velvet scoter (*Melanitta fusca*), black scoter (*Melanitta nigra*), common merganser (*Mergus merganser*), red-breasted merganser (*Mergus serrator*), cormorant (*Phalacrocorax carbo*), ruff (*Philomachus pugnax*), great crested grebe (*Podiceps cristatus*), common eider (*Somateria mollissima*), little tern (*Sterna albifrons*), common tern (*Sterna hirundo*), Arctic tern (*Sterna paradisaea*), sandwich tern (*Sterna sandvicensis*), spotted redshank (*Tringa erythropus*), common redshank (*Tringa totanus*) and northern lapwing (*Vanellus vanellus*).	The area of the planned offshore wind farm does not overlap with the Natura nature area; it is more than 1.8 km from the Natura area at the closest point. There are thus no direct physical impacts to the area's protection objectives. The mobile nature of the life of birds (e.g. migrations) must also be considered, however, due to which significant impacts (obstacles/bird deaths during migration etc.) on bird areas, their cohesiveness and bird life can in certain cases also emerge in the case of wind turbines planned outside the Natura areas. In certain cases, when the planned turbines are erected near a bird area, there may be temporary/indirect impacts, such as temporary impacts during construction on the protection objectives of the bird area (suspended solids etc.). These will probably have a temporary and insignificant impact for the bird area and in the long term, will not alter conditions for the bird species constituting the protection objective or the changes can be minimized by adopting precautionary measures. The erected turbines themselves may however cause a disruptive impact with a permanent nature for species in the bird area. A potential impact factor is impacts materializing upon migration with regard to the bird species constituting the protection objectives of the bird area, which cannot be ruled out in the current Natura preliminary assessment stage. The potential locations of the planned submarine cable will pass through the Pärnu Bay bird area's marine part and reach the mainland on a stretch of coastline within the same bird area. Potential impacts related to establishment of the cable include temporary impacts during construction, which include above all the physical impact of installation of the cable in the seabed (and in soil on the	A full Natura assessment has to be carried out as part of the EIA report.

Name of natura area	*Protection objectives for the area*	*Forecasting impact*	*Results of the Natura preliminary assessment*
		mainland) and possible suspended solids generated in water, noise disturbance etc. resulting from the construction works. No significant long-term impacts on bird area species or species habitats are anticipated.	

Väinameri Sea bird area (EE0040001)	Species: northern pintail (*Anas acuta*), Northern shoveller (*Anas clypeata*), Eurasian teal (*Anas crecca*), Eurasian wigeon (*Anas penelope*), mallard (*Anas platyrhynchos*), garganey (*Anas querquedula*), gadwall (*Anas strepera*), greater white-fronted goose (*Anser albifrons*), greylag goose (*Anser anser*), väike-laukhani (*Anser erythropus*), bean goose (*Anser fabalis*), hallhaigur (*Ardea cinerea*), kivirullija (*Arenaria interpres*), short-eared owl (*Asio flammeus*), common pochard(*Aythya ferina*), tuttvart (*Aythya fuligula*), greater scaup (*Aythya marila*), Eurasian bittern (*Botaurus stellaris*), mustlagle (*Branta bernicla*), barnacle goose (*Branta leucopsis*), Eurasian eagle-owl (*Bubo bubo*), common goldeneye (*Bucephala clangula*), dunlin (*Calidris alpina schinzii*), red knot (*Calidris canutus*), little tull (*Charadrius dubius*), sand tull (*Charadrius hiaticula*), black tern (*Chlidonias niger*), white stork (*Ciconia ciconia*), Western marsh harrier (*Circus aeruginosus*), hen harrier (*Circus cyaneus*), long-tailed duck (*Clangula hyemalis*), corn crake (*Crex crex*), Bewick's swan (*Cygnus columbianus bewickii*), whooper swan (*Cygnus cygnus*), mute swan (*Cygnus olor*), white-backed woodpecker (*Dendrocopos leucotos*), Ortolan bunting (*Emberiza hortulana*), Eurasian coot (*Fulica atra*), great snipe (*Gallinago media*), Eurasian pygmy owl (*Glaucidium passerinum*), common crane (*Grus grus*), white-tailed eagle (*Haliaeetus albicilla*), red-backed shrike (*Lanius collurio*), common gull (*Larus canus*), lesser black-backed gull (*Larus fuscus*), black-headed gull (*Larus ridibundus*), plütt (*Limicola falcinellus*), bar-tailed godwit (*Limosa lapponica*), black-tailed godwit (*Limosa limosa*), velvet scoter (*Melanitta fusca*), mustvaeras (*Melanitta nigra*), smew (*Mergus albellus*), common merganser (*Mergus merganser*), red-breasted merganser (*Mergus serrator*), Eurasian curlew (*Numenius arquata*), cormorant (*Phalacrocorax carbo*), ruff (*Philomachus pugnax*), grey-headed woodpecker (*Picus canus*), grey plover (*Pluvialis squatarola*), great crested grebe (*Podiceps cristatus*), väikehuik (*Porzana parva*), spotted crake (*Porzana porzana*), pied avocet (*Recurvirostra avosetta*), common eider (*Somateria mollissima*), little tern (*Sterna albifrons*), Caspian tern (*Sterna caspia*),	The area of the planned offshore wind farm is located more than 23 km from the Väinameri Sea bird area at the closest point. There are thus no direct physical impacts to the area's protection objectives. The mobile nature of the life of birds (e.g. migrations) must be considered, due to which significant impacts (obstacles/bird deaths during migration etc.) on bird areas, their cohesiveness and bird life can in certain cases also emerge in the case of wind turbines planned outside the Natura areas. In certain cases, when the planned turbines are erected near a bird area, there may be temporary/indirect impacts, such as temporary impacts during construction on the protection objectives of the bird area (suspended solids etc.). These will probably have a temporary and insignificant impact for the bird area and will not alter habitat conditions for the bird species constituting the protection objective. Significant disturbances will likely not extend to the bird area and the likelihood of suspended solids introduced into the water during construction being borne into the area are low and the potential Impact unlikely. A potential impact factor is impacts materializing upon migration with regard to the bird species constituting the protection objectives of the bird area, which cannot be ruled out in the current Natura preliminary assessment stage.	A full Natura assessment has to be carried out as part of the EIA report.

Name of natura area	*Protection objectives for the area*	*Forecasting impact*	*Results of the Natura preliminary assessment*
	common tern (*Sterna hirundo*), Arctic tern (*Sterna paradisaea*), sandwich tern (*Sterna sandvicensis*), barred warbler (*Sylvia nisoria*), black grouse (*Tetrao tetrix*), spotted redshank (*Tringa erythropus*), wood sandpiper (*Tringa glareola*), common greenshank (*Tringa nebularia*), common redshank (*Tringa totanus*) and northern lapwing (*Vanellus vanellus*).		

Name of natura area	*Protection objectives for the area*	*Forecasting impact*	*Results of the Natura preliminary assessment*
Kahtla-Kübassaare bird area (EE0040412)	Species: northern shoveller (*Anas clypeata*), Eurasian wigeon (*Anas penelope*), mallard (*Anas platyrhynchos*), garganey (*Anas querquedula*), gadwall (*Anas strepera*), greylag goose (*Anser anser*), common pochard (*Aythya ferina*), tufted duck (*Aythya fuligula*), barnacle goose (*Branta leucopsis*), common goldeneye (*Bucephala clangula*), sand tull (*Charadrius hiaticula*), Western marsh harrier(*Circus aeruginosus*), long-tailed duck (*Clangula hyemalis*), Bewick's swan (*Cygnus columbianus bewickii*), mute swan (*Cygnus olor*), Eurasian coot (*Fulica atra*), common crane (*Grus grus*), white-tailed eagle (*Haliaeetus albicilla*), common gull (*Larus canus*), lesser black-backed gull (*Larus fuscus*), väikekajakas (*Larus minutus*), black-headed gull (*Larus ridibundus*), black-tailed godwit(*Limosa limosa*), velvet scoter (*Melanitta fusca*), smew (*Mergus albellus*), common merganser (*Mergus merganser*), red-breasted merganser (*Mergus serrator*), cormorant (*Phalacrocorax carbo*), European green woodpecker (*Picus viridis*), horned grebe (*Podiceps auritus*), great crested grebe (*Podiceps cristatus*), naaskelnokk (*Recurvirostra avosetta*), common eider (*Somateria mollissima*), little tern (*Sterna albifrons*), Caspian tern (*Sterna caspia*), common tern (*Sterna hirundo*), Arctic tern (*Sterna paradisaea*), common redshank (*Tringa totanus*) and northern lapwing (*Vanellus vanellus*).	The area of the planned offshore wind farm is located more than 22 km from the bird area at the closest point. There are thus no direct physical impacts to the area's protection objectives. The mobile nature of the life of birds (e.g. migrations) must be considered, due to which significant impacts (obstacles/bird deaths during migration etc.) on bird areas, their cohesiveness and bird life can in certain cases also emerge in the case of wind turbines planned outside the Natura areas. In certain cases, when the planned turbines are erected near a bird area, there may be temporary/indirect impacts, such as temporary impacts during construction on the protection objectives of the bird area (suspended solids etc.). These will probably have a temporary and insignificant impact for the bird area and will not alter conditions for the bird species constituting the protection objective. Significant disturbances will likely not extend to the bird area and provided that technological precautionary measures are taken, the likelihood of suspended solids introduced into the water during construction being borne into the area are low and the potential impact unlikely. A potential impact factor is impacts materializing upon migration with regard to the bird species constituting the protection objectives of the bird area, which cannot be ruled out in the current Natura preliminary assessment stage.	A full Natura assessment has to be carried out as part of the EIA report.

Result of Natura assessment and conclusions

The technical solution for the offshore wind farm will be clarified in the subsequent EIA process and in technical design development in cooperation with experts in the relevant field. The objective is to establish an offshore wind farm and related infrastructure such that it lacks a significant impact on achieving the protection objectives of the Natura areas.

An additional full Natura assessment will be carried out as part of the EIA in regard to the likely impacted Natura areas and their protection objectives.

7. The environmental impact assessment process and timetable

The exact course over time of the EIA process is hard to pinpoint when preparing the EIA programme and thus the times that the activities in the timetable will take place should be considered tentative. Further details on public engagement and the exact time of the public discussion on the EIA programme and report shall be given in accordance with legislation.

The stages of carrying out the EIA are given in the following table.

Table 7-1. *Stages in carrying out the EIA and expected timetable*

EIA stage	*Content of stage and duration*	*Expected term for carrying out the stage*[51]
Initiation of EIA		Initiated by TTJA decision no. 1-7/21-521 of 23 December 2021.
Preparation of the EIA programme.	The EIA expert group will prepare the EIA programme.	February-April 2022
	The EIA programme will be submitted to the decision-maker.	May 2022
Verification of EIA programme and eliciting comments	The decision-maker shall within 14 days verify that the EIA programme is in conformity and submit it to the institutions for eliciting comment.	May 2022
	The relevant institutions submit their comments within 30 days.	June 2022
	The decision-maker shall within 14 days review the comments from the relevant institutions and give its opinion on the relevancy and sufficiency of the EIA programme.	July 2022
	The EIA expert group will if necessary make corrections and addenda to the EIA programme.	July 2022
	The decision-maker verifies the improved and supplemented EIA programme within 14 days and involves in the proceedings, if necessary, any relevant institution whose position has not been considered.	July-August 2022
Public disclosure of the EIA programme.	The decision-maker provides notification within 14 days regarding the public display and public discussion.	August 2022
	The public display of the EIA programme will last at least 14 days.	September 2022
	Public discussion of the EIA programme will take place.	September 2022
Supplementation of the EIA	The EIA expert group will, on the basis of proposals and objections made regarding the EIA programme, make the	October 2022

51The optimum duration of the stage arising from the Environmental Impact Assessment and Environmental Management System Act valid on the date on which the EIA was initiated is taken into account for each stage in the EIA process.

EIA stage	*Content of stage and duration*	*Expected term for carrying out the stage*[51]
programme and submission for verifying conformity to the requirements	necessary corrections and addenda, clarify that the proposals and objections have been taken into consideration, or provide reasoning for why they were not considered, and respond to questions submitted.	
	The corrected EIA programme will be submitted to the decision-maker for verifying conformity to the requirements.	November 2022
Verification and declaration of the conformity of the EIA programme to the requirements	The decision-maker shall, within 30 days, verify the conformity of the EIA programme, relevancy and sufficiency of the programme for assessing the environmental impact of the planned activity. The decision-maker shall make the decision to declare the EIA programme in conformity to the requirements.	December 2022
Preparation of the EIA report	Based on the EIA programme, the EIA expert group shall prepare the EIA report.	2022-2024
	The EIA programme shall be submitted to the decision-maker.	
Verification of EIA report eliciting comments	The decision-maker shall, within 21 days, verify that the EIA report is in conformity and submit it to the relevant institutions for eliciting comment.	
	The relevant institutions submit their comments within 30 days.	
	The decision-maker shall within 21 days review the comments from the relevant institutions and give its opinion on the relevancy and sufficiency of the EIA report.	
	The EIA expert group shall if necessary make corrections and addenda to the EIA report.	
	The decision-maker verifies the improved and supplemented EIA report within 21 days and involves in the proceedings, if necessary, any relevant institution whose position was not considered.	
Public disclosure of the EIA report	The decision-maker provides notification within 14 days regarding the public display and public discussion.	
	The public display of the EIA report will last at least 30 days.	
	Public discussion of the EIA report will take place.	
Supplementation of the EIA report and submission for verifying conformity to the requirements	The EIA expert group will, within 30 days, on the basis of proposals and objections made regarding the EIA report, make the necessary corrections and addenda, clarify that the proposals and objections have been taken into consideration, or provide reasoning for why they were not considered, and respond to questions submitted.	
	wAfter the public discussion, the report will be submitted to the decision-maker for verifying conformity to the requirements.	

EIA stage	*Content of stage and duration*	*Expected term for carrying out the stage*[51]
Verification and declaration of the conformity of the EIA report to the requirements	The decision-maker shall submit the EIA report to the relevant institutions for endorsement, and they shall either endorse or withhold endorsement within 30 days.	
	Based on the endorsements, the decision-maker shall, within 30 days, verify the conformity of the EIA report to the requirements, the relevancy and sufficiency of the report and also whether proposals and objections submitted should be considered or not considered.	
	The decision-maker shall make the decision to declare the EIA programme in conformity to the requirements.	

8. Parties to the EIA and composition of the expert group

The parties to the EIA process in accordance with the Environmental Impact Assessment and Environmental Management System Act are the developer, expert and decision-maker (table 8-1).

Table 8-1. *Parties to the EIA*

Decision-maker, processor of superficies licence	*Developer*	*EIA carried out by:*
Consumer Protection and Technical Regulatory Authority A: Endla 10a, 10142 Tallinn	**Utilitas Wind OÜ** A: Maakri tn 19/1, Tallinn 10115	**Roheplaan OÜ** A: Koidu 20, Tallinn 10316
Contact: Liina Roosimägi E: liina.roosimagi@ttja.ee T: +372 667 2004	Contact: Kristiina Nauts E. kristiina.nauts@utilitas.ee	Contact: Riin Kutsar E: riin@roheplaan.ee

The environmental impact assessment is conducted at the behest of the environmental consultancy Roheplaan OÜ in cooperation with Hendrikson & Ko OÜ, the University of Tartu marine Institute and many other experts and study staff. The lead expert of the EIA is licensed EIA Riin Kutsar (EIA licence no. KMH0131). The expert group includes at least the members listed in Table 8-2.

Table 8-2. *Members of the EIA expert group*

Member of the working group	*Field/competence*	*Institution*
Riin Kutsar	EIA lead expert (licence KMH0131), BSc University of Tartu, environmental technology speciality (equivalent of a master's degree); MBA Estonia Business School Role: Process and team management, impact on natural environment, Natura assessment, assessment of the social and economic environment Member participating in preparation of the EIA programme	Roheplaan OÜ
Epp Zirk	Project assistant, environmental expert. MSc University of Tartu, geology speciality; MSc Tallinn University of Technology, industrial ecology speciality Role: Preparation of general parts, geology Member participating in preparation of the EIA programme	Hendrikson & Ko OÜ

Member of the working group	*Field/competence*	*Institution*
Kaile Eschbaum	Environmental specialist; zoologist. BSc University of Tartu biology, zoology speciality (equivalent of a master's degree) Role: Impact on marine life, protected natural objects, Natura assessment. Cartographer Member participating in preparation of the EIA programme	Hendrikson & Ko OÜ
Georg Martin	Expert on benthic life and habitats. PhD, University of Tartu, marine biology speciality Role: Impact on phytobenthos, zoobenthos, marine water quality, impact on plankton communities Member participating in preparation of the EIA programme	University of Tartu, Estonian Marine Institute
Redik Eschbaum	Fisheries expert. MSc, University of Tartu, ichthyology and fisheries speciality Role: Impact on fisheries and fishing, including spawning areas Member participating in preparation of the EIA programme	University of Tartu, Estonian Marine Institute
Leho Luigujõe	Bird expert, MSc, University of Tartu, zoology and animal ecology speciality Role: Impact on birds Member participating in preparation of the EIA programme	Eesti Ornitoloogiaühing MTÜ / Taevasikk MTÜ
Kaarel Võhandu	Bird expert, MSc, University of Tartu, zoology and animal ecology speciality Role: Impact on birds	Eesti Ornitoloogiaühing MTÜ
Mart Jüssi Ivar Jüssi	Expert on seals. PhD, University of Tartu, zoology and animal ecology speciality Expert on seals. MSc, University of Tartu, biology speciality Role: Impact on seals	MTÜ Pro Mare
Oliver Kalda	Expert on bats. MSc, University of Tartu, zoology and hydrobiology Role: Impact on bats	Elustik OÜ

Member of the working group	*Field/competence*	*Institution*
Veiko Kärbla	Environmental specialist, BSc University of Tartu, environmental technology (equivalent of a master's degree) Role: noise and vibration	Hendrikson & Ko OÜ
Kerttu Ots	Landscape architect. University of Life Sciences, MSc and the University of Edinburgh, MSc Role: Assessment of visual impact	WSP Global Inc.
Taavi Liblik	PhD, Tallinn University of Technology, marine physics speciality Role: Impact on hydrodynamics, waves, wind conditions, distribution of suspended solids, risks related to ice, forecasting how potential oil slicks will spread	Tallinn University of Technology (TalTech)
Ivar Treffner	Role: Submarine archaeology	Estonian Maritime Museum
Being clarified	*Navigational risks, including accidents and navigational requirements of the Republic of Latvia*	

In addition, those preparing studies to be conducted in the course of the EIA process (see list in Table 5-1) provide their own input to the EIA report. If necessary, additional experts/specialists are involved in the course of the EIA process.

9. Public engagement and overview of the public disclosure of the EIA programme

9.1. Relevant institutions and stakeholders

Under legislation, public disclosure of the EIA is in the remit and the task of the decision-maker. Parties to the proceedings, and information channels through which the notifications will presumably be sent out in the course of the EIA:

- *Ametlikud Teadaanded* (initiation, public display of programme and report, approval of programme and report).
- Newspaper (public display and discussion of programme and report).
- The public display and public discussion of the EIA programme and report are announced by letter pursuant to subsection 16 (3) of the EIAEMSA.

A list of the interested institutions and persons is provided in Table 9-1. The definition of relevant institutions was initially based on the specifications of the decision to initiate EIA and supplemented upon preparation of this programme. The list submitted is the proposal on the part of the EIA programme compiler regarding, at minimum, the parties to be notified by letter. The decision-maker shall make the final decision on who is to be notified.

Table 9-1. *A list of the interested institutions and persons.*

Institution or person	*Reason for involving them in the proceedings*	*Notification form*
Ministry of Finance	Is responsible for spatial planning in the country and is involved in projects as the representative of their area of responsibility and representative of the area of competence. Organizes preparation of the maritime thematic plan	Notified by email
Ministry of Economic Affairs and Communications	Maritime policy, ports, port infrastructure. Energy sector	Notified by email
Ministry of the Environment	Involved in projects as the representative of their area of responsibility and representative of the area of competence.	Notified by email
Environmental Board	Administrator of protected natural objects	Notified by email
Ministry of Defence	Involved in projects as the representative of their area of responsibility and representative of the area of competence.	Notified by email
Ministry of the Interior	Internal security.	Notified by email

Institution or person	*Reason for involving them in the proceedings*	*Notification form*
Ministry of Rural Affairs	Fisheries and aquaculture	Notified by email
Transport Board	Ports, waterways, port basins, anchorages and navigational markings; aviation safety	Notified by email
Heritage Board	Cultural assets, including underwater cultural heritage	Notified by email
Police and Board Guard	Border Guard and security Organizing maritime search and rescue, organizing detection, localization and cleanup of marine pollution	Notified by email
Environmental Agency	Organizer of national environmental monitoring	Notified by email
Veterinary and Food Board	Organization of professional fishing	Notified by email
Health Board	Health protection and safety	Notified by email
Kihnu Municipality Government Pärnu City Government Ruhnu Municipality Government Lääneranna Municipality Government Häädemeeste Municipality Government Saaremaa Municipality Government	Local governments in the wind farm's zone of influence or local governments potentially impacted by cable connections	Notified by email
Chamber of Estonian Environmental Associations	Association of NGOs Promoting Environmental Protection	Notified by email
Eesti Kalurite Liit MTÜ Liivi Lahe Kalanduskogu MTÜ	Associations representing fishermen's interests	Notified by email
Area inhabitants	The planned activity may impact inhabitants in the region	Notified through the newspaper and local media.

Cooperation

The activities of the planned Saare-Liivi offshore wind farm and related planned activities have already been introduced to the city of Pärnu, Häädemeeste Rural Municipality, Kihnu Municipality

Council and on another occasion to all interested Kihnu inhabitants. A meeting is planned with Lääneranna Municipality in August 2022.

In regard to the city of Pärnu, the planned buried cable to Audru ties in with the project and engagement with the local community there will take place, among other things, as part of the proceedings on the design conditions.

Community engagement will take place regularly in the course of designing the offshore wind farm, with Kihnu and Pärnu engaged the most, with regular get-togethers, introduction of the course of the project, discussion of maintenance ports and other cooperation points etc.

9.2. Cross-border impact

Considering the size and location of the planned wind farm, it may be an activity with cross-boundary impact and thus a cross-boundary environmental impact assessment must be carried out. The cross-boundary impact assessment is organized in accordance with procedure set forth in international agreements, cross-boundary environmental impact assessment convention (Espoo convention) and the EIAEMSA. The cross-boundary impact assessment process and engagement will be led by the Ministry of the Environment, and all of the relevant notification and feedback documents are set forth in Annex 2.

On the basis of the Consumer Protection and Technical Regulatory Authority's letter of 28 December 2021, the Ministry of the Environment on 2 February 2022 sent neighbouring countries (Latvia, Lithuania, Sweden, Finland) a notice in accordance with the cross-boundary environment impact assessment (Espoo) convention regarding the Saare-Liivi offshore wind farm project planned by Utilitas Wind OÜ.

Responses came in from Latvia, Lithuania, Sweden and Finland. Latvia, Sweden and Lithuania want to take part in this EIA proceeding. Finland would like to receive additional information before making the final decision to participate and they will also be sent the EIA programme.

A summary of feedback appended to the EIA initiation notice is set out in Table 9-2 and the copies of procedural letters are in Annex 2.

Table 9-2. *Feedback submitted to the EIA initiation notice regarding cross-boundary environmental impact assessment in neighbouring countries*

Topic that needs attention	*EIA response*
LATVIA	
Assess all relevant aspects in accordance with EI directive 2011/92/EU.	Proposal to be considered
Latvian-language summary of the EIA, which reflects information in the necessary amount and scope for the cross-boundary EIA (including graphic materials and maps).	The summary of the EIA report and EIA programme will be translated into Latvia. In the EIA report stage, the public disclosure of the EIA will be agreed with Latvia; which could

Topic that needs attention	*EIA response*
In Latvia, EIA proceedings (including public disclosure pursuant to Latvian legislation.	include public disclosure in parallel in Estonia and Latvia.
Ministry of Environmental Protection and Regional Development	
Connection cable landfall on Latvian territory.	To the best of current knowledge, the connection cable will be established on the mainland on the territory of the Republic of Estonia. Hydrogen generation for Latvian territory is not planned. Assessment of the cumulative impact is a standard part of the EIA. It will be carried out at the required level of detail set forth in the EIA programme. If necessary, the relevant Latvian authorities will be consulted in the course of assessment of cross-boundary impact.
Hydrogen generation on Latvian territory.	
E5 offshore wind farm investigation area near Ainaži pursuant to Latvian maritime area planning.	
State Environmental Service	
Bird and bat migration	In the course of the EIA, the relevant ornithological and chiropteral studies (see chapter 5.2). Impact in the planned offshore wind farm area (and reference area) is assessed at the level of populations and among other things the cumulative aspect is assessed.
Nature Conservation Agency of the Republic of Latvia	
Cumulative and indirect impacts for protected areas and various habitat groups (including their migration corridors, feeding areas and wintering areas). Species constituting a protection objective in Natura 2000 areas.	As part of the EIA, various relevant studies will be carried out by experts/institutions recognized in Estonia. For example, a fisheries and spawning study; determination of qualitative and quantitative parameters for phytobenthos and zoobenthos in the development area and potential impact zone; bird migration and feeding area study, bat migration and feeding area study. For more detail, see chapter 5.2. Assessment of the cumulative impact is a standard part of the EIA. It will be carried out at the required level of detail set forth in the EIA programme. Natura 2000 assessment is part of the EIA in accordance with Estonian law.

Topic that needs attention	*EIA response*
Ministry of Health of the Republic of Latvia	
Solutions that are as detailed as possible (engineering properties of sites, preparations and access routes related to construction, impact of preparatory works on adjoining areas, construction materials and transport of structures and temporary storage areas). Hydrological regime and geological processes Solutions for water supply and diversion of waste water. Recommendation to use the guidelines prepared by the Baltic Environmental Forum, "Guidelines for investigation of offshore wind farms on the marine environment in the Baltic States" (http://bef.ee/wp-content/uploads/2014/04/EIA-Guidelines-2009.pdf).	The proposals will be taken under advisement. The building design documentation is not yet a basis for the superficies licence. The EIA is conducted in as detailed form as necessary and possible in the superficies licence process.
Ministry of Agriculture of the Republic of Latvia	
Marine habitats and fisheries (including spawning areas)	As part of the EIA, relevant studies will be conducted by experts/institutions certified in Estonia, including a fisheries and spawning areas study and a marine habitat study. For more detail, see chapter 5.2.
Ministry of Defence of the Republic of Latvia	
Latvia's marine defence system and operation of radar systems.	As part of the EIA, cooperation will take place with the Estonian Ministry of Defence. If necessary, additional consultation with the Latvian Ministry of Defence.
Aviation safety Marine and aviation navigation systems.	As part of the EIA, cooperation will take place with institutions responsible for the relevant fields (such as the Transport Board) and if necessary, in neighbouring countries as well. In the course of the cooperation, potential negative impacts will be determined and solutions found to avoid and alleviate them. A separate topic treated as part of the EIA will be impact on navigation systems, marine communication systems and aviation safety and maritime safety. If necessary, additional consultation with the Latvian Ministry of Defence.

Topic that needs attention	*EIA response*
Oil and chemical pollution and spill cleanup response capacity in Latvia.	A risk assessment with the relevant level of detail is part of the EIA. Detailed safety guidelines will be prepared by the time of construction and the operation period, since they relate to a specific construction process and technical solution.
Salacgriva Port Authority	
Shipping lanes	As part of the EIA, cooperation will take place with institutions responsible for the relevant fields (such as the Transport Board) and if necessary, in neighbouring countries. In the course of the cooperation, potential negative impacts will be determined and solutions found to avoid and alleviate them. A separate topic treated as part of the EIA will be impact on navigation systems, marine communication systems and aviation safety and maritime safety.
Establishing electrical cables and connecting them to mainland infrastructure	In the course of the EIA, impacts related to establishing the submarine cable and connectivity with mainland infrastructure is assessed.
Fish spawning areas	As part of the EIA, relevant studies will be conducted by experts/institutions certified in Estonia, including a fisheries and spawning areas study. For more detail, see chapter 5.2.
LITHUANIA	
Wants to be involved in the further process.	Proposal to be considered.
SWEDEN	
Swedish Transport Administration	
Ensure shipping lanes between Sweden and Estonia.	As part of the EIA, cooperation will take place with institutions responsible for the relevant fields (such as the Transport Board). In the course of the cooperation, potential negative impacts will be determined and solutions found to avoid and alleviate them. A separate topic treated as part of the EIA will be impact on navigation systems, marine communication systems and maritime safety.
BirdLife Sverige	

Topic that needs attention	*EIA response*
Bird migration routes. Barrier effect, including combined effects with other offshore wind farms. Bird mortality upon collisions with wind turbines. Impact of more frequent shipping traffic on bird life. Synergy with other activities in the area (shipping, fishing).	In the course of the EIA, the relevant ornithological studies will be carried out in the offshore wind farm area and cumulative aspects will also be considered. For more detail, see chapter 5.2.
Swedish Pelagic Federation	
Impacts during construction, use and demolition on fish (underwater noise, vibration, changes in currents, electromagnetic fields).	As part of the EIA, various relevant studies will be carried out by specialized experts/institutions recognized in Estonia. For example, a fish and spawning area study. For more detail, see chapter 5.2. Assessment of the cumulative impact is a standard part of the EIA.
FINLAND	
Cohesiveness and functionality of protected areas and other important areas for waterfowl. The diving duck and velvet scoter are under special scrutiny – impact on their feeding areas, migration corridors. Bird mortality upon collisions with wind turbines.	In the course of the EIA, the relevant ornithological studies will be carried out (see chapter 5.2).

9.3. Positions of the relevant authorities and how they will be considered

Pursuant to Section 15[1] of the EIAEMSA, prior to publication of the EIA programme, a position must be elicited from all relevant authorities. TTJA submitted the RIA programme for eliciting positions from relevant authorities on 24 May 2022 (letter no. 16-7/21-02502-041).

The following submitted their positions to TTJA: Häädemeeste Municipality Government, Health Board, Ministry of Rural Affairs, Ministry of the Environment, Rescue Board, Lääneranna Municipality Government, Saaremaa Municipality Government, Environmental Agency, Ministry of Finance, Transport Board, Environmental Board, Heritage Board, Pärnu City Government, Kihnu Municipality Government, Ministry of the Interior, Ministry of Economic Affairs and Communications, Police and Border Guard and Ministry of Defence.

Positions of the relevant authorities (see full letters in Annex 5) and responses to them are set out in the following table, 9-3.

Table 9-3. *Positions submitted by relevant authorities to the EIA programme and responses from the EIA expert group in cooperation with the developer*

Positions received	*Response of the EIA expert group in cooperation with developer*
Häädemeeste Municipality Government (letter no. 5-1/840-1 of 31.05.2022)	
Turbine colour schemes suitable for the natural environment must be weighed when assessing environmental impact. Most wind generators are white or grey and thus are more visible from the mainland. We ask to consider whether the negative impact might be less with a more marine colour (green, blue).	The proposal will be considered and in the course of the preparation of the EIA, the colour of the turbines will also be analysed for visual impact.
Upon visualization, we ask that the views from the coast of Häädemeeste municipality be brought out so that other planned offshore wind farm areas would be included.	The proposal is considered and the relevant visualizations are prepared and submitted in the EIA report.
During the night-time periods, aviation safety lights on wind generators will shine on the coast and these may have significant nuisance for local inhabitants. In connection with this, please consider the possibility of limiting the aviation safety lights shining on to the mainland. For example, aim the ray of light upward, not in the direction of the mainland.	The proposal will be considered and thus topic will be analysed in the course of preparation of the EIA.
To consider compensation mechanisms for the local inhabitants who may be impacted by the establishment of the offshore wind farm. By this, we mean individual compensation for citizens with built-up immovable property on the coast. Also, implementation of compensation mechanisms through local governments.	The legal regulation of the local benefit will be used as the basis for implementing compensation mechanisms (i.e. the local benefit model or wind farm toleration fee).

Health Board (letter no. 9.1-1/22/5017-1 of 03 June 2022)	
The Western regional department of the Health Board has familiarized itself with the Saare-Liivi offshore wind farm EIA programme and there are no additional proposals for the programme and members on the EIA expert group.	-
Ministry of Rural Affairs (letter no. 6.2-15/772-4 of 08 June 2022)	
In accordance with the county spatial plan for the maritime area adjoining Pärnu County, the following principles pertaining to fisheries must be adhered to in developing and operating the potential wind energy development area: the impact of the development on fish migration and spawning must be determined and in carrying out the EIA, it must be ensured that significant fish spawning areas are preserved when building according to the spatial plan being designed. The best possible realistic solution must be selected for establishing the wind farm. Among other things, possible harm to fish stocks arising from the undersea cables must be minimized. /---/ When it comes to establishing wind farms, it is important to find in the same maritime area the best possible solution for shared use of these waters. The planned offshore wind farm may exert an impact on fisheries and thereby on fisheries both during construction and operation of the offshore wind farm. The planned offshore wind farm territory partially overlaps with fishing areas and thus also have an impact on fishermen's income. The Ministry of Rural Life considers it important for the potential impacts on fisheries to be thoroughly mapped and assessed in the course of the EIA.	The position will be taken under advisement. The assessment of impacts related to fisheries and studies described by you are envisioned by the EIA process (see also table 5.1, clause 1.5). Fisheries studies were launched in spring 2022.
Häädemeeste Municipality Government (letter no. 8-5/3228-2 of 13 June 2022)	
The draft EIA programme does not clarify the total output of the wind farm.	The total power output from the wind farm depends on the number of wind turbines and the power output of each turbine. During the EIA, the power rating of the turbines will be evaluated in the range of 14-20 MW. The exact number of turbines and their parameters will be determined in the course of the EIA process, once area-specific studies have been conducted to indicate the environmental sensitivity/tolerance of the planned superficies licence area. This will reveal what parameters and how many turbines can be installed in the area. This information will be set out in the EIA report.
Hydrogen generation was mentioned. It is not mentioned what share of electricity is planned for	

producing hydrogen and the volume of hydrogen generation?	A topic segment on hydrogen technology has been added to chapter 2.3 of this EIA programme. As of the time of preparation of this EIA programme, Utilitas Wind does not plan specific (technical) solutions at the offshore wind farm for dealing with the hydrogen topic, e.g. production of hydrogen in the wind farm and transport via pipeline to the mainland. At the same time, the planned offshore wind farm will be developed such that it could be connected to hydrogen technology solutions with minimal modifications. The EIA report thus considers specific development options related to the hydrogen topic at the conceptual level (i.e., technical solutions not planned in detail). Producing hydrogen from the power generated at Saare-Liivi offshore wind farm can be arranged in various ways if it proves upon more detailed design development whether the hydrogen production unit can be cost effectively established in the immediate proximity to the offshore wind farm cable clearance or on the territory of the offshore wind farm. Should solutions that are parts of the offshore wind farm emerge during the EIA process, the planned activities at sea will be assessed in the framework of this EIA and if connecting the offshore wind farm to a hydrogen plant on e.g. the mainland is considered, a separate project will be prepared along with assessment of the environmental impacts.
Is hydrogen fuel generation planned on the wind farm territory and will a hydrogen pipeline run next to the power cable, is it currently unclear??	
Since the Tuuletraal OÜ wind farm is already planed next to the adjoining maritime area, we believe that the EIA processes could be combined, or the combined effect of the wind farms be considered if the EIA is done separately for both wind farms.	The maritime area set out in Tuuletraal OÜ's superficies licence application is not envisioned by the valid Estonian maritime spatial plan as an area suitable for wind energy development and the Ministry of Finance has asked the TTJA to analyse whether the it is even possible to achieve the desired goal with Tuuletraal OÜ's superficies licence (the detailed circumstances are described in the Ministry of Finance letter no. 15-1/3653-2 p2 of 25 May 2022 sent in the Tuuletraal OÜ superficies licence proceedings). In the letter no. 16-7/19-3332-070 of 7 July 2022, the TTJA has recommended that Tuuletraal OÜ withdraw the application for superficies licence. In addition, combining EIAs
What are the possibilities in cooperation with Tuuletraal OÜ for establishing joint transmission lines?	

	may take place only with the consent of the developer(s) (subsection 11 (7) of the EIAEMSA). The Tuuletraal OÜ offshore wind farm is not currently all that realistic for EIA processes to be combined and the combined effects of the offshore wind farm to be taken into consideration. If the circumstances related to Tuuletraal OÜ developments change during this EIA process, the assessment of combined effects will be based on table 5.1, under 4.1.
Ministry of the Environment (letter no. 16-3/22/2464-3 of 14 June 2022)	
In its letter, the Consumer Protection and Technical Regulatory Authority (TTJA) explained that on 11 April 2022, Utilitas Wind submitted an application for superficies licence for establishing the submarine cable needed to connect Saare-Liivi offshore wind farm to the transmission system. The EIA programme treats assessment of the impacts of the superficies licence applied for on 11 April 2022 as a single EIA proceeding, although the TTJA has not, as of the current time, yet initiated the superficies licence proceeding necessary for establishing the submarine cable line. As the establishment of an offshore wind farm is viewed as the planned activity in the context of the EIA, and one component that will be treated is the installation site of the submarine cable up to the mainland, we propose in the interests of clarity that these activities be shown together on drawings. As a technical note, we also propose that all drawings could show the planned offshore wind farm area (currently some do and some don't).	The later EIA report will cover both the planned offshore wind farm and planned cable corridor activities together, including schematic diagrams. The EIA programme has been supplemented and the planned offshore wind farm area has been added to all drawings.
Please specify whether in the course of the EIA, it is planned to analyse the alternatives for the planned activity also in comparison with the so-called "0-alternative" (i.e. the status quo is preserved in the maritime area and the offshore wind farm is not built).	The expected impacts will be assessed and forecasted based on the existing environmental status of the maritime area and pursuant to subsection 5 (4) of the regulation (*The environmental impact assessment report sets out a description of the likely development of environmental status if the planned activity is not carried out)* specified in subsection 20 (2) of the EIAEMSA. An explanatory circumstance has been added to chapter 2.3: "alternatives for the planned activity will be analysed in the course of the EIA in comparison with the 0-alternative – i.e. the preservation of the existing situation in the marine area without the offshore wind farm being planned".
The following sentence is provided in clause 1.4 of Table 5-1: The EIA will require geotechnical site investigation information of a general nature that would allow primary conclusions to be drawn regarding	Geological investigations of the seabed will be carried out as part of the EIA (including additional information about the geology of the seabed) in an extent allowing the locations and

the structural solution and technology to be used and give information on environmental impacts that could potentially materialize. We note that construction technology decisions (such as the wind turbines' foundation type) will require additional information to be obtained on the geology of the seabed and we therefore make a proposal to supplement the EIA programme with the geological studies necessary for investigating the seabed, which are planned in connection with planning and designing the structure and later construction activity.	possible technical solutions of the turbines to be determined. Preparation of a detailed geotechnical site investigation of the seabed is necessary only in the stage of development of the precise technical solution (design and final selection of technology) – a geotechnical site investigation of that level of detail will be executed outside of the scope of the EIA and after the EIA and superficies licence process.
In addition, we ask that it be more clearly shown in the table in question that the EIA will assess the impact of the planned offshore wind farm on the national greenhouse gas emissions and the impact of climate change on planned activity.	It is not considered necessary to supplement the EIA programme. Table 5.1, clause 1.11 describes the principles for assessing the impact on the climate and specifies that the offshore wind farm's impact on the climate will be positive. The magnitude of the positive impact depends on the final rated output of the offshore wind farm and the amount of electricity this generated. The EIA report will give an overview of how much less CO_2 is emitted per kwh of offshore wind farm power generated than is, for example, given off by a fossil fuel burning power plant. When designing technical solutions (including when preparing detailed project solutions and performing strength calculations after preparation of the EIA, but before construction of the wind farm), it is natural and in the developer's interests to consider the best available knowledge about possible extreme weather conditions. In preparation of the EIA report, the Environmental Agency's 2014 work will be taken into consideration: "Estonian future climate scenarios up to 2100 "[52].
We propose to treat, in the EIA programme, the introduction of elegas into the environment or to explain what kind of technology is planned to be used to prevent fires in electrical equipment.	The proposal is considered; this topic is mapped in the EIA programme (see table 5.1, added 5.3) and it will be analysed in the EIA report.
In chapter 3.14, it is stated regarding the Estonian maritime spatial plan "in preparation" –the Cabinet established the spatial plan in May of this year.	The version of the EIA programme was prepared on 9 May 2022. The Estonian maritime spatial plan was established by the Government of the Republic on 12 May 2022, and we will make adjustments to the status of the documents referred to in the course of the EIA process.
The EIA programme explains that according to Transport Board data, three shipwrecks are found in the	We will consider this factor. The necessary investigation is also provided for, in which

52 "Eesti tuleviku kliimastsenaariumid aastani 2100", (contracting authority: Environmental Agency); https://www.klab.ee/wp-content/uploads/sites/4/2016/04/2016-04-07-KAUR_Lopparuanne.pdf

planned offshore wind farm area and there may be a number of underwater obstacles in the area. It should be considered that since part of the planned offshore wind farm area is unsurveyed by the Transport Board, more wrecks or obstacles may be found in addition to the three known ones.	during the course of the preparation of the EIA, sonar investigations will determine the existence of underwater objects, including underwater objects with potential cultural value, and the cultural layer. For more detail, see chapter 5.1, p 2.1.
In the context of assessment of cross-boundary impact, we draw attention to the fact that pursuant to Section 30 of the EIAEMSA, the EIA programme must be sent to impacted countries no later than the beginning of the public display of the programme in Estonia.	We will consider this factor.
In connection with the need for the EIA expert group being of sufficient size, we propose to involve an expert whose area of activity is related to seabed sediments (including hazardous substances in the sediment) and modelling the distribution of suspended solids.	An expert was added to the expert group – Taavi Liblik (TalTech).
Lääneranna Municipality Government (letter no. 2022/8-1/685-2 of 15 June 2022)	
We hereby notify that Lääneranna Municipality Government has no proposals and comments in regard to the above draft EIA for Utilitas Wind OÜ Saare-Liivi offshore wind farm.	-
Rescue Board (letter no. 7.2-3.4/3277-4 of 15 June 2022)	
The Rescue Board's Western rescue centre has no objections and proposals.	-
Ministry of Finance (letter no. 15-1/4565-2 of 21 June 2022)	
The description in the activity planned in clause 2.3 states that the EIA will be prepared on the assumption of offshore wind farm turbines with the biggest dimensions and still as yet hypothetical but would have a peak height above sea level of max. 400 m. The foundation type used for the wind turbines will become evident after more detailed studies are performed. We draw attention that in assessing the impacts of the Estonian maritime spatial plan established by Cabinet order no. 146 of 12 May 2022, the height of the wind turbine is assumed to be about 300 m in the guidelines and conditions issued for development of wind energy and the foundation of the turbine is a gravity foundation or similar in terms of impacts. Thus, the EIA process must assess the impact of higher turbines and different foundation types have to be assessed and the result of the assessment of the impact will determine what sorts of turbines can be built.	During the EIA process, the impacts resulting from the planned activity including the height of the wind turbine and impacts resulting from the foundation type, are assessed.
We draw your attention to chapter 5 of the explanatory memorandum of the Pärnu County maritime spatial plan, "Implementing spatial plan". It lists the investigations and analyses to be carried out by the developer for designating the locations of the wind	On the basis of the proposal, there is reference in the chapter 3.13 on the Pärnu maritime spatial plan to table 5-1 in chapter 5.2, which deals with environmental elements being

turbine farms within the potential wind energy development area and in regard to the submarine cable up to landfall. In addition, research that must be taken into consideration for preserving the cultural heritage and protecting heritage board interests. Although the studies have been taken into account in chapter 5.2 of the EIA programme, "Environmental elements impacted and studies to be carried out," we do ask that a reference to the required studies be provided in the chapter on Pärnu County maritime spatial plan.	assessed and the studies conducted as the basis for assessing them.
The heading of point 3.14 is **Estonian maritime spatial plan (in preparation)**. Since the Estonian maritime spatial plan was established on 12 May 2022, we ask that this heading be clarified.	The version of the EIA programme submitted for comment was prepared on 9 May 2022. The Estonian maritime spatial plan was established by the Government of the Republic on 12 May 2022, and we will make adjustments to the status of the documents referred to in the course of the EIA process.
Chapter 3.6 of the Pärnu County maritime spatial plan explanatory memorandum, "Renewable Energy" (page 34) sets out as the principle of wind farm development that development of wind farms is allowed 10-12 km from the coast, if there is an agreement between the developer and local government. The agreement is entered into in a free form and this does not constitute the approval granted in the proceedings on the superficies licence in accordance with the Water Act. Hence, we ask the developer to engage in constructive cooperation with Kihnu Municipality Government upon conducting proceedings on the superficies licence.	The developer engages in cooperation with Kihnu Municipality Government in the course of planning the offshore wind farm, including based on the conditions of the Pärnu County maritime spatial plan.
Environmental Agency (no. 6 6/22/994 2 of 21 June 2022)	
On page 5, we draw attention to the fact that location of the offshore wind farm is the inland sea to the west of Kihnu Island – the coastal sea area (central part of the Gulf of Riga and coastal waters of the north-eastern part of the Gulf of Riga) and, in part, the area in the territorial waters.	The EIA programme has been supplemented and updated based on this observation.
On page 17, in the context of the maritime strategy, we find it important to bring out, in addition to maritime strategy criterion D11 (undersea noise and energy) and measures designed to achieve its environmental aims, other criteria potentially impacted by offshore wind farms, such as D1 .D4 (biological diversity and food network), D3 (fish), D6 and D7 (integrity of the seabed and hydrographic changes), D8 (hazardous materials) and related planned measures for achieving a good environmental status for the maritime area.	Based on the proposal, the context of the maritime strategy has been supplemented.
P. 47 "The impact of the offshore wind farm on seawater quality may be manifested mainly in the course of Installation of wind turbine foundations and submarine cables by way of suspended solids	Based on the proposal, point 1.2 of table 5-1 has been supplemented. During the EIA, some seabed soil samples will be taken and analysed

introduced into the water column from marine sediments." The impact on seawater quality and marine organisms may also materialize upon re-contamination of the marine environment, i.e. release of nutrients and hazardous substances into the water column, if such compounds are present in the sediments in significant quantity. We believe that this should be borne in mind during investigations during the pre-construction stage, thus, in addition to water samples, study the composition of sediment samples with the aim of clarifying the location of the infrastructure to be established and plan it so that there would be no significant impact on the surrounding environment and on achieving good environmental status. Please supplement point 1.2 of table 5 accordingly.	in a lab (to determine content of hazardous materials).
There are no objections in regard to the sufficiency of the experts serving on the EIA expert group.	-
To promote cross-use of data and prepare future overviews of environmental status, give assessments, develop limit and threshold values, we ask that Environmental Board be furnished with access to the (raw) data gathered in the course of the investigations.	The information on (raw) data from the investigation will be shared at the right time – i.e. a time that does not compromise Utilitas Wind trade secret. To wit, the data pertain partially to matters related to economic cost-benefit and strategy, which are business secrets for the purposes of subsection 5 (2) of the Restriction of Unfair Competition Prevention and Protection of Business Secrets Act. For the above reason, we release data to third parties pursuant to the procedural requirements set forth in legal acts (including the EIAEMSA.
Transport Board (letter no. 8-5/22/11675-2 of 22 June 2022)	
We draw attention to the fact that assessment of impacts exerted on navigational risks related to the offshore wind farm, i.e. ship traffic necessitates the use of experts with knowledge and experience for determining the hazards and risk scenarios related to water traffic generated due to construction of the wind farm, for assessing the level of the risks arising therefrom, and if necessary for developing measures to alleviate the risks. We believe that for this purpose, the expert must have experience in organizing ship traffic or operation or previous risk assessment experience according to internationally recognized methodology for assessing navigational risks related to an offshore wind farm. Assessment of navigational risk must rely on a methodology suitable for assessing risks related to construction of offshore wind farms etc. We ask that the Transport Board be briefed beforehand on the person assessing navigational risks to be used in preparing the EIA report, and the assessment methodology.	The circumstances you have identified will be taken into consideration in the EIA process. The Transport Board will be brief beforehand on both the expert to be involved and the methodology used as the basis for analysis.

Environmental Board (no. 6 3/22/10515 2 of 27 June 2022)	
According to the cover letter: *"On 11 April 2022, Utilitas Wind submitted an application for superficies licence on the basis of subsection 218 (1) of the Water Act for establishing the submarine cable needed to connect Saare-Liivi offshore wind farm to the transmission system. On the basis of subsection 11 (7) of the EIAEMSA, it is also desired to merge the EIA proceedings with the proceedings on the EIA launched by the TTJA on 23 December 2021. We would note that although the EIA programme treats assessment of the impacts of the superficies licence applied for on 11 April 2022 as a single EIA proceeding, the TTJA has not, as of the current time, yet initiated the superficies licence proceeding necessary for establishing the submarine cable line.* The Environmental Board agrees to assessing significant environmental impacts related to establishing Saare-Liivi offshore wind farm and the submarine cable line necessary to connect the offshore wind farm to the transmission system as part of a single EIA, not separately. A single proceeding makes it possible to more comprehensively assess significant environmental impacts related to establishing the offshore wind farm and the submarine cable line necessary to connect to the transmission system. One of the major components of EIAs is, at any rate, assessing combined impact; it is easier to do this in a joint proceeding.	The position will be taken under advisement.
We ask that the spatial boundary of the EIA for seabed cable lines be reviewed in the EIA programme. On page 44 of the EIA programme, it is noted: *"For example, where **possible**, the impacts related to location and establishment of the submarine cable in the transition areas between sea and the mainland and in their immediate vicinity will be assessed to determine the potential for functioning of the network connection and the rough locations of activities taking place on land."* The Natura preliminary assessment (page 65 of the EIA programme) treats among other things the Lao nature area, which may be impacted above all by cable installation works on the mainland. In this light, we ask that the wording in the EIA programme be reviewed (whether the current EIA) deals with the impact of the establishing and functioning of the cable lines precisely up to the shoreline (i.e. in the maritime area) or also in the immediate vicinity of the shore, on the mainland).	This EIA definitely deals with activities in the maritime area – the impact of the establishing and functioning of the cable lines up to the shoreline. If possible and necessary, impacts will be assessed in the immediate vicinity of the shore on land to gain clarity that the developer needs regarding the prospective functioning of the network connection. In this light and arising from precautionary principles, the Lao nature area has been added to the Natura assessment.
It is stated on page 7 of the EIA programme that if necessary different foundation types, including rammed a foundation, will be used. A pile foundation is also referred to in Table 5-1 of the EIA programme. Yet on page 19 of the EIA programme: *"Rammed*	In the course of the EIA, the impact of noise and vibration during installation of various types of foundation will be evaluated and if necessary, environmental measures (including monitoring)

foundations that generate noise during construction may not be used to establish the wind turbines./..../ The planned activity is in conformity with the county spatial plan for the maritime area adjoining Pärnu County and the principles set forth in the spatial plan have been considered in designing the EIA." Page 34 of the explanatory memorandum of the county spatial plan for the maritime spatial plan for the maritime area adjoining Pärnu County also states that Rammed foundations (which generate noise during construction) may not be used to establish the wind turbines. In the course of the EIA, the impact of noise and vibration during installation of various types of foundation will be evaluated and if necessary, environmental measures (including monitoring) developed.	developed. The corresponding update has been added to table 5-1 by point 1.5 and 1.6. Noise during construction and operation is assessed in regard to impacts to marine life.
On page 17 of the EIA programme, it is stated: *"Offshore wind farm construction activity may cause physical disturbances on the seabed and cause the distribution of suspended solids."* It should not be forgotten that the impact also occurs during use (noise, vibration, possible electromagnetic impact).	It is not relevant to describe impacts related to offshore wind farm under the Chapter 3.12 Estonian Maritime Strategy and passage describing it. Thus, the quoted sentence has been removed from the EIA programme. Impacts expected to result from the planned offshore wind farm (including impacts specified in the proposal) are treated in chapter 5.2.
EIA programme chapter 3.14 is to be updated since the Government of the Republic with its order no. 146 of 12 May 2022 established an Estonian maritime spatial plan; due to which the EIA programme should refer to the version established in the plan and the obligations imposed therein. To wit: Page 19 of the EIA programme notes that "*In preparing this EIA programme and planning the content of the EIA as a process, the best practices set forth in the Estonian maritime spatial plan and latest principles have been taken into account."* Pursuant to page 53 of the explanatory memorandum of the Estonian maritime spatial plan, the research protocol established in Germany as a standard must generally followed in future investigations of bird life in suitable no. 1 for developing wind energy in the Gulf of Riga specified in the maritime spatial plan (BSH, 2013). As the Saare-Liivi offshore wind farm is located close to the abovementioned area, it is important in the interests of comparability of data obtained from studies that the guidance established in the maritime spatial plan also be considered in the bird studies to be carried out in the course of this EIA.	The EIA programme has been corrected and reference made to the Estonian maritime spatial plan that has as of now been established. The bird study to be conducted in the course of this EIA takes into account the conditions and guidance described in the Estonian maritime spatial plan. The bird study will be carried out by the Estonian Ornithological Society, which was also involved during preparation of the Estonian maritime spatial plan in setting the conditions pertaining to bird studies.
EIA programme chapter 5.1 mentions the environmental elements impacted and studies to be conducted. We propose in the course of the EIA to treat not only the impact of construction and use of the offshore wind farm and submarine cable but also the impact of removal of wind turbines (a rough	The EIA programme was supplemented on the basis of the proposal in chapter 5.1.

assessment, to the degree afforded by the existing information).	
Point 1.2 of Table 5.1 of the EIA programme states: *"The offshore wind farm will not exert an impact on the chemical makeup of seawater (including nutrient load), salinity or other physical and chemical parameters."* Installation of turbine and cables may impact the water quality (suspended solids, nutrients released from the sediments, possible release of pollutants), due to which this assertion is not true. Please correct.	This passage has been removed from the EIA programme. The impacts related to installation of turbines and cables will be determined in the course of studies as described in Table 5-1.
EIA programme table 5-1, p 1.3: In accordance with the EIA programme, a study of the seabed biota and habitats will be conducted in the area of the planned wind farm. We note that the studies are important also in the cable corridor area to provide an assessment of the impact of establishing the cable corridor.	The EIA programme has been supplemented on the basis of the observation.
It is unclear from point 1.4 of Table 5-1 of the EIA programme why the detailed sediment study is in the next phase of the EIA. Point 1.4 of Table 5-1 states: *"In the course of the EIA, some seabed soil samples will be taken /.../ If the EIA indicates the need to conduct a geotechnical investigation of the seabed (e.g. in the places where submarine cables come to land in the near-coastal zone), the necessary works will be performed in the areas where on the basis of other environmental information it is realistic and possible to install wind turbines or submarine cables. The methodology for the relevant work and study conclusions will be summarized in the EIA report."* We believe that in order to carry out the EIA, geotechnical information for the entire project area is necessary at a level of detail that allows the impact of the wind turbines' technical solutions (including selection of foundation and specific construction technologies) on water quality to be assessed and draw conclusions in this regard. In other words, the samples mentioned in the EIA programme must give an overview of the wind farm area and the cable corridor area.	As part of the EIA, a geotechnical site investigation will be carried out at a level of detail that allows environmental tolerance for the various wind turbine technical solutions to be assessed and determined. The volume and scope of the geotechnical site investigation will be apparent after the first information is received in the course of the primary marine habitat and marine biota investigations (including fish, birds etc.). Based on the information gathered in the course of preparing the Estonian maritime spatial plan, we know that the planned superficies area may in certain spatial regards be important to birds, bats etc, which may partially impose restrictions on activity on the planned area.
EIA programme table 5-1, p 1.5: In the interests of accuracy, we note that it will definitely be necessary to map the fish stocks in the area, fish spawning areas and fish migratory routes to be able to assess the impact of the planned activity on fisheries.	The objective of the fish study in Table 5.1, point 1.5, is to determine the fisheries situation in the area of the planned wind farm and submarine cables, i.e. seasonal incidence of species, abundance, importance of the area for spawning, migration or feeding area for various fish species. In the course of field work, data will be collected on fisheries In the planned wind far area and the data obtained will be analysed against data collected previously from other pelagic and coastal areas. As a result of the work, the potential impacts of wind farms during construction and use will be assessed

	and appropriate alleviatory measures will be recommended. In addition, point 1.5 details the Baltic herring migration study to be carried out in the course of the fisheries study.
EIA programme table 5-1, p 1.6: The EIA programme states that field studies relating to seals will cover one full year, since there are significant seasonal differences in seal locations and activity patterns; the study will be conducted in 2023. We note that the distribution of seals may be significantly impacted by winter ice conditions that may vary greatly in conditions of a changing climate. Thus the study should cover at least two winter periods. For example, according to page 104 of the draft EIA programme for Tuuletraal OÜ's Gulf of Riga offshore wind farm and use of green hydrogen for managing ouput, it is planned for carry out two consecutive fundamental research studies spanning the entire seasonal cycle; one seasonal cycle consists of 12 calendar months, including the first month of the study. The studies carried out in the course of wind energy project EIAs should be based on the same methodological principles that ensure comparability of data and give a full picture that would allow cumulative impacts to be assessed as well.	The methodology for the seals study was prepared by seal experts Mart Jüssi and Ivar Jüssi, who deemed it necessary and adequate to carry out field work spanning 12 months. The same volume of seal studies and methodological principles are also envisioned for other offshore wind farm wind farm EIA processes being compiled, where the EIA programmes have been approved accordingly (e.g. Saare Wind Energy OÜ offshore wind farm; Eesti Energia AS Gulf of Riga offshore wind farm).
EIA programme table 5-1, p 1.9: The EIA programme notes that there are no protected natural objects in the expected area of the planned wind farm and submarine cable. This is not correct, since in accordance with figure 2-3 of the EIA programme, the planned offshore wind farm passes through the Gulf of Riga special conservation area (KLO2000286), which being a Pärnu Bay bird area is also part of the Natura 2000 network. The establishment of the submarine cable in the bird area was not dealt with in the course of the Natura preliminary assessment (page 66 of the EIA programme). The special conservation area as a bird area also encompasses the shore of the Pärnu Bay, through which it is planned to create a submarine cable connection to mainland cable lines. Thus, there is a need for not only studies and assessments related to birds in the maritime area, but an assessment of impacts related to cable laying works in the coastal zone that could impact birds and damage the special conservation zone and the protection objectives of the Pärnu Bay bird area.	Based on the proposal, table 5-1, point 1.9 and figure 2-3 have been supplemented and corrected. The corresponding addenda have been also added to the Natura preliminary assessment in regard to the Pärnu Bay bird area.
EIA programme table 5-1, p 4.1: The EIA programme states: *"This EIA cannot assess cumulative impacts in regard to plans and projects that are still in the superficies licence or EIA programme stage – in other*	We concur that one important component of the EIA is assessment of cumulative impacts. The field of the impact and its approach are listed in Table 5-1, point 4.1. We continue to

words, where a realistic and feasible alternative solution and volume have not been determined. The EIA report will include an overall expert opinion on the basis of previous studies, scientific literature and studies conducted during this EIA. We believe that one important part of the EIA is assessment of cumulative impacts. The fact that some developments are in the early stage cannot be a reason for not assessing potential cumulative impacts. Information available at the time of this EIA can be used as a basis for assessment, including permit applications and the activity volumes declared in them, and the level of accuracy of the assessment given in the EIA can be based accordingly. Otherwise, cumulative impacts may remain unassessed. When assessing cumulative impacts, all activities within the impact zone should be considered, including planned (including various wind farms; and also Tuuletraal OÜ's planned development).	maintain that, when assessing cumulative impacts, it is possible to consider similar projects or other planned projects that will lead to accumulation of similar impacts from multiple activities, which have by the time of the preparation of the EIA report have reached at least the same assessment stage – in other words, it is possible to consider the study data gathered and published regarding the other project. In the case of superficies licence applications, the maximum wishes of the developer have been mapped, which often are not realistic since the environmental sensitivity/environmental tolerance of the area has not been considered. Thus; it is necessary to consider, as part of each successive and later activity licence and its EIA, the assessment results for other projects, whether they have been implemented, are being implemented, or have reached at least the same EIA assessment stage, and address assessment of combined impacts. The development planned by Tuuletraal OÜ is an example of circumstances that may not be realistically achievable based on the known data, among other things, the TTJA in its letter no. 16-7/19-3332-070 of 7 July 2022 has recommended that Tuuletraal OÜ withdraw the superficies licence application. (More detailed explanations can be read in the position submitted by Saaremaa Municipality Government and responses thereto).
In accordance with the KMH programme figure 4-7, a mainland bird migration corridor on the Munalaid-Kihnu-Ruhnu-Kolka trajectory passes through the project area and a significant part of the project area encompasses a sensitive area for bird life. While the said migration corridor is specified in the EIA programme, the nature of the sensitive area has not been elucidated. Instead, pages 32-34 of the EIA programme state that the area is not all that noteworthy from the standpoint of bird life. Please review these places so that they would be consistent with each other.	EIA programme figure 4-7 shows, among other things, sensitive areas for birds with the nature of the sensitive areas listed in brackets. In other words, these are presumed to be significant migration, feeding and moulting areas. In addition, there are explanations as to what the sensitivity of the area is and what impacts would materialize for the said area from various activities. The EIA programme does not assert that it is not a noteworthy area for bird life, and the expert group does not agree with the opinion contained in the comment.
The Environmental Board in letter no. 6-2/21/7427-2 of 7 May 2021 issued a recommendation to the TTJA regarding the application for superficies licence. In points 5 and 6 of the letter, the Environmental Board noted that the impacts on areas under domestic protection located nearby must be determined: Pärnu Bay special conservation area, Sorgu nature protection area, Kihnu special conservation area, Manija landscape	On the basis of the proposal, Manija landscape protection area and Sorgu nature protection area – whose protection objectives also include numerous bird species – have been added to the list of areas to be assessed in chapter 4.1.5, table 4-3. The Manilaid-Hanilaid nature area within the Natura network overlaps with Manija landscape protection area, which encompasses

protection area, Kihnu islets nature protection area; Natura 2000 network areas: Pärnu Bay bird area, Sorgu nature area, Kihnu nature area, Mainlaid-Hanilaid nature area. To EIA programme chapter 4.1.5 and 6, add Sorgu nature protection area and nature area, Manija landscape protection area, Manilaid-Hanilaid nature area which are not specified in the EIA programme. In the course of the EIA, the locations of cable corridors and the attendant impacts will be evaluated in combination with the impacts stemming from the planned offshore wind farm, including the infrastructure within the wind farm (substation and cables within the wind farm). In the estimation of the Environmental Board, the submarine cable installation area will be quite close to the Manija landscape protection area and Manilaid-Hanilaid nature area, due to which the impact of the activity on these areas should also be assessed during the EIA to prevent unfavourable impact. The impact on Sorgu nature protection area and nature area is also to be assessed. Under clause 1 (2) 3) of Cabinet regulation no. 35 of 7 March 2014, "Formation of Sorgu nature protection area and protection rules", the protection objective of Sorgu protected area is to protect and preserve species that are specified in Annex I or II of the directive of European Parliament and of the Council on protection of wild birds, and migratory birds not listed in Annex I. These species are the smew (*Mergus albellus*), Caspian tern (*Sterna caspia*), sandwich tern (*Sterna sandvicensis*), common tern (*Sterna hirundo*), Arctic tern (*Sterna paradisaea*), little tern (*Sterna albifrons*), barred warbler (*Sylvia nisoria*), mute swan (*Cygnus olor*), greylag goose (*Anser anser*), tufted duck (*Aythya fuligula*), common eider (*Somateria mollissima*), velvet scoter (*Melanitta fusca*), red-breasted merganser (*Mergus serrator*), common merganser (*Mergus merganser*), Eurasian oystercatcher (*Haematopus ostralegus*), ruddy turnstone (*Arenaria interpres*), alk (*Alca torda*), plover (*Charadrius hiaticula*), common redshank (*Tringa totanus*) and common gull (*Larus canus*). In accordance with the EIA programme, the impact on Kahtla-Kübassaare bird area will be assessed, this being at the same distance from the wind farm development area as Sorgu nature protection area and nature area. EIA programme figure 4-7 refers to an important spring migration corridor for waterfowl.	the mainland, not the sea, and the following habitats are protected there: coastal lagoons (Boreal baltic islets and small islands (1620), boreal Baltic coastal meadows (1630*), fixed coastal dunes with herbaceous vegetation (grey dunes) (2130*) and semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) – 6210). A negative impact can be ruled out for the nature area's mainland habitats that are more than 2 km from the planned cables. Sorgu nature area was established for the protection of small islands and islets (1620) and in the extent of the island, and thus the establishment of submarine cables does not exert an impact to this area.
EIA programme page 62: Among other things, the Natura preliminary assessment relies on the document "Wind energy developments and Natura 2000" (European Union, 2011). This guideline was updated in	The proposal submitted will be taken under advisement.

2021[1], so we ask that the new version of the guideline now be used. [1] Available at: https://op.europa.eu/en/publication-detail/-/publication/2b08de80-5ad4-11eb-b59f-01aa75ed71a1	
EIA programme table 6-1 also treats Lao nature area, which is located in the location of the transition of the connection of the cable to the mainland power grid; it is the Lao marsh angelica species protection site. If impact on Lao nature area is assessed in the course of the EIA, the marsh angelica species protection site must be added to EIA programme chapter 4.1.5.	Based on the proposal, the list in chapter 4.1.5, table 4-3 has been supplemented.
We ask that it be added to the Pärnu Bay bird area field in the column "Forecasting the impact" in table 6-1 in the EIA programme that the installation of the submarine cable may also exert a direct impact on the bird area during construction. With regard to biota, studies are planned; a Natura assessment will also be carried out, where this should also be taken into consideration.	Table 6-1 has been supplemented in regard to impacts expected to result from installation of the submarine cable.
The membership of the expert group set forth in Table 8-2 is sufficient. Nevertheless, we note that the EIA programme does not e.g. name the person whose area of competence is related to marine physics, including modelling and studying introduction of seabed sediments into the water column. According to page 47-48 of the EIA programme, it is planned to commission a study (modelling distribution of suspended solids). Thus it must be ensured during the EIA that if proposals are submitted in the context of the EIA regarding EIA results (including studies) the expert group has a member who if necessary can answer the questions and review the EIA results.	An expert was added to the expert group and the Taavi Liblik (TalTech) was added as an expert in charge of modelling of the distribution of suspended solids.
The TTJA cover letter is marked "for official use" on the basis of clause 35 (1) 17) of the Public Information Act. Since the EIA programme will undergo public display and public discussion, the developer should remove from the EIA programme the information that merited the "official use" marking. It is wise to prepare the EIA programme in one version (not two versions, of which one is public and the other is for internal use), if necessary information meant for internal use can be presented in the e.g. programme annexes, which are available only to the officials.	The position will be taken under advisement.
We ask that the superficies licence application be added to the EIA programme on the basis of subsection 13 (10) of the EIAEMSA and if necessary, for internal use.	Proposal to be considered.

Heritage Board (no. 1.1-7/871-3 of 27 June 2022)	
The treatment of underwater cultural heritage is not relevant or sufficient in the EIA programme and it is necessary to supplement the fifth chapter. Table 5-1 of the EIA programme sets out the expected significant impacts of the planned activity, the methods used to forecast and assess them and studies to be conducted (EIAEMAA subsection 13 (5) and (6). The impact resulting from establishment of the offshore wind farm on cultural heritage has been assessed as insignificant in the programme in spite of the fact that *activity may endanger the preservation or good status of the shipwreck*. It states that *impact may also be manifested through potential destruction, damage or impeded access to cultural heritage and the spread of sediments on to heritage conservation assets*. Cultural heritage is an non-renewable resource. Destroyed or ruined cultural heritage – the status quo ante – cannot be restored. Thus, the expected risk to cultural heritage is significant in the case of all activities related to establishment of the offshore wind farm that endanger the preservation or good status of heritage.	We confirm that the impact on underwater cultural heritage is assessed in the course of the EIA to ensure its preservation as the Heritage Board has set as an objective in its position. In the course of the EIA, the direct and indirect significant environmental impact of the planned activity is determined for cultural heritage as well, and the impact is described and assessed EIAEMSA subsection 3[1] (2)). The EIA is intended for assessing the impacts of the planned activities, not for abstract studies. The specific planned activities in this case are the erection and operation of offshore wind farm structures (turbines, substation, cables). It must be considered that no structures will be erected on a large part of the encumbered area envisioned upon initiation of the proceedings on superficies licence (nor will the indirect impacts from construction materialize). In areas not affected by construction activity (and its impact) the underwater cultural heritage will not be damaged – in other words, it is not justified to carry out underwater archaeological investigations. Design development and application for building permit will precede the proceedings on superficies licence. Due to the abovementioned circumstances, sonar studies will be used during the preparation of the EIA to determine whether there are underwater objects at least in the location and impact zone of the offshore wind farm structures. If the said objects are indeed found in the locations covered by the EIA, and the impact zone of the planned construction/structure planned in the design phase does extend to these objects and may endanger them, an underwater archaeological investigation will be conducted for the purposes of Section 10 of Minister of Culture regulation no. 25 of 25 May 2019 and pursuant to the requirements of sections 46-48 and 68-69 of the Heritage Conservation Act as the Heritage Board has desired. Thus, the plan set forth in the EIA programme has set the goal of ensuring that endangerment of the underwater cultural heritage is precluded in the actual construction and impact zone of the turbine foundations and cables. Contrary to the interpretation of the
The impact zone is considered to be the area underneath the wind farm and submarine cables, which is not the only impact on the underwater cultural heritage. The EIA programme must treat all expected impacts (e.g. any physical activity on the seabed, including anchoring, erosion etc.), that may have an impact on underwater cultural heritage during installation of turbines and during use of wind farm. The topic of environmentally hazardous shipwrecks must be highlighted separately, since a change in the status of such wrecks may lead to environmental contamination.	
Pursuant to the superficies licence initiation decision no. 1-7/21-521 and the Heritage Conservation Act (hereinafter the MuKS) subsection 46 (2), an underwater archaeological investigation must be conducted in the framework of the EIA. The findings of the underwater archaeological investigation are the basis for assessment of environmental impacts on underwater cultural heritage and carrying out activities for organizing long-term monitoring. Determination of cultural heritage is an important factor from the standpoint of determining the size of the area burdened, including encompassed	

by structures, and also necessary for carrying out long-term activities on the seabed to ensure the preservation of existing but currently unknown underwater cultural heritage. Identification of objects with cultural value also prevents damage and destruction of finds from the underwater archaeological investigation during the work commenced and also suspension of works in the event that a cultural valuable find is made (subsection 31 (1) and (2) and subsection 32 (1) of the MuKS). The underwater archaeological investigation is an activity necessary for preventing and reducing significant environmental impact on cultural heritage resulting from the establishment of offshore wind farm. Taking the above into account, the underwater archaeological investigation for the wind turbines and cable corridors and their impact zone must be performed during the EIA ,not only prior to construction (during design development). The underwater archaeological investigation consists of two stages: 1) high-resolution sonar study in the corridor of the submarine cable line and its impact zone. As a result of the study, objects of human origin must be identified starting from one metre; 2) for the purpose of identifying, documenting and assessing the condition of objects with cultural value, video or 2 photo (2) documentation using photogrammetry or other technology or methods with equivalent outcome, for wood-hulled shipwrecks, a dendrochronological investigation if the age of the wreck cannot be determined by other methods. The underwater archaeological investigation may be carried out by a company which employs a person with competency certificates in the respective area and who has submitted a notice of economic activity regarding operating in the heritage conservation field (pursuant to Sections 68-69 of the MuKS). Before carrying out the study, the competent person must submit to the heritage Board a research plan and notice, and after carrying out the research, a research report (MuKS § 46-48). The sonar study intended as a part of the underwater archaeological investigation may be combined with other planned sonar investigations. It is also possible to use data from high-res sonar studies already performed if they were collected regarding the area earlier and meet the requirements. In either case, the competent person must analyse the data and submit a report to the Heritage Board.	Heritage Board, the EIA programme envisions that the direct physical impact on the shipwrecks will be insignificant, since the existence and locations of the underwater objects were already taken into consideration upon placing the offshore wind farm structures. The EIA programme has considered all of the expected impacts (in addition to the location of the specific structure, also anchoring, erosion etc.). Thus, impact zone is not considered to be only the area under the footprint of the structures but also the immediate vicinity of the foundations and the cable corridor area in the broader sense (the area in which the impact of anchoring and erosion can manifest). The topic of historical environmentally hazardous wrecks will be dealt with if necessary in the course of the EIA. Unlike registered immovables – i.e. specifically delimited pieces of land – (where an archaeological investigation must be carried out already during the EIA if the preconditions set forth in subsection 31 (3) of the heritage Conservation Act are fulfilled, meaning if there is a justified assumption of the existence of cultural heritage, subsection 32 (2) of the Heritage Conservation Act sets forth unequivocally that research shall be performed before construction, including installation of civil engineering works, structure or equipment in internal water bodies, territorial seas, transboundary water bodies or exclusive economic zones or before planning another activity that may endanger the preservation of underwater cultural heritage. Thus, valid law is also based on the approach of conducting an underwater archaeological study before to construction or during the design if a risk to underwater cultural heritage may materialize from the impact from a specific construction/structure. For the same reason (i.e., a specific object is involved) the expense on the research is not subject to compensation (clause 32 (3) 2) of the Heritage Conservation Act). It also derives from chapters 3.5 and 3.of the explanatory memorandum to the county spatial plan for the maritime area adjoining Pärnu County that the existence of shipwrecks in the area of the structures will be determine through a preliminary study in the course of the EIA.

	Only if a shipwreck is found are underwater archaeological investigations conducted in the near vicinity of the shipwreck. Locations of wind turbines must be selected such that preservation of shipwrecks is guaranteed. The Heritage Board refers to the superficies licence and EIA initiation decision (no. 1-7/21-521). Obligations arise from the resolution part of said administrative act (subsection 60 (2) of the Code of Administrative Procedure), sub-clause 6 of clause 4 states of which: "in the case of operating in the immediate vicinity of shipwrecks, the impact on culture heritage must be assessed, and if necessary, studies conducted. Prior to relocation of a shipwreck, an underwater archaeological preliminary study is to be conducted to identify the status of the shipwreck, the extent of the archaeological layer and the feasibility of the relocation." This description also conforms to the text of chapter 5 of the explanatory memorandum of the county spatial plan for the maritime area adjoining Pärnu County. Thus, the obligation of conducting an underwater archaeological investigation was not mandated upon initiating the proceedings on the superficies licence and the EIA. Subsection 46 (2) of the Heritage Conservation Act referred to by the Heritage Board stipulates that the need for a research and the extent thereof shall be determined by the Board based on the nature and volume of the planned works before the preparation of special conditions for heritage conservation, in the special conditions for heritage conservation, upon grant of approval to another administrative authority or in the permit for performance of work. In this case, the Heritage Board has expressed an "opinion" in regard to the application for superficies licence (subsection 219 (2) of the Water Act), so it is not even possible for the Heritage Board to "designate" studies in this format. The studies were designated by the TTJA (clause 219 (7) 3)). We repeat that the concerns brought out by the Heritage Board have been addressed in the EIA programme.
Considering the importance of the impact on the underwater cultural heritage and the shortcomings of the EIA programme when it comes to cultural heritage,	An expert was added to the expert group as Ivar Treffner (Estonian Maritime Museum) was involved in the process as an expert.

we recommend involving an underwater archaeologist in the assessing the impacts on cultural heritage.	
Pärnu City Government (no. 9-11/5017-1, 28 June 2022)	
The Pärnu City Government has no proposals in regard to the above draft EIA for Saare-Liivi offshore wind farm.	-
Ministry of the Interior (email of 29 June 2022)	
In chapter 5.2, "Environmental elements impacted and studies to be conducted" , page 61, study no. 5.2 "Impact on navigational systems and impact on ship traffic and navigational safety", we propose to supplement the wording of in the column "Expected significant impacts (including impact zone, impact sources)" as follows: Use of the wind farm may exert an influence on ship and air traffic and to map and assess this impact, we engage in cooperation with the Transport Board and Police and Border Guard Board.	The proposal will be considered and the relevant wording has been updated.
Kihnu Municipality Government (email of 29 June 2022)	
The objectives described in chapter 2.1 – generation of electricity and/or hydrogen, but there is no more talk of hydrogen in the programme. What are the impacts of hydrogen production and how are they assessed?	A passage discussing hydrogen technology has been added to EIA programme chapter 2.3. As of the time of preparation of this EIA programme, Utilitas Wind does not plan specific (technical) solutions at the offshore wind farm for dealing with the hydrogen topic, e.g. production of hydrogen in the wind farm and transport via pipeline to the mainland. At the same time, the planned offshore wind farm will be developed such that it could be connected to hydrogen technology solutions with minimal modifications. The EIA report thus considers specific development options related to the hydrogen topic at the conceptual level (i.e., technical solutions not planned in detail). Producing hydrogen from the power generated at Saare-Liivi offshore wind farm can be arranged in various ways if it proves upon more detailed design development whether the hydrogen production unit can be cost effectively established in the immediate proximity to the offshore wind farm cable clearance or on the territory of the offshore wind farm. Should solutions that are parts of the offshore wind farm emerge during the EIA process, the planned activities at sea will be assessed in the framework of this EIA and if connecting the offshore wind farm to a

	hydrogen plant on e.g. the mainland is considered, a separate project will be prepared along with assessment of the environmental impacts.
The EIA programme discusses various parameters of wind farms, including the spacing between turbines. This is mentioned as a numerical value and corresponds to five times 250 m rotor wind turbine. At the same time, it is stated that the EIA will be prepared on the assumption of offshore wind farm turbines with the biggest dimensions whose rotor diameter is at least 300 metres. There is much indeterminacy and the maximum dimensions in the EIA programme should be strictly in place.	The exact technical alternatives for the wind farm will be determined during the EIA process, after studies conducted in the superficies licence area. Based on the results of the studies, the environmental sensitivity/environmental tolerance of the planned superficies licence area will be revealed and, based on that, in cooperation with the EIA expert group, alternative solutions for the wind farm will be developed, which will be assessed, and the process of assessment shown, in the EIA report. The technical alternatives in chapter 2.3 have been updated. The maximum number of wind turbines to be evaluated and planned in the EIA report is up to 160. During the EIA, the nominal power rating of the turbines will be evaluated in the range of 14-20 MW and the maximum peak height studies will range up to 400 m. One of the goals of the EIA is to assess the maximum potential impact, due to which hypothetical wind turbine parameters have been used, e.g. the maximum turbine height of up to 400 m.
One aspect when it comes to establishment of submarine cable lines is the assessment of impacts from the laying of cable lines through Kihnu Island.	For now, it is not planned to lay cable lines through Kihnu because that would mean that a relatively wide cable corridor would pass across Kihnu and it would not generate benefit for the island or its inhabitants; it would not improve Kihnu's security of supply of electricity. These would be high-voltage electrical lines (expected to be 330 kV and the corridor would be 6-20 m wide. Considering the total electrical consumption of Kihnu Island, it would be more reasonable in the current phase to improve the 10 kV lines from the mainland than to start passing 330 kV lines through the island and in addition establish an interim substation on Kihnu.
As comparative material for the bird studies, a study conducted on Kihnu and whose team member included Mati Kose could be used.	This previous bird study is under contractual protection as an Eesti Energia trade secret and it has not been possible to involve this study in the national Estonian maritime spatial plan preparation process.
The local community should be involved in conducting of the study, as they are source of information on when	A extensive working group has been formed to forecast the environmental impacts expected to result from the establishment of the offshore

which study can be obtained for collecting accurate data.	wind farm (for more detail, see chapter 8). The working group includes experts in the field, including scientists, who have developed a methodology for marine environment research that also meets international standards. The studies for determining impact to the local community, e.g. visual impacts, impact on people's well-being etc., the local community will definitely be involved and cooperation will take place through the EIA process.
One part of the EIA must be the assessment of irreversible environmental damage and the probability of it occurring. Either in a risk analysis form or other similar form. In addition, activities for preventing these environmental damage must be described.	Pursuant to subsection 3^1 (1) of the EIAEMSA, the purpose of the EIA is to provide the issuer of an activity licence information on significant environmental impacts expected to result from the planned activity and its realistic alternative options and selection of the most suitable alternative for the planned activity, with which is possible to prevent or reduce unfavourable impact on the environment and to promote sustainable development. Under section 2^2 of the EIAEMSA, environmental impact is significant if it is expected to exceed the environmental tolerance of the influence area, cause irreversible changes in the environment or pose a danger to human health and well-being, cultural heritage or assets. Thus, the expected impacts of establishing the offshore wind farm have been mapped in this EIA planning stage, which impacts must be assessed in the next stage of the EIA – i.e. in the EIA report after the findings of the research become evident. To prevent and reduce potential environmental impacts, alleviatory measures (including monitoring) are developed.
Ministry of Economic Affairs and Communications (no. 1.10-17/2022/3683-2 of 6 July 2022)	
The draft lists Estonia's strategic development documents and describes their main goals, but does not describe how the activity planned in the draft is connected with these strategies. It is advisable to show in the programme how the planned activity is in conformity with or contributes to achievement of the specific goals.	Based on the proposal, Chapter 3 has been supplemented.
Please update the text in point 3.14 of the draft. On 12 May 2022, the Cabinet issued order no. 146 establishing the Estonian maritime spatial plan.	The version of the EIA programme submitted for comment was prepared on 9 May 2022. The Estonian maritime spatial plan was established by the Government of the Republic on 12 May 2022, and we will make adjustments to the status of the documents referred to in the course of the EIA process.

According to the EMODnet categorization set out in clause 4.1.1., the word "rocky" area refers more to exposed bedrock (limestone or dolomite). Varved clays are also found in the Pärnu maritime area of the Gulf of Riga as Quaternary sediments. Only sands, tills and mud are listed in the draft as sediments. Please amend the draft.	The wording of Chapter 4.1.1 has been supplemented.
Generating capacity for the planned Saare-Liivi offshore wind farm and possible alternatives, such as technological ones, whose environmental impact is to be compared, have not been clearly brought out.	The precise technical alternatives for the wind farm will be determined during the EIA process, after studies conducted in the superficies licence area. Based on the results of the studies, the environmental sensitivity/environmental tolerance of the planned superficies licence area will be revealed and, based on that, in cooperation with the EIA expert group, alternative solutions for the wind farm will be developed, which will be assessed, and the process of assessment shown, in the EIA report. The technical alternatives in chapter 2.3 have been updated. The maximum number of wind turbines to be evaluated and planned in the EIA report is up to 160. During the EIA, the nominal power rating of the turbines will be evaluated in the range of 14-20 MW and the maximum peak height studies will range up to 400 m.
Research and development activity, innovation and the enterprise strategy 2021-2035 (TAIE2035) should be included, since the planned activity makes a significant contribution to the goals of TAIE35, meaning that it will increase productivity.	We agree that the planned business activity will help directly contribute to the well-being of Estonian society and increase economic productivity. In this EIA programme, we have listed the higher strategic documents that are hierarchically and/or directly tied to achieving energy and marine environment goals.
Police and Border Guard (no. 2.1-3/17504-3 of 7 July 2022)	
The insufficiency alternatives and the EIA development area. The EIA programme notes that as of the preparation of the EIA programme and based on the environmental restrictions that had become evident at the time of the preparation of the programme of the realistic (main) alternatives, the EIA will look at main alternative 1, which is an offshore wind farm area with up to 160 wind turbines. Yet the EIA programme does not give the reader any information whatsoever about the exact considerations on which alternative 1 was adopted, whether it could in turn have common features or conflict points, from the standpoint of marine surveillance, security and pollution among others. Besides the above, besides the 160 wind generators, there is no information on the content of	As of the preparation of the EIA programme and based on the environmental restrictions that had become evident at the time of the preparation of the programme (based inter alia on the environmental information published during the Estonian maritime spatial plan on the birds and bats and water traffic areas), of the realistic (main) alternatives, the EIA will look at main alternative 1, which is an offshore wind farm area with up to 160 wind turbines. The technical alternatives in chapter 2.3 have been updated. The maximum number of wind turbines to be evaluated and planned in the EIA report is up to 160. During the EIA, the nominal power rating of the turbines will be evaluated in

this and other alternatives and the approximate areas and locations of their positioning pursuant to maps. It is also not mentioned what the rest of the alternatives are and how they will be selected and realized relative to each other or depending on the results of assessment. This makes the work more difficult for the decision-maker, other government authorities and the public, and in particular the experts involved in the assessment,. It is understandable that the results of the studies may impact the final configuration greatly But it cannot be considered acceptable if the EIA programme does not contain detailed plans on the locations of the wind farms or their dimensions. Submission of the EIA programme in such a form and planning research does not add assurance that the EIA research staff and impact assessors will be able to perform their work and draw relevant conclusions in a quality manner, since there is a lack of a clear object of impact assessment. We ask that the EIA programme not be approved before the main alternatives have been set out for both location and wind turbine measurements. We also ask that the impact assessment rely on turbine models that are new will be in production in the near future and their technical parameters be fixed during the impact assessment and as a result of the licence proceedings, because e.g. the situation that happened in Aidu must be avoided where turbines that were much higher and had other operating parameters different to the initial consent endangered the operation of national defence surveillance systems.	the range of 14-20 MW and the maximum peak height studies will range up to 400 m. In the EIA process planning, i.e. EIA programme stage, a description of potentl alternatives known by that time shall be set out (Section 13 of the EIAEMSA) Among other things, it will be necessary to avoid alternatives that are too narrowly delineated and defined. In the course of the EIA programme, it will be important to define the scope of the alternatives. It is important to treat alternatives more broadly to try to find the best solution, not to stick to the checking the presented solution's conformity to the minimum environmental requirements [5354]. The precise technical alternatives for the wind farm will be determined during the EIA process, after studies conducted in the superficies licence area. Based on the results of the studies, the environmental sensitivity/environmental tolerance of the planned superficies licence area will be revealed and, based on that, in cooperation with the EIA expert group, alternative solutions for the wind farm will be developed, which will be assessed, and the process of assessment shown, in the EIA report. One of the goals of the EIA is to assess the maximum potential impact, due to which hypothetical wind turbine parameters have been used, e.g. the maximum turbine height of up to 400 m. Based on the EIA report assessment results, the issuer of the licence will define the technical parameters as a part of the licence conditions (in accordance with issuing the superficies licence in accordance with clause 222 (2) 4) of the Water Act, the maximum allowed height and depth of the structure and other significant technical data of a structure are defined upon issuing the superficies licence).
In regard to cross-boundary EIA programme, authorities and organizations of neighbouring countries have devoted attention and expressed	The compiler of the EIA programme has noted in its cross-boundary responses that the assessment of cumulative impacts is a standard

53 https://ec.europa.eu/environment/eia/pdf/EIA_guidance_Scoping_final.pdf

54 https://ec.europa.eu/environment/eia/pdf/EIA_guidance_EIA_report_final.pdf

concern about cross-boundary and particularly cumulative impacts. From our standpoint the response of the EIA programme drafter – that the assessment of cumulative impacts is a standard part of an EIA – is not sufficient. Instead, appealing to a standard could lead to merely formal execution of assessment. In actuality, it is one of the weightiest responsibilities of the EIA to perform a high-quality assessment of so exte3nsive and diverse a human activity on a large (marine) area and environmental assets and species (birds, seals, bats) present broadly and without boundaries. The first modest steps are only now being taken in this field. The EIA programme advisably should set out with sufficient detail for each field or for the whole what the relevant scientific and technical principles and methods are, how cumulative and combined impacts will be assessed and taken into consideration in both this and future licence proceedings. The current EIA programme and responses on cross-boundary impact certainly do not provide this assurance and it may result in this key topic not being treated with the required care.	part of the EIA, by which it means that it is a compulsory part of the assessment arising from the clause 6 (2) 6) of the regulation referred to in subsection 20 (2) of the EIAEMSA. We concur that one important component of the EIA is assessment of cumulative impacts. The field of the impact and its approach are listed in Table 5-1, point 4.1. When assessing cumulative impacts to consider similar projects or other planned projects that will lead to accumulation of similar impacts from multiple activities, which have by the time of the preparation of the EIA report have reached at least the same assessment stage – in other words, it is possible to consider the research data gathered and published regarding the other project.
The topic of marine pollution risks and monitoring and readiness for response has not received sufficient attention. Table 5.2 description of impacts and means of assessing them: Point 1.2 Impact on seawater quality, including distribution of suspended solids: although possibilities of marine pollution due to establishment, use of the wind farm and accidents and collisions from ship traffic or trawling in the vicinity were mentioned, the EIA programme does not provide for either research into expert recommendations for risk assessment and mitigation or monitoring of the marine pollution situation. Oil spills spread quickly across the surface of the sea and identifying residues from the water column is thus not an effective research or monitoring measure. Considering the great potential impact of marine pollution on the surrounding maritime area and the complications nature of limiting or cleaning it up and Estonia's and Latvia's very limited state pollution control capabilities in this maritime area, it is important to highlight this topic in the EIA programme as a separate activity, find experts who are able to assess the topic substantively with the necessary level of detail to be added to the EIA working group and use, for developing corresponding risk assessment and potential recommendations and alleviatory measures or restrictions, assessment methodologies and experts internationally recognized in this field. The Police and Border Guard does not find it acceptable to not assess	The environmental fields assessed in the course of the EIA deal among other things with environmental risks which are likely to result to an impact. The EIA programme has been supplemented and modelling of oil spill has been envisioned in addition to modelling of modelling of distribution of suspended solids, see table 5-1, p 5.3. If necessary, alleviatory measures (including monitoring measures) are developed as a result of assessment. The EIA cannot e.g. consider risk analyses for specific ships participating in construction, because the specific ships are not known at the time of preparation of the EIA. Each ship is covered by a separate risk analysis for work on the open sea, which includes among other things also oil spill and other potential risk/impacts and an action plan should they materialize. We add that we plan to prepare a detailed risk analysis covering wind farm construction and later maintenance, which also takes into consideration, among other things, risk analyses for specific construction and maintenance ships and other necessary information. In regard to fuel or other hazardous substances leaking into the sea from shipwrecks, we proceed from the

the oil risks due to the explanations given in the table, according to which safety rules have to be followed in the course of construction and maintenance works, and this is because accidents that cause marine pollution can occur in rough seas even if all requirements are followed. For example, strict marine pollution prevention measures apply under the MARPOL convention above all to oil tankers, but not to other ships. All potential risks must be assessed. Another reason is that there are areas with dense trawl fishing and shipping lanes near the wind farm. The Ministry of Defence of the Republic of Latvia has raised the topic of oil and chemical pollution and the cleanup response capability in Latvia. The Police and Border Guard believes that it is not sufficient in the case of the EIA programme to mention the wind farm operator's safety measures, since among other things, the risk assessment must be reviewed in light of the marine pollution and cleanup capabilities, including assessing the suitability of the overlap between the wind farm development area and shipping lanes, especially considering also the severe ice conditions often present in the area. In regard to the risks of marine pollution, it will certainly not be enough to only perform an analysis of this wind farm's impacts but to consider the cumulative risk from establishing a large number of wind farms (including Utilitas Wind's other farms Saare-Liivi 1-4) that partially overlap and adjoin shipping lanes and trawl fishing areas.	action plan and relevant guidelines developed in Estonia. We note that the antifouling paints on ships are environmentally friendly and in all likelihood will not be documented separate in the risk analysis. A prohibition on ships approaching closer than 500 m of the wind farm will be established for ship traffic both during construction and operation. Possible exceptions for ships in the course of operation of the park will be specified in further stages. The publication *Teadaanded Meremeestele, public* announcements for seamen published by the Transport Board, notifies sips regarding the location of the wind farm, commencement of work and prohibition on entry. Ships working in the spatial plan area must follow IMCA and IMO regulations. The EIA cannot and is not required to document risk analyses for specific works. These will be developed and approved at the crisis management level with the relevant government authorities before the start of actual construction.
In addition, we note that the impact of the risk of marine pollution materializing needs to be highlighted and assessed for the most susceptible species in regard to the risk of marine pollution – seafowl, for which this is an important area. It is necessary to assess the relevant risks in the context of the establishment, use and elimination of the wind farm and power grid connection cable. We believe that in regard to the Natura bird areas within the development area's impact zone, it will be necessary, as one topic of the Natura assessment, to also assess the corresponding impact risks of marine pollution to the corresponding protection assets.	
Supplementing the historical shipwreck research brief. In Table 2.1, Impact on objects under heritage conservation, including shipwrecks, it is noted that underwater archaeological investigations will be conducted in regard to known shipwrecks in the development area to ascertain their heritage	A detailed seabed study investigation will be performed in the course of the EIA, which also determines the potential shipwreck locations. For establishing turbine foundations and cables, locations with no wrecks in the near vicinity and thus no potential leak hazard are to be

conservation value. As petroleum products may be found as fuel or cargo in known transport conveyances on the seabed or ones potentially found in the course of investigations, it is necessary to gather data on archaeology dives and add to the report a risk assessment regarding potential leaks of petroleum products from the wreck and if necessary from the standpoint of mitigating said risk. Intensive movement of ships and construction activity may either contribute to fuel leaks or accelerate them. The PPA thus maintains that the corresponding investigation of pollution hazard and risk assessment will have to be added to the underwater research topics for wrecks and to assess pollution hazard, the previous Investigations on the environmental hazards of historical shipwrecks conducted by the Heritage Board and Ministry of the Environment can be used as a basis.	preferred. If there is a need to perform work near shipwrecks; separate detailed investigations will be conducted to determine, among other things, the potential cultural value and status of the wrecks, etc. Prior to construction, a ferromagnetic study will be conducted In the cable corridor and in turbine locations and the removal of potential unexploded ordnance will take place by a person with the corresponding qualification prior to construction. In other cases, UXO will be mapped and a 20 m no-go perimeter will be established around them.
The PPA also maintains that the turbines to be established may not impact the existing national maritime monitoring solution. The exact scope and compensation measures for the wind farm impact must be determined with a corresponding research study, which is a primary requirement of surveillance technology service. The research study must determine who will compensate the impact to surveillance systems, and how.	In table 5-1, p. 5.2, we noted that use of the wind farm may have an impact on air and ship traffic as well and cooperation will take place with the Transport Board and the Police and Border Guard to map and assess it. The corresponding study described in point 5.2 of Table 5-1 will be compiled.
Ministry of Defence, email of 27 June 2022	
The Ministry of Defence asks to consider the fact, detailed in its previous letter no. 12-1/21/1297 of 5 July 2021, that development of Saare-Liivi 5 offshore wind farm in the volume submitted can be realized only if the national defence height restrictions are eased, for example as the result of implementing compensatory measures. For now, no binding decision has been made for implementing compensatory measures in the given area in regard to the operating capacity of national defence structures. Taking into account the height restrictions applicable to the wind farm area, the wind farm cannot be erected in the desired volume and height sought in the draft EIA programme. Until the compensatory measure are realized; the electrical wind turbine height restrictions of 51-200 metres above sea level, depending on the location of the wind turbine, will remain in place.	The position has been taken under advisement; the valid height restrictions will not impede continuing the EIA proceeding. The maximum allowed height and are defined upon issuing the superficies licence (clause 222 (2) 4) of the Water Act), decision on which will also taken into consideration EIA results (subsection 24 (1) of EIAEMSA). Upon granting superficies licence, only the height restrictions stipulated by legal acts in force at that time can be considered. If necessary, it is even possible upon granting superficies licence to designate the height of a structure conditionally, since the precondition of erecting the wind turbines is also issuance of a building permit, and in deciding whether to endorse the permit the Ministry of Defence in fact has to take into consideration the question of operating capacity *(Supreme Court Administrative Law Chamber no. 3-16-1562, p 22; Supreme Court Administrative Law Chamber no. 5-20-12, p 47;*

	Supreme Court Administrative Law Chamber no. 3-17-2766, p 26.2). Thus the valid height restrictions will not impede continuing the EIA proceeding.
Consumer Protection and Technical Regulatory Authority, no. 16-7/21-02502-063 of 15 July 2022	
TTJA believes that the draft EIA programme for the Saare-Liivi offshore wind farm must be supplemented in terms of content with positions elicited from stakeholders. Among other things, a number of authorities have noted that the description of EIA alternatives is insufficient and It would be necessary to obtain information in the framework of the EIA with regard to geotechnical status. If the developer fails to consider a/the comment(s) stated in the programme, a reason must be provided.	Proposal to be considered. All positions submitted above have been responded to along with reasoning.

9.4. Publication

The chapter will be completed after publication.

Annexes

Annex 1. Application for superficies licence. Decision on superficies licence proceeding and initiation of EIA (to be added as a separate directory)

Annex 2. EIA cross-boundary notification and feedback (added as a separate directory)

Annex 3. Notification on initiation of EIA (to be added as a separate directory)

Annex 4. Notifications on publication of EIA programme (to be added as a separate directory)

Annex 5. Positions of authorities concerned in regard to the EIA programme (to be added as a separate directory)

Annex 6. Proposals received upon publication of EIA programme and responses (to be added as a separate directory)

Annex 7. Materials on public discussion on EIA programme (to be added as a separate directory)