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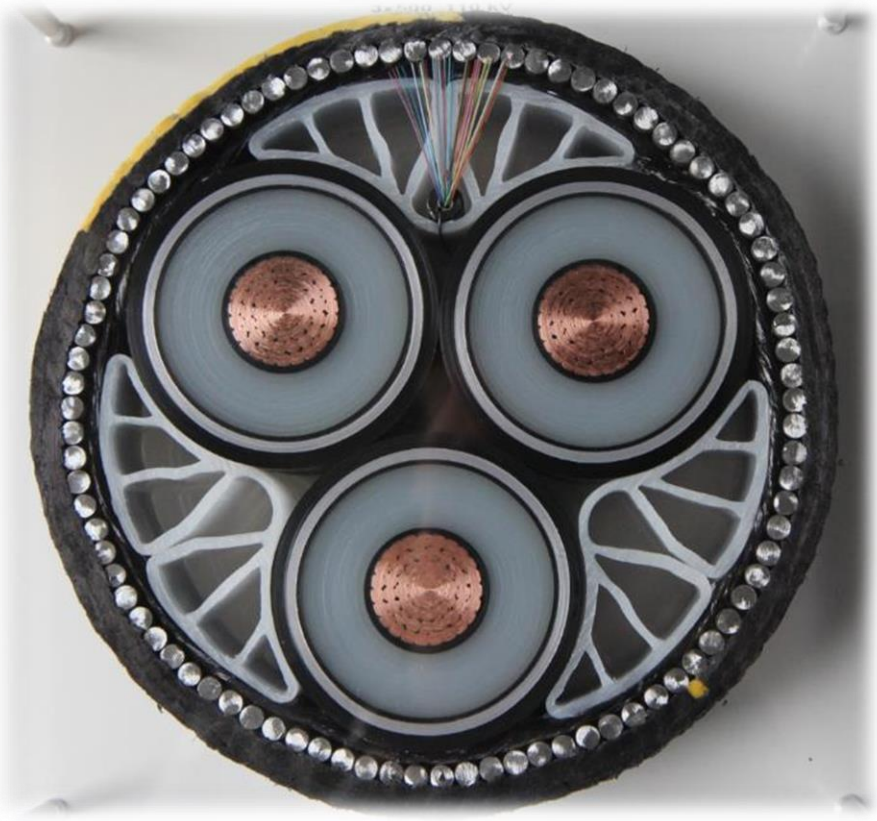
Date	22.05.2025

Environmental impact assessment of the superficies license for the submarine cable of the fourth Estonian-Latvian electricity interconnection (EE-LV 4)

Draft EIA program



SKEPAST & PUHKIM

Version:	**1 (for disclosure and to collect opinions)**
Date:	**22.05.2025**
Compilers:	**Eike Riis, Vivika Väizene, Raimo Pajula, Kaarel Karolin, Ketter Kärp, Marko Lauri**

Front cover image:	**A cross-section of a submarine cable. Source: Elering**

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Abbreviations used

EE-LV 4	Estonia-Latvia fourth electricity connection/transmission line
EE-LV IV REP	National designated spatial plan for the fourth Estonian-Latvian electricity connection
ADVANTAGE	Estonian Nature Information System
KeHJS	Environmental Impact Assessment and Environmental Management System Act
GHG	Greenhouse gas
EU	European Union
EIA	Environmental Impact Assessment
Central Statistical Office	Strategic Environmental Assessment
TTJA	Consumer Protection and Technical Regulatory Authority

INTRODUCTION

On 08.05.2024, Elering AS submitted an application for a superficies license to the Consumer Protection and Technical Regulatory Authority (hereinafter the Consumer Protection and Technical Regulatory Authority) for the construction of the fourth Estonian-Latvian electricity connection (the fourth Estonian-Latvian joint transmission line; hereinafter EE-LV 4) with a public water body with a 330 kV submarine cable. The construction of the submarine cable is necessary to create additional electricity transmission capacity between Estonia and Latvia.

According to the application for a superficies license, the submarine cable of the fourth Estonian-Latvian electricity connection consists of up to three alternating current power cables with a voltage of up to 330 kV and one fibre optic communication cable line. The planned operating capacity of the submarine cable is a maximum of 1000 MW. In order to avoid mechanical damage, the cable line shall be sunk at least partially into the sediment of the seabed (up to a depth of 3 m).

On 23.12.2024, the TTJA initiated the superficies license procedure and environmental impact assessment (EIA) with decision no. 1-7/24-422.

An environmental impact assessment (EIA) was initiated for the installation of the EE-LV 4 submarine cable in a public water body, including a cross-border environmental impact assessment, for the assessment of possible short- and long-term, indirect and direct impacts. Due to the fact that a superficies license is applied for for the purpose of laying a submarine cable, an EIA is mandatory on the basis of § 3(1)1) of the Environmental Surveillance Act, as it may result in dredging of the sea with a volume of soil with a volume of more than 10,000 m3, which is an activity with a significant environmental impact pursuant to § 6(1)17) of the Environmental Protection Act. An EIA is also mandatory under § 3(1)2) of the Environmental Protection Act, as an adverse impact on the conservation objective of the Natura 2000 network area cannot be ruled out in the case of the planned activity. Pursuant to § 11(3) of the Environmental Impact Assessment Act, the initiation of an environmental impact assessment does not have to be justified if an activity with a significant environmental impact is planned.

The purpose of the environmental impact assessment is to provide the decision-maker (issuer of the activity licence) with information about the environmental impact of the planned activity and its real alternative options, and for the selection of the most suitable solution option for the planned activity, which can avoid or reduce the adverse impact on the environment and promote sustainable development.

The content of the EIA program is determined by § 13 of the EIA Act. Conducting an EIA, including the preparation of a report, requires conducting surveys in the area of the submarine cable route corridor and its area of influence.

In this EIA process, the decision-maker and organiser of the proceedings is the TTJA. The EIA program was prepared by Skepast & Puhkim OÜ and the developer (a person who plans the activity and wishes to carry it out; applicant for an activity licence (superficies license)) is Elering AS.

After the EIA program has been declared compliant, separate procurements are announced for carrying out studies and preparing the EIA report.

1. EIA PARTIES

The EIA parties are listed in the following table (Table 1), other parties to the proceedings, including the relevant authorities and interested/affected persons, see chapter 6.1.

Table 1. EIA Parties

Party	Institution/Institution	Contact person	Contact details
Decision-maker	Consumer Protection and Technical Regulatory Authority	Adeele Vesingi Chief Specialist of the Construction Activity Law Division	Endla 10a, 10142 Tallinn tel 667 2135 adeele.vesingi@ttja.ee
EIA expert	Skepast&Puhkim OÜ[1]	Eike Riis EIA Lead Expert	Laki põik 2, 12919 Tallinn tel 501 1548 eike.riis@skpk.ee
Developer	Elering AS	Viktoria Muske-Vidyajev Project manager	Kadaka tee 42, 12915 Tallinn tel 5308 2147 Viktoria.Muske-Vidjajev@elering.ee

1.1. The expert group that prepared the EIA program

The lead EIA expert in the EIA program preparation stage is Eike Riis (EIA licence KMH0154, valid until 19.09.2028). EIA program compiled by Skepast&Puhkim OÜ The composition of the Expert Group is set out in the table below (Table 2).

Table 2. EIA program Members of the Expert Group

Expert	Area	Task in the working group/area of impact
Eike Riis	EIA Lead Expert	Organisation of the work of the expert group; preparation of the EIA program; participation in the EIA program proceedings; noise and vibration; cultural values; waste generation; Cross-border impact
Ketter Kärp	Fisheries and fisheries	Fisheries and fisheries; related strategic planning documents
Raimo Pajula	Wildlife and Natura 2000	Natural environment, including Natura 2000, protected natural objects, seals, birdlife, seabed biota and habitats
Vivika Väizene	Geology and hydrogeology	Geology, marine environment, surface and groundwater
Kaarel Karolin	Climate change	Climate and climate change, floodplains
Marko Lauri	GIS Specialist	GIS data collection, management and analysis; settlement and land use, technical infrastructure; Preparation of EIA program drawings

[1] *EIA program stage, as Skepast & Puhkim OÜ has entered into a contract with the developer only for the EIA program stage. After the EIA program has been declared compliant, separate procurements are announced for carrying out studies and preparing the EIA report.*

The members of the expert group have been selected on the basis of subsections 14 (3) and (4) of the Environmental Protection Act on the basis of their competence, previous work experience and experience of mutual cooperation. Pursuant to subsection 14 (1) of the Environmental Protection Act, the lead expert is responsible for the competence of the members of the expert group.

1.2. The expert group required to prepare the EIA report

After the studies mentioned in the EIA program (see chapter 5.3) an EIA report is prepared on the basis of the results of the studies in accordance with the requirements of § 20 of the Environmental Impact Assessment Act. The performers and time of the studies and the author of the EIA report (the expert group preparing the EIA report) are not yet known at the time of compiling the EIA program, because the EIA experts who will carry out the studies necessary for the EIA and the EIA expert who will prepare the EIA report will be selected by the developer in the next stage.

On the basis of the above, it is not possible to name the experts who carry out the environmental impact assessment and prepare the report in the EIA program.

For an overview of the studies and expert assessments required for the preparation of the EIA report and the competence of the experts involved, see chapter 5.3 Table 9.

2. DESCRIPTION OF THE PLANNED ACTIVITIES

The following description of the planned activities has been prepared on the basis of the superficies license application submitted by Elering AS to the TTJA on 08.05.2024 and its annexes (Lisa 2) and the decision to initiate the superficies license procedure and the EIA (Lisa 1) . In doing so, it has been taken into account that in the period following the submission of the application for a superficies license, three route alternatives fell out due to different circumstances (see the explanation in chapter 2.2), as a result of which the EIA will only need to be carried out on the south-western Saaremaa–Ventspils route corridor. In addition, the description of the planned activities has been prepared on the basis of additional information received from Elering AS and previous similar projects.

2.1. Objective of the proposed action

The construction of the submarine cable is necessary to create additional electricity transmission capacity between Estonia and Latvia. The submarine cable of the fourth Estonian-Latvian electricity interconnection will help to contribute to the security of electricity supply in both the country and the region, to make the energy system more carbon-neutral, to provide an opportunity to achieve the goals of climate and energy policy, and to ensure greater integration of markets. More external connections allow for a more secure network that is less vulnerable to third-party interference.

The construction of the fourth electricity connection between Estonia and Latvia via Saaremaa requires the construction of power lines with a voltage level of 330 kV in Saaremaa and their strong connection to the 330 kV electricity transmission network located on the mainland. To this end, the national designated spatial plan (REP) for the fourth Estonian-Latvian electricity connection (REP) and the SEA (see chapter 39) have been initiated by order no. 39 of the Government of the Republic of 15.02.2024 3).

The Estonian electricity system operator Elering AS and the Latvian electricity system operator AS *Augstsprieguma tīkls* (AST) are cooperating on the construction of the EE-LV 4 electricity connection between Saaremaa and Courland. The aim of the cooperation is to carry out the preparations, including the necessary studies, in order to find an environmentally sustainable and technically and economically suitable solution.

2.2. Development of the route corridor under discussion

On 23.12.2024, the TTJA initiated the superficies license procedure and environmental impact assessment (EIA) with decision no. 1-7/24-422. According to the superficies license procedure and the decision to initiate the EIA, the alternatives to the EE-LV 4 submarine cable route corridors were as follows (together with the area of the public water body to be encumbered for the installation of the submarine cable); See Figure 2:

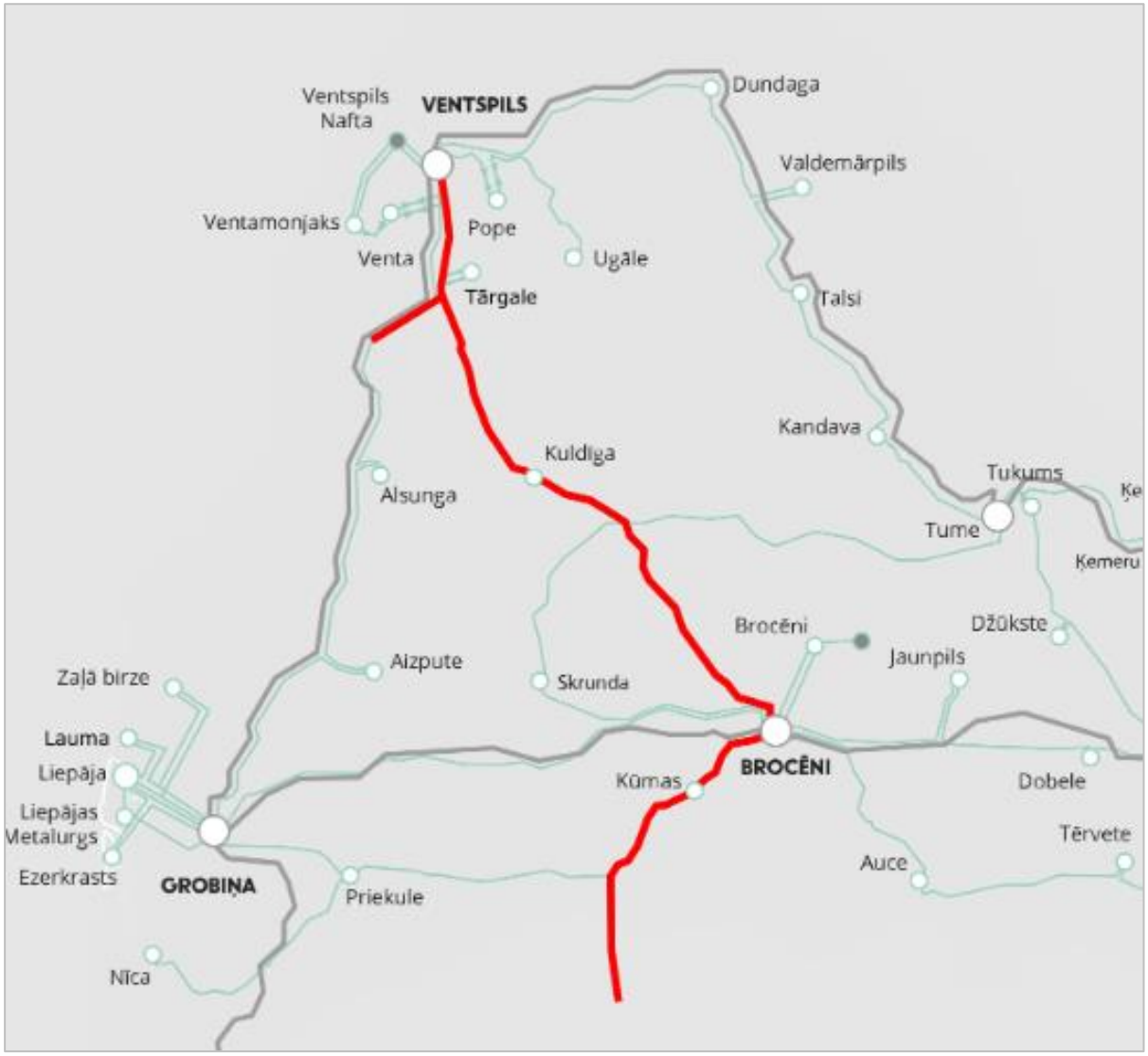
1. Southwestern Saaremaa–Ventspils (20.75 km2);
2. south-western Saaremaa–Dundaga (21.94 km2);
3. Sõrve–Ventspils (9.20 km2);
4. Sõrve–Dunda (6.48 km2).

At the time of making the initiation decision, the parties knew which of the four possible alternatives would proceed to proceedings, according to the EE-LV IV REP[2] when the location where the submarine cable landing area will be located in Saaremaa is known. With the EE-LV IV REP that is being

[2] National designated spatial plan for the fourth Estonian-Latvian electricity connection, initiated by the Government of the Republic on 15.02.2024

prepared, there is no connection to the main network planned for the Sõrve peninsula or a disembarkation area and connection point (location of a prospective substation) for submarine cable route alternatives 3 and 4; See chapter 3.2. On the basis of the above, route alternatives 3 and 4 starting from the Sõrve peninsula (Figure 2) are actually feasible, i.e. they are not realistic in terms of EIA.

At the time of making the decision to initiate, the knowledge that on the Latvian side two possible disembarkation points (Ventspils and Dundaga) are being considered in connection with the fourth Estonian-Latvian connection, was also taken into account. Regarding the connection point on the Latvian side, during the cross-border EIA consultation,[3] information from the Latvian transmission system operator AS "Augstsprieguma tīkls" that an EIA procedure has been initiated for the project to strengthen the Ventspils-Brocen-Varduva (LT) intranet on the territory of Latvia (Figure 1), which is one of the prerequisites for the establishment of the EE-LV 4 connection. The plan to strengthen the transmission network in Latvia is based on the Ventspils connection point, and the Dunda option is asked not to be taken into account when planning the connection between Estonia and Latvia. Thus, alternatives 2 and 4 of the route corridor starting in Dundaga (Figure 2).



[3] Document register of the Ministry of Climate Change: https://adr.envir.ee/et/document.html?id=635663bc-9e6a-4578-b528-087c6ab616e0

Figure 1. Plan for strengthening the core network on the territory of Latvia on the route Ventspils–Broceni–Varduva (with a red line). Source: Latvian transmission system operator AS "Augstsprieguma tīkls"[4]

For the above reasons, Elering AS submitted an application to the TTJA on 16.04.2025 by letter no. 1.1-20/2024/377-12, in which it wishes to partially withdraw the submitted applications for a superficies license in order to focus on further work on the route corridor of the South-West Saaremaa–Ventspils submarine cable. It was intended to withdraw the applications for a superficies license for the South-West Saaremaa–Dundaga, Sõrve–Dundaga and Sõrve–Ventspils alternatives (alternatives 2, 3 and 4).

On 25.04.2025, the TTJA replied by email [5]that it considers the partial withdrawal of the application for a superficies license.

Based on the above, only one EE-LV 4 submarine cable route corridor – South-West Saaremaa–Ventspils – is considered as a planned activity in this EIA program, of which the EIA object is the section of the route corridor from South-West Saaremaa to the Estonian-Latvian border.

For a description of the location of the route corridor to be discussed during the EIA, see chapter 2.4.

[4] Website of the Latvian transmission system operator AS "Augstsprieguma tīkls": https://www.ast.lv/sites/default/files/editor/majas_lapai.png
[5] Document register of the Consumer Protection and Technical Regulatory Authority: https://jvis.ttja.ee/modules/dokumendiregister/view/1038363

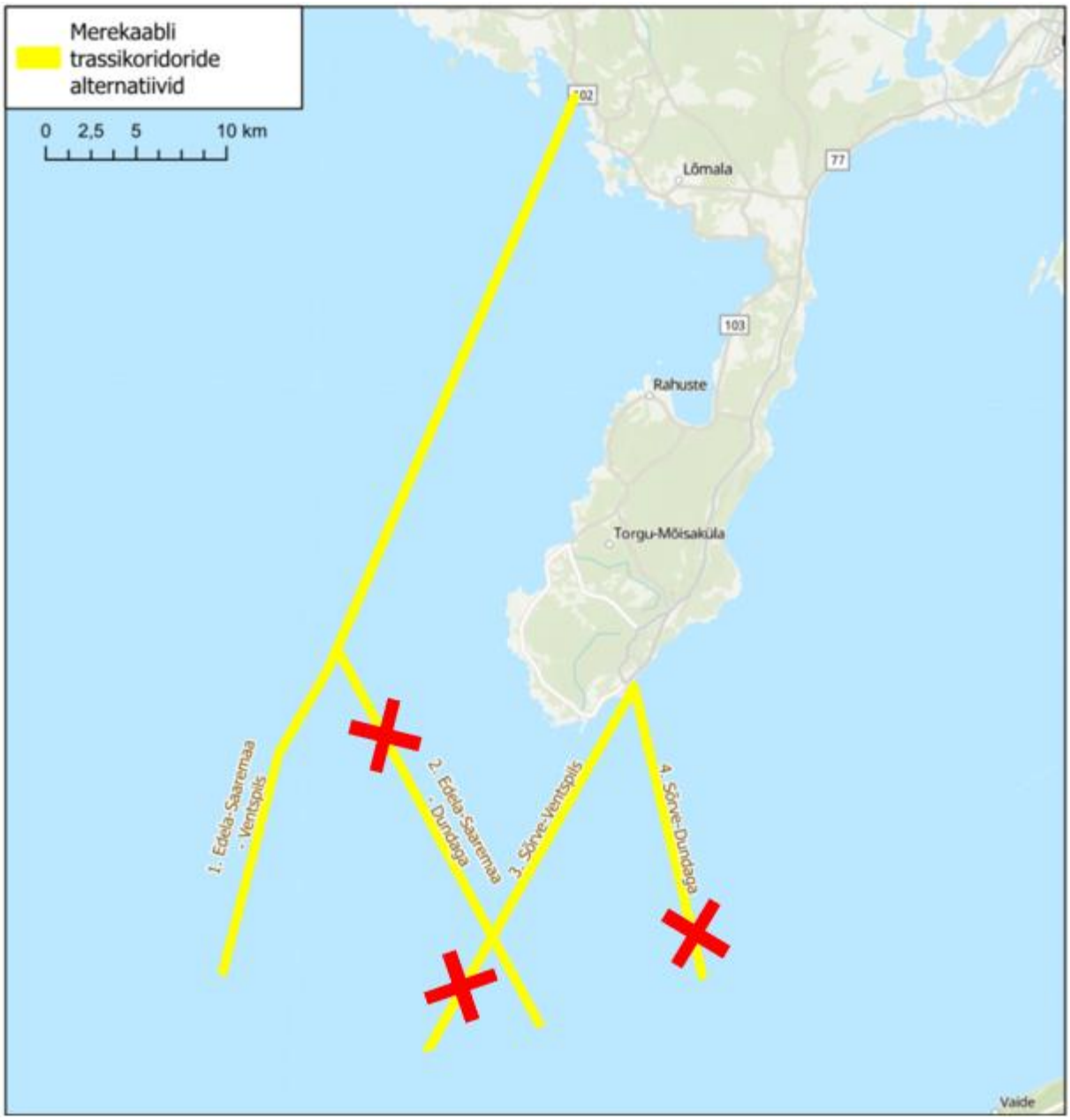


Figure 2. Location of alternatives 1–4 of the EE-LV 4 submarine cable route corridor based on the initial application for a superficies license and the decision to initiate the EIA. The Red Cross marks the alternatives to the route corridors that were later excluded from the selection

2.3. Location of the proposed activity

The location of the EE-LV 4 submarine cable route corridor planned with the application for a superficies license is located in the Kura Gorge in the sea between Saaremaa and the Curonian Peninsula (LV) (Figure 3). The landing area of the EE-LV 4 submarine cable on land (Saaremaa) is determined by the national designated spatial plan for the fourth Estonian-Latvian electricity connection (see chapter 3.2). The route corridor planned with the application for a superficies license ends at the Estonian-Latvian border.

The principal description of the establishment of the EE-LV 4 electricity connection is given in chapter 2.5. The exact configuration of the cable connection, the distances between them, the installation

technique and technology, and the need for installation under the surface of the seabed will be determined as a result of the preparation of the construction project and procurements.

For a description of the environment that is expected to be affected by the proposed activity, see chapter 4.

Figure 3. Location of the EE-LV 4 submarine cable South-West Saaremaa–Ventspils route corridor. Basis: specified application for a superficies license

2.4. Alternatives to be considered when conducting an EIA

Submarine cable route corridor

According to the superficies license procedure and the decision to initiate the EIA, and as a result of the subsequent emergence of new circumstances (see the explanation in chapter 2.2) is not on the

route corridor of the EE-LV 4 submarine cable South-West Saaremaa–Ventspils (see Figure 3) location alternatives.

The length of the south-western Saaremaa–Ventspils route corridor to the Estonian-Latvian border is about 52 km, and the area of the public water body loaded[6] in Estonian waters is 20.75 km2.

The location of the submarine cable route corridor has been determined on the basis of the information provided in the application for a superficies license. The width of the submarine cable route corridor with protection zones is 500 m. In the course of the EIA, it will be assessed whether and under what conditions it is possible to build EE-LV 4 submarine cables in the area applied for.[7]

In the event that circumstances that complicate or hinder the construction of the cable at a specific location (e.g. wrecks, seabed habitat types, etc.) emerge in the course of the EIA, it will be considered whether and to what extent it is possible to move the cable route to minimise the impacts. Subsection 11312 (3) of the Building Code provides that, based on the results of the environmental impact assessment and studies, the area to be encumbered by a public water body may be shifted or increased by up to 33% in relation to the given coordinates compared to the encumbered area specified in the decision to initiate the superficies license proceedings, or may be reduced to a greater extent. Proceeding from the above, if the location of the route changes by more than 33% from the location indicated in the application for a superficies license, the developer must submit a new application for a superficies license. The place of disembarkation may also be specified as a result of the above-mentioned process of preparing the national designated spatial plan (see chapter 3.2). The final possible location of the cable route will be determined, among other things, as a result of an impact assessment and technical design.

The task of the (construction) surveys and the preparation of the preliminary design is to determine the possible location of the cable route on the seabed and its alternatives, taking into account, among other things, known nature and heritage conservation, geological and other restrictions. Therefore, at the EIA program stage, it cannot be ruled out that as a result, the route corridor may deviate somewhat from the existing trajectory. During the preparation of the EIA report, it must be decided whether such deviations from the initial trajectory are considered as (sub)alternatives or mitigation measures.

Technological alternatives

The installation of the EE-LV 4 submarine cable is carried out using the open or closed method (see chapter 2.5.2.5 and 2.5.4). From a technical point of view, an open method is preferred, but in some locations, for example, environmental constraints may require the application of a closed method. Thus, both construction methods are assessed during the EIA (see chapter 2.5.2):

- installation of cables using the open method;
- installation of cables using the closed method.

In order to assess the environmental impact of different technologies on the marine environment, the spread of suspended solids is modelled during the digging of cable trenches (see chapter 2.5.2.5), ploughing and dredging of waterfalls (see chapter 2.5.2.6) of the Society. Alternatively, modelling can also be done for the so-called worst-case scenario, i.e. the situation when the amount of sediment to be moved is the largest. The volume of modelling will be agreed upon in cooperation between the expert preparing the EIA report, the developer and the water quality expert based on the results of the geological survey to be carried out in the next stage of the EIA. Depending on the results of the geological survey, it may also be necessary to model the distribution of suspended solids on different soils.

[6] Area of the encumbered area of a public water body required for the installation of a submarine cable with a superficies license

[7] For clarification, the area to be encumbered with a superficies license is an area of 1 m wide for each cable (the area directly under construction) and the area of ca 95 m between the cables is not included in the area encumbered by the superficies license.

The impact assessment is based on the change in the state of the environment compared to the current situation (the so-called 0-alternative, i.e. if the EE-LV 4 submarine cable line is not built).

2.5. Technical specifications for the construction of the infrastructure

The basis for the preparation of the technical specification for the construction of the infrastructure is the annexes to the superficies license application submitted by AS Elering to the TTJA, including Annex 6 – technical input, the information provided and the descriptions of the installation of other similar submarine cables.

2.5.1. Technical specifications of the submarine cable line

To build a high-voltage alternating current (*HVAC)* transmission line for the EE-LV 4 connection, it is necessary to install two to four cables on the seabed. The submarine cable line consists of up to three AC cables and one communication cable.

The construction of the cable line is as follows:

- 2 to 3 submarine cables, through which electricity is transmitted. The number of cables depends on the power of the connection and the length of the connection to be established, and it is determined during the design process. The voltage of the cable is selected during the design process and can be up to 330 kV;
- 1 fiber optic communication cable, which allows to ensure the operation of the electrical system.

The basic diagram of the location of the cables is shown in the figure below (Figure 4).

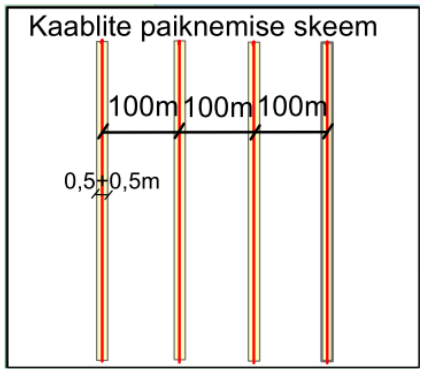
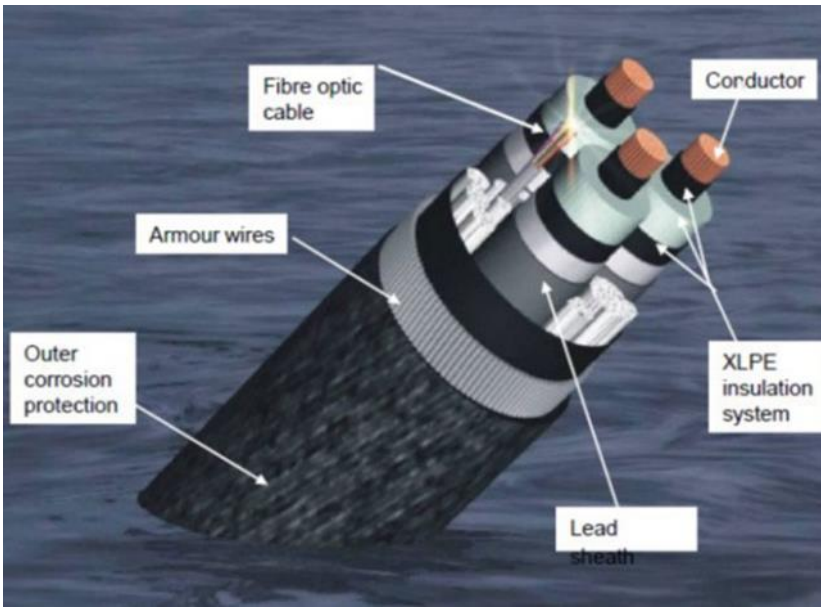


Figure 4. Diagram of the location of cables. Source: Elering

Each AC cable consists of three phase cables and an optical cable and an enclosing sheath with a total diameter of approximately 20 cm (Figure 5). The number of cables can be reduced by using a concentric cable where there is also a fiber optic communication cable inside the same cable. The exact configuration of the cable connection will be determined as a result of the design and procurement.



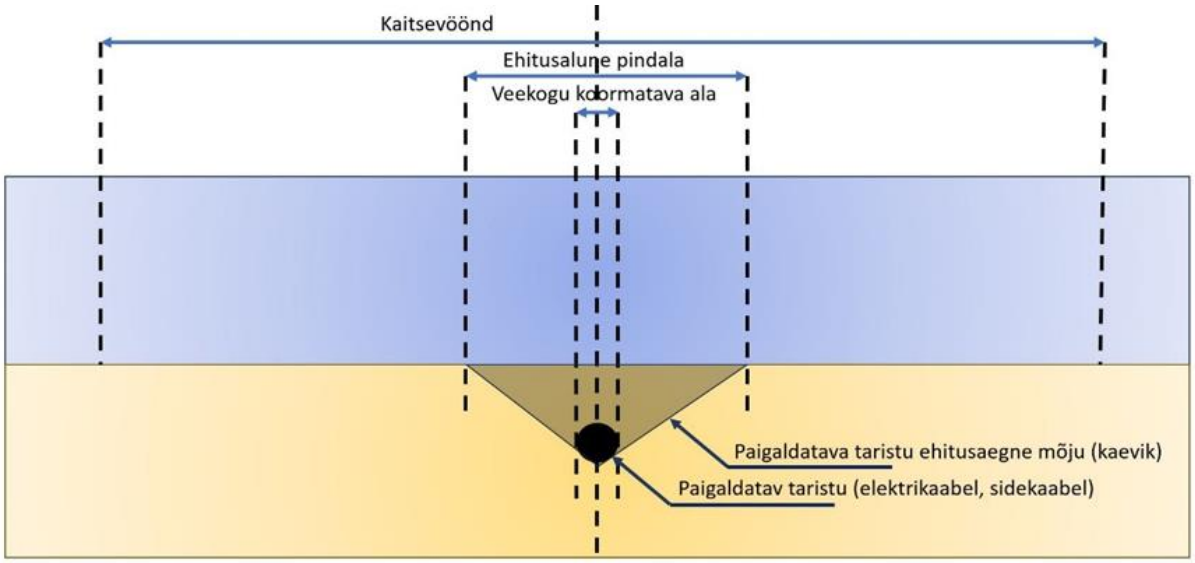
Translation of the names of the elements of the submarine cable:

- *Fibre optic cable*
- *Conductor*
- *XLPE insulation system*
- *Lead sheath*
- *Armour wires – armor wire*
- *Outer corrosion protection*

Figure 5. Possible *HVAC* cable cross-section. Source: Elering

The distances between the cables depend on the characteristics of the seabed and will be determined during the design process. In order to avoid mechanical damage, the cable line shall be installed, at least partially, in the sediments of the seabed at a depth of up to 3 m, and at a depth of 1.5 m on the coast.

For a principal diagram of the encumbrances on the seabed of a superficies license related to a submarine cable, see Figure 6.



- ***Protection zone:*** *on an electric cable in the sea 100 m on both sides of the central axis; on a communication cable 0.25 nautical miles from the central axis of the communication building; not subject to a building permit;*
- ***Area under construction:*** *the area where work is carried out for the construction of infrastructure; is important for environmental impact assessments. Depending on the location, 3-15 m from the axis of the cable; is not an object of a superficies license;*
- ***The area to be loaded by a water body*** *= the area under the building; conceptually, the width of the cables is considered to be 1 m, the area loaded with a superficies license is thus 0.5 m from the axis of one cable times the number of cables.*

Figure 6. Encumbrances of the superficies license on the seabed. Source: Elering

2.5.2. Stages of the construction of the submarine cable line

In order to build the submarine cable line of the EE-LV 4 connection, several activities will be carried out on the seabed, as a result of which either two or more cables will be installed under the surface of the seabed. After installation, it is not possible to see the cable in the sea because it is located below the surface of the seabed.

On the technical side, the project consists of the following parts:

1) preparation of the preliminary design;
2) seabed construction studies;
3) working design and installation project;
4) seabed preparation works;
5) digging a trench in coastal waters and on the coast;
6) laying submarine cables;
7) post-installation work.

2.5.2.1. Preparation of the preliminary design

When a new cable connection is built, the preparation of a preliminary design will begin. The existing databases on the seabed and landing sites will be used in the preparation of the preliminary design . The aim of the preliminary project is to:

- to determine, on the basis of the available information, the possible location of the cable route on the seabed and its alternatives, taking into account the known nature and heritage conservation, geological and other restrictions;
- prepare an initial technical design with cable selection and carry out an initial risk assessment;
- map what data is available on the seabed and what information is needed to carry out the next design stages.

According to the preliminary design, seabed construction surveys can be carried out. Depending on the quality of the available information, more than one seabed survey may be necessary.

2.5.2.2. Seabed Construction Studies

Before the installation of the submarine cable, seabed construction studies will be carried out, which are necessary for determining the exact location of the submarine cable and technical design (preparation of the working project).

The following non-interventional seabed surveys may be carried out prior to cable laying.

Side scan sonars (SSS) are *used for the surface examination of sediments covering the seabed*, which are installed on submarines towed by ships close to the seabed. Side-view sonar transmits sound pulses in a directional manner to small corners of space, up to angles close to the horizontal direction. With the help of determining the time of reflections of sound pulses, a picture is formed of the relief of the seabed, irregularities, objects present there and changes in the structure. Fan sonar may also be used to measure the seabed relief and determine the type of substrate. The type of use of different sonars is determined by the depth of the water and the suitability of the sonar. Dual-frequency (400 and 900 kHz) side-view sonar may be used to map the types of sediments and their distribution limits.

In addition to determining the seabed relief, the composition of seabed sediments is detected with a high-frequency Pinger sediment profiler operating at a pulse wave frequency (24 kHz) and a medium-frequency (3–9 kHz) sediment profiler (Chirp). To obtain information about the moraine layer and

bedrock relief under the sediments, a Boomer-type seismoacoustic sedimentation profiler is used at a frequency of 0.5–2 kHz.

In the course of magnetometry research, the direction, strength and change of the magnetic field on the seabed is measured, with the help of which metal objects can be found, even if they are buried in mud or sand. In particular, this is important for determining the presence of possible *unexploded ordnance* (UXO) devices on the cable route. If it is not possible to unambiguously clarify what is happening on the seabed during the mentioned survey, ROVs (operating submarines) are used, which allow detailed inspection of objects and underwater manipulation to determine exactly what it is. In shallow water, divers may be used for this purpose.

In addition to non-interventional studies, interventional construction studies are also carried out with the aim of validating the results of non-interventional studies. During these studies, sediment profiles are taken and static penetration tests (*Cone penetration test* – CPT) are performed to determine the mechanical properties of the soil. During the experiments, as much soil is moved as is necessary to take a sediment profile.

Information on the studies carried out within the framework of the EIA is provided in the chapter 5.3.

2.5.2.3. Working design and installation project

Based on the preliminary design and seabed surveys, a working project is prepared. The aim of the working project is to design a solution on the basis of which it would be possible to complete the building as a whole. If necessary,[8] intersections with other infrastructure objects will also be resolved during the work project in cooperation with their owners. On the basis of the work project, it is possible to obtain construction works and building permits.

After the completion of the work project and the procurement of construction works, the company installing the submarine cable during the construction will carry out an installation project according to the installation bases used, in the course of which it will be determined exactly how the installation vessel can install the submarine cable. In the course of this, it may be necessary to carry out additional seabed surveys at certain locations.

2.5.2.4. Seabed preparation works

Before starting the construction work, the submarine cable corridor will be cleared of objects the presence of which may prove to be a danger to the cable. These threats are, first and foremost, the removal of the UXOs that have been found, which are removed by the Navy in Estonia's territorial waters and exclusive economic zone. It may also be necessary to lift the boulders, but since the location of the cable is easy to change, it is very likely that the cable will be designed past the boulders.

If necessary, crossings with other infrastructure objects are prepared, which are generally solved by first covering the infrastructure on the seabed with stones, creating a bridge over the existing submarine cable or pipeline. It is also possible to solve crossings with concrete mats and other technical solutions, but this depends on the specific requirements of the owner of the existing infrastructure. For example, during the installation of the Balticconnector gas pipeline, the volume of rock to be installed at the crossings ranged from a few hundred to a few thousand m3, depending on the location, type of crossing and the geology of the seabed.

It may also be necessary to backfill the seabed in places where the seabed surface profile is too uneven for submarine cable installation. The need for this will become clear during the design process.

[8] At the time of the preparation of the EIA program for the proposed submarine cable, no crossings with existing infrastructure objects are known in the area under consideration.

2.5.2.5. Digging a trench in coastal waters

Dredging barges are used to dig trenches in coastal water, which are not capable of self-propelled and are mobilised to the site with the help of tugs. Trenches are built differently at different depths.

In shallow water near the coast, *for sections with a water depth of up to about 10 m, the open or closed method is used.* The exact shallow water limit is determined during the design and installation project preparation. In shallow water, the cable is laid at a depth of at least 1.5 m (up to 3 m). In places where it is not possible to sink the seabed to a predetermined depth, gravel embankments and/or concrete mattresses may be used to protect the submarine cable.

- In the case of the closed method , the excavation cavity of the submarine cable is built by means of directional drilling up to a certain depth and distance from the shore. The use of the closed method depends on the construction technology, geology and other environmental conditions, because in the case of the closed method, a bentonite solution is used throughout the drilling (3-5 times more than the volume of the soil to be drilled). Bentonite transports excess soil out of the borehole into the trench. In addition, bentonite prevents the drilling tunnel from collapsing before the submarine cable or protective pipe is pulled into the drilling tunnel. The solution saturated with soil is sucked out of the trenches and disposed of. There may be environmental restrictions on the use of bentonite.
- Loose method The trench of the submarine cable shall be built in the sea either by means of raised excavators or by means of buckets on the barge (Photograph 1). The excavated soil is placed next to the trench and after the installation of the submarine cable, the soil is placed back in the trench. During the design process, it is determined whether the open method is possible and technically feasible. Depending on the soil and the location of construction, environmental restrictions may apply. In the case of the open method, it may be important to create a sand cushion under and on top of the submarine cable, it depends on the geology and surface properties.

Photograph 1. Digging a trench in shallow water[9]

For both of the methods described above, backfilling of additional soil is not envisaged, as the submarine cables are intended to be laid in existing soil without additional protection. When

[9] https://www.vlmaritime.com/product/a0606-backhoe-dredger/ (accessed 13.02.2025)

submerging in deeper water with pressurised water jets, usually about 2/3 of the soil immediately sinks back into the trench onto the submarine cable.

In water deeper than 25 m, it is technologically impossible to dig a trench, because there are no excavators that would reach to work at such a depth. In this case, the cable is laid under the soil on the seabed with special equipment without digging (see chapter 2.5.2.6).

2.5.2.6. Submarine cable installation

When laying the cable on the seabed deeper than 25 m (technologically it is also possible in the shallower sea), ploughing or waterfall dredging is used in the soil. However, if a furrow is created for the cable with a water jet or plough and some of the soil remains at the edges of the cable trench (about 1/3 of the surface), sediment is removed from the bottom of the water body and it is dredging within the meaning of subsection 176 (1) of the Water Act – the soil is removed and dumped next to the cable trench. How much soil is left out of the cable trench probably depends on the soil and the plough used (some ploughs also have a higher backfill capacity).

In the case of ploughing, jet dredging and digging a cable trench, sediment is thrown into the water and suspended solids are formed. Thus, during the EIA, the spread of suspended solids is also modelled across different soils and technological alternatives for cable laying (see chapter 2.4), as the spread of suspended solids can affect fish stocks and seabed habitats.

As the exact geology of the seabed is unknown, construction geological surveys will be carried out in the design of the submarine cable (see chapter 2.5.2.2), which indicate how much of the submarine cable route can be placed below the surface of the seabed and whether the submarine cable needs additional protection and how much backfilling should be poured into the sea or protected by concrete mats.

The submarine cable will be installed on the seabed with the help of special cable-laying vessels. A section of submarine cable, which can be tens of kilometres long, is wound onto a drum on the ship. The submarine cable is launched from the stern of the ship (see the illustrative diagram in Figure 7). The speed of laying the submarine cable depends on the complexity of the route and weather conditions, but is generally 2-5 km per day. If the submarine cable consists of more than one section, the cable-laying vessel (see e.g. Photograph 2) loading a new section onto the ship's drum between the installation of two sections. This can take place in a nearby port or cable factory.

Depending on the technology, the submarine cable may be installed initially on the seabed and later below the surface of the seabed, or it may also be installed immediately during installation. The exact installation time depends on the availability of vessels and equipment, but immediate installation below seabed is preferred.

Depending on the soil, the submarine cable is laid under the surface of the seabed using the ploughing method (ploughing) or jet treatment. In the case of softer soil layers, such as sand and clay, either ploughing or jet treatment is used, where the cable is laid by pushing the seabed below the surface with a plough, which may also have an additional jet of water that diverts the soil away. In this case, the soil is not moved, but pushed aside, creating a certain amount of local suspended solids.

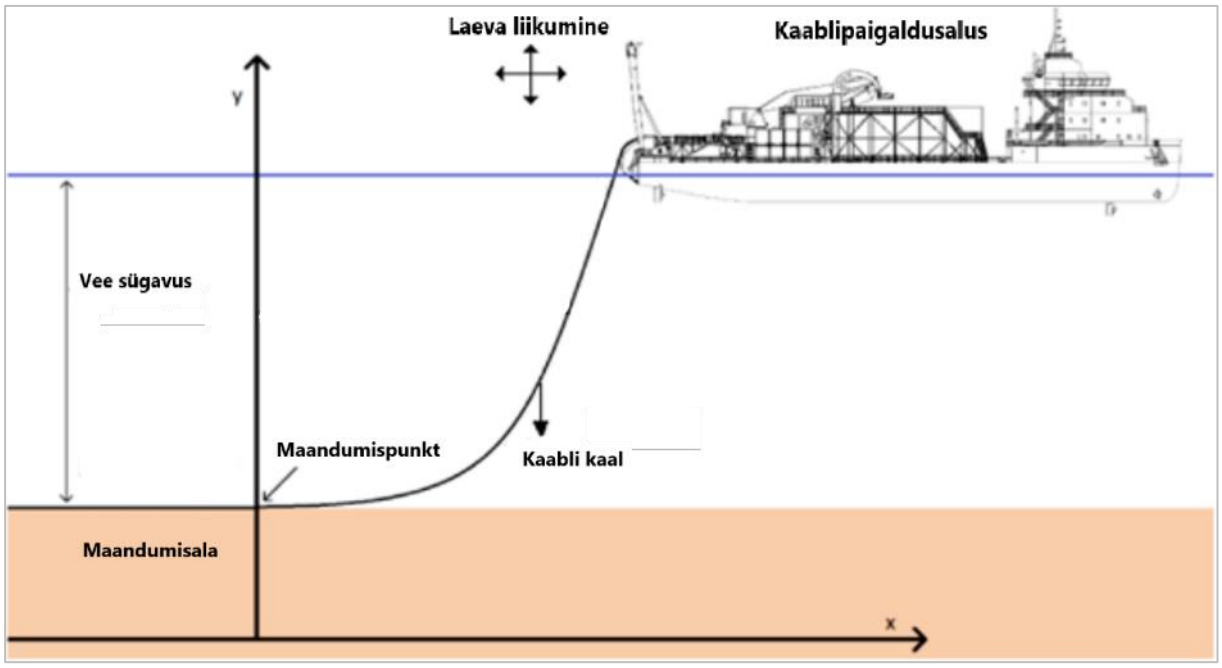


Figure 7. Cable installation scheme

Photograph 2. Cable-laying vessel (example)

In theory, blasting may also be necessary to remove bedrock from the bedrock. If it turns out that in a certain section it is necessary to protect the submarine cable by sinking it into the surface of the seabed or if there is such an unevenness in the seabed that it is inevitable to change, then blasting may be necessary. Attempts are made to avoid blasting by changing the route corridor or using concrete mats or protecting the cable by additionally covering it with gravel.

2.5.2.7. Post-installation work

In the shallow sea area and at the point of landing, the backfilling of the submarine cable route will be carried out with excavated soil. If necessary, the protection of the submarine cable will be supplemented with crushed stone and/or concrete mattresses. At intersections with other communications, intersections are solved with a separate intersection project, which provides for a

minimum distance between the two communications, which is achieved by means of gravel, concrete mats or some other technical solution. Once the work is completed, a post-installation seabed survey will be carried out, on the basis of which as-built drawings will be prepared. On the basis of the as-built drawings, a permit for use is applied for from the Technical Regulatory Authority.

During the designed lifetime of the submarine cable (40-60 years), the planned cable will not undergo seabed intervention. It may be necessary to cross the cable route with a side-view sonar and/or sedimentation profiler to determine the location of the cable and whether there have been any changes in the seabed that could damage the cable.

2.5.2.8. Post-service phase of the submarine cable

If the life of the cable has been exhausted (i.e. the cable no longer works) or the cable has been replaced with a new one, there are two possible solutions for the depreciated cable:

- Abandonment at the bottom of the sea – the most common practice, especially in the deep sea. An abandoned cable is officially removed from the register and left in place because its removal would be costly, technically difficult and sometimes more harmful to the environment than leaving the cable in place;
- Dismantling – possible in shallower water and coastal areas. Here, the cable is removed and the materials (e.g. copper, steel, plastic) are disposed of in accordance with environmental requirements.

The solution depends on the respective studies.

2.5.3. Volume of seabed works

Based on the experience of previous similar works (EstLink1 and EstLink2, Suur and Väike Väin cables), it has been estimated that the dredging of the seabed is less than 10,000 m3. This is especially the case in a shallow section of water if the cable trench is built using the open method up to a depth where ploughing or dredging of a waterfall can be started. Its exact depth depends on the technique used, which will become clear during the construction procurements. In the case of the open method, waterfall dredging or ploughing can also be used to lay the cable right from the shore.

During the preparation of the EIA program, the developer has carried out more precise calculations on the volumes of seabed works compared to those submitted in the application for a superficies license. The EIA is carried out on the basis of the data below. If these are further specified/changed in the course of planning, including as a result of construction geological surveys, the developer shall submit new data to the impact assessor as soon as possible.

The total length of the south-western Saaremaa–Ventspils route is *about* 100 km, of which the Estonian part is about 52 km. In the worst-case scenario, the total length of the open trenches could be up to 1.5 km. In this case, the volume of dredging works required for the construction of the trench is as follows:

- trench depth 2.7 m on top of the cable – total depth 3 m;
- the corner slope of the trench is 1/2;
- the width of the trench is 4 times the depth (provided that it is loose sandy soil) – 12 m;
- cross-sectional area of the trench – 18 m2;
- length of trenches 1500 m;
- the volume of soil in the trench – 27,000 m2;
- 18 m2 x 52,000 m (length) x 3 (cables) = 2,808,000 m3.

The total volume of soil to be removed from the trenches is 2,808,000 m3. In this case, the soil is lifted next to the trench, and after the installation of the cable, there would be no change in the profile of the seabed.

The variables affecting the volume of soil to be removed will be revealed during the surveys and the construction project, and they are:

- number of cables (depending on the technology, there may be fewer cables, it is also possible to create a submarine cable connection with a single cable);
- the composition of the soil on the seabed (the cross-sectional area of the trench decreases according to the type of soil);
- the technology chosen (in the case of ploughing or waterfall dredging, the soil is not moved; the technological solution at the point of disembarkation is not yet known and depends on geology and environmental conditions);
- The number of crossings and the technical solutions of the crossings must be coordinated with the party to be crossed. Based on the example of the Balticconnector gas pipeline, experience shows that the amount of backfill soil needed for crossing the cable is *about* 250 m3 and *about* 2000 m3 in the case of pipe crossing.

Taking into account the mentioned variables and a certain uncertainty, the volume of backfilling has been estimated to be more than 10,000 m3 in the application for a superficies license.

The exact volume of seabed work will be determined during the design process. The above calculation of the volume takes into account the theoretical maximum possible volume, which, according to the project developer, will be several orders of magnitude smaller in reality.

2.5.4. Laying the cable at the point of disembarkation

The location alternatives of the substation planned for connection to the main network (Kotland or Lõmala; see EE-LV IV REP in chapter 3.2) is about 7.8 km as the crow flies. Since in the coastal area of southwestern Saaremaa in the landing area of the submarine cable (see Figure 10) there are a number of potentially affected Natura 2000 network sites (nationally protected as protected areas) and probably also valuable coastal habitats, this must be taken into account in the impact assessment. In order to avoid a significant negative impact on protected areas, coastal habitats and biota, the EIA deals with the impact of the construction of a submarine cable line in the area of influence of the cable disembarkation site on the coast throughout the disembarkation area.

The width of the submarine cable line route corridor in the sea is 500 m (i.e. in the case of four parallel cables, they are located at a distance of 100 m from each other; see chapter 2.5.1). At the point of disembarkation on the coast, the submarine cables are concentrated at one point and the onshore connection to the substation is made by means of one or two underground cables. **The location of the underground cable in the section between the submarine cable's disembarkation point and the prospective substation will be determined by a separate work (in the procedure of the design specifications and will be carried out by the local government). The assessment of this impact is not the task of the EIA of this superficies license.**[10]

Based on the above, the following is a description of the planned activities on the coast.

Laying cables at the point of disembarkation is possible either by the open or closed method.

Trenches for the cable are built differently at different depths. In shallow water, for sections with a water depth of up to about 10 metres, either the open or closed method can be used. The exact shallow water limit is determined during the design and installation project preparation. In the shallow water section (to be specified during the design process), a trench with a depth of up to 3 m (min 1.5 m) will be sunk for the cable. In places where the seabed does not allow the cable to be sunk to a given depth, a gravel embankment and/or concrete mattresses may be used to protect the cable. In the near-coastal sea to a depth of at least 10 m (to be specified during the design process),

[10] Information from Viktoria Muske-Vidjajev, Project Manager of Elering AS, by phone on 19.02.2025

the submergence of the cable to the bottom of the sea is definitely necessary to protect the cable from rough ice or the possible entry of the ship into the shallow sea.

The choice of construction method depends on the geology of the location and how much environmental impact a particular construction method has in a specific location. The closed method cannot be used if the geology is very variable or there are rocks on the route to be drilled. Also, when installing a cable route using the closed method, there may be a need to build large drilling shafts that allow drilling, which in total may have a greater environmental impact than laying the cable using the open method.

Loose method

To install the cable using the open method, a channel is dug on a barge with a bucket, a bucket with floats or a raised bucket where the cable is installed. The cable is installed either by pulling the cable to the ground or by submerging the cable into the duct.

When pulling the cable to the ground, the cable is installed as follows:

- the cable is produced at the cable factory and wound on a drum located on the cable ship, with an estimated total length of up to 20-50 km;
- the cable ship will be as close to the beach as possible;
- a winch has been installed at the disembarkation point, the cable of which reaches the cable ship and the cable end is connected to the cable on the ship;
- With a winch, the cable is pulled to the disembarkation site in a pre-dug cable channel. When building a cable duct, the material to be excavated is placed next to the cable duct and this material is later used to backfill the same duct. Depending on the technical characteristics of the cable, it may be necessary to install a sand cushion at the bottom of the cable duct if the cable duct is not located in sandy soil;
- when the end of the cable has reached the previously designed location where the coupling connection between the ground and the submarine cable is made, the winching is stopped, and the cable ship begins to move along the previously designed cable route, laying the cable at the bottom of the sea;
- The cable laid on the coast is covered with the existing soil next to the cable duct. In the event that the soil that is backfilled is not sand, it may be necessary to install a sand cushion on top of the cable to protect the cable;
- The cable duct with backfilled soil is levelled to the same height (generally +/- 20 cm) as it was before the cable duct was built.

An example of laying a cable using the open method at the point of disembarkation is shown in the following photos (Photograph 3, Photograph 4 and Photograph 5.

Photograph 3. Example of an excavator used to build a trench[11]

Photograph 4. Installation of the second 110 kV submarine cable of the Väike Väin strait on the coast of Muhu using the open method (Skepast & Puhkim OÜ, 21.08.2024)

[11] https://almaahadeng.com/product/elevated-excavator (accessed 13.02.2025)

Photograph 5. The disembarkation point of the second 110 kV submarine cable in the Väike Väin Strait in Muhu (left) and Orissaare (right) after installation (Elering AS, 06.11.2024)

Closed method

The closed method is further divided into microtunneling and horizontal directional drilling (HDD) methods.

The microtunnel is built using a remotely controlled microtunnel drilling machine (MTBM) to form an underground microtunnel with pushed-in concrete pipe links, where the cable is laid.

The construction of the microtunnel includes the following activities:

- Starting shaft mining: is necessary to ensure the correct alignment of the microtunnel. Heavy machinery such as excavators and trucks are used for this operation;
- microtunnel digging: typical microtunnel mining equipment mainly consists of a hydraulic compression device for pushing the pipe, a closed mixture system for removing the excavated tunnel aggregate, a mixture cleaning system for removing the aggregate from the mixture water, a crane for lifting concrete elements, and a power supply for supplying electricity to the aforementioned equipment;
- pre-digging and MTBM removal: digging is necessary to remove the cage head at the exit point.

The technology can be used on different soils in both dry and wet conditions. For the construction of the microtunnel at the disembarkation site, a temporary work area of approximately 10,000 m2 is required. The maximum feasible length of the microtunnel is about 1.5 km. The diameter of the pipe is about 780-2200 mm.[12]

[12] Microtunnel Technology | UAB "Grunterra" | Pipe installation using the closed method | Auger conveyor drilling (*Auger boring*): https://mikrotuneliavimas.lt/ee/tehnoloogia/mikrotunneli-tehnoloogia (accessed 13.02.2025)

Horizontal directional drilling (HDD) is a method of installation in which a prefabricated sleeve pipe into which the cable is installed is pulled through an opening in the ground created by the directional drill.

A jig is placed in the cage on the shore and a guide tube is inserted into the soil. The hydraulic power source of the drill bit is bentonite, which moves along the pilot tube. Bentonite moves the soil away and fills the hole behind the drill bit, preventing it from sinking in. The diameter of the cutting head is larger than that of the guide tube. The latter is surrounded by a drill pipe, and as the drill bit penetrates through the soil, a pilot pipe and a drill pipe are successively added.

During the construction of the disembarkation site, a pilot hole will be drilled into the previously dug trance at the exit from the sea. A crane vessel with support equipment for handling a drill pipe and hole openers (reapers) is placed at sea. The hole opening is passed through several times before the drilled hole is large enough to accommodate a stationary conduit, and then the cable is installed in the conduit.

Drilling can be done by departing within a few meters of the destination, which is several kilometers away. If the departure point is not suitable, the pilot pipe is pulled back to a certain extent and the route is corrected.

The success of the horizontal drilling method depends on the soil conditions, with uniform clay being the most suitable, but drilling through solid bedrock is also entirely possible. Horizontal drilling does not involve activities between the start and end points and is therefore the preferred method for traversing areas with numerous buildings or sensitive environments.

With the closed method, the cable is installed by pulling the cable through a built-in protective pipe, similarly to the open method. It must be taken into account that the pull cable or cable would not damage the protective pipe when pulling, and this may set technical restrictions on the maximum length of the cable to be built using the closed method, as it may be impossible to pull the cable through the protective pipe due to the long weight of the cable.

3. RELATED STRATEGIC PLANNING DOCUMENTS

3.1. Strategies and development plans

EU framework and climate targets

The main causes of climate change are considered to be the increase in the amount of anthropogenic greenhouse gases (GHG) in the atmosphere. The consequences of climate change include an increase in average temperatures, an increase in extreme weather events (storms, droughts, heat waves, floods, etc.), rising sea levels, water scarcity, biodiversity loss, land-use change, habitat loss and resource scarcity. In order to control climate change, it is considered important to reduce the burning of fossil fuels and use environmentally sustainable renewable energy.

In its conclusions of 12 December 2019, the European Council agreed on the objective of achieving a climate-neutral European Union (EU) by 2050, in line with the objectives of the Paris Agreement. This is a net emissions target, which means that anthropogenic GHG emissions and removals are in balance. The EU-wide climate target of reducing greenhouse gas (GHG) emissions by -55% by 2030 compared to 1990 was agreed by the leaders of the European Council in December 2020 and is set out in the EU climate law. According to the Renewable Energy Directive, the EU-wide renewable energy target for 2030 is 32% and may be *further increased as part of the Fit for 55* climate package. The Energy Efficiency Directive sets an EU-wide target of increasing energy efficiency by 32.5% by 2030.

Energy Sector Development Plan until 2030 and Proposal until 2035

The Energy Sector Development Plan until 2030[13] (ENMAK 2030) describes the objectives of Estonia's energy policy until 2030, the vision of the energy sector until 2050, the general and sub-objectives of the energy sector and the measures to achieve them.

According to ENMAK 2030, the task of the energy sector, as a branch of the economy serving other sectors of the economy and the people of Estonia, is to ensure the availability of energy for energy consumers at a favourable price and that takes into account environmental requirements. The electricity sector contributes to the competitiveness of the Estonian economy through guaranteed security of supply, the use of market-based electricity prices for end consumers and environmentally friendly solutions.

In shaping European energy policy, it is important to develop a market-based energy market that is mainly based on local and renewable energy sources in the European Union. According to ENMAK 2030, the share of renewable energy in Estonia's final energy consumption will be 50% in 2030.

The most important task of the electricity network is to deliver electricity from electricity-producing sources to electricity consumers. During the period under consideration in the development plan, the Estonian electricity transmission system will be reoriented from the current east-west flows to north-south flows. This process will be facilitated by the planned new connections with the Baltic States and Central and Eastern Europe and between the Nordic countries and the Baltic States, as a result of which Estonia's connectivity with both Central Europe and the Nordic countries will improve. The strong interconnection of the Baltic power grids will make it possible to disconnect the Baltic electricity system from the current Northwest Russian frequency area and synchronise the Baltic electricity system with the Central European or Nordic synchronous area in the period 2025–2030. Investments in the development of the Estonian electricity transmission system must support the achievement of this goal.

[13] Approved by the Government of the Republic Order No. 285 of 20.10.2017; https://mkm.ee/sites/default/files/documents/2022-03/Energiamajanduse%20arengukava%20aastani%202030.pdf; Retrieved 17.03.2025

In terms of Estonia's domestic consumption load, the 110 kV electricity network generally meets the needs of consumers, but according to ENMAK, it is still necessary to contribute to the reconstruction of ageing lines and the optimisation of the location of substations and load centres. In order to ensure regional balance, it is important to bring the electricity transmission network to all Estonian counties.

The planned activities are in accordance with the objectives of ENMAK. The implementation of the planned activities will increase the security of energy supply in the country.

The Ministry of Economic Affairs and Communications has completed a **proposal for the preparation of the Energy Sector Development Plan until 2035 in 2021**[14]. The purpose of the preparation of the new development plan is to update the trends, objectives and activities of the energy sector contained in the current Energy Sector Development Plan and to describe the development vision, objectives, bottlenecks and policy instruments of the Estonian energy sector in moving towards climate-neutral energy production and consumption and ensuring energy security. According to the schedule, the Government of the Republic will approve the new development plan by the end of 2025.

Estonian Electricity Transmission Network Development Plan 2024-2033

Pursuant to Article 51 of Directive (EU) 2019/944 of the European Parliament and of the Council, on the basis of subsection 66 (8) of the Estonian Electricity Market Act, the transmission network operator is obliged to submit a ten-year network development plan[15] based on existing and projected demand and supply at least every two years.

In order to meet the European Union's green goals, Estonia also needs to change its electricity production and switch to green energy production methods. By 2030, Estonia has set a goal of producing 100% of the annual electricity consumption from renewable sources1. Elering's role in achieving this goal is to ensure a network with sufficient capacity. Elering annually supplements the electricity network investment budget and the long-term 10-year investment plan.

Of the planned investments, Estlink3, the 330 kV connection in Saaremaa, the fourth Estonian-Latvian connection and investments related to the strengthening of the network of larger consumption centres have a greater impact. The additional connection with Latvia will help to transmit energy produced from wind farms in the Baltic Sea and will also help to avoid commercial congestion between Estonia and Latvia after the completion of EstLink 3.

In addition to the memorandum of understanding signed between Estonia and Latvia in 2020 for the development of wind energy4, in the spring of 2021 the transmission system operators of both countries (the operator of the Latvian transmission system is AS Augstsprieguma tīkls, AST for short) entered into an agreement, within the framework of which the best possible solutions for the construction of an additional 700-1000 MW of transmission capacity will be jointly analysed. The project foresees the construction of a fourth 330 kV connection between Estonia and Latvia, to which offshore wind farms can be connected.

Estonia-Latvia transmission line 4 passes through Saaremaa for the following reasons:

- The line through Saaremaa will allow Saaremaa to connect additional production capacities from the production equipment in Saaremaa as well as from the Gulf of Riga and the Baltic Sea.
- If the plan allows the use of overhead lines in Saaremaa, then this is the most affordable option for the construction of a fourth transmission line.
- Saaremaa's security of supply will increase through the creation of an additional connection.

The planned activities are in accordance with the transmission network development plan.

[14] https://mkm.ee/energeetika-ja-maavarad/energiamajandus/energiamajanduse-arengukava; Retrieved 17.03.2025
[15] https://elering.ee/elektriulekandevorgu-arengukava-2024-2033; Retrieved 17.03.2025

Estonian Security of Electricity Supply Report 2024[16]

In October 2023, Elering and the Latvian electricity system operator AST (Augstsprieguma tīkls) signed a memorandum of understanding for the development of an additional cross-border connection, according to which the transmission system operators will jointly prepare and study to find an environmentally sustainable, technically best and economically suitable solution for the creation of a new connection. The fourth Estonian-Latvian interconnection is planned to be built as a hybrid interconnection, which means that in addition to connecting the electricity systems of the two countries, interconnection opportunities will be created for additional renewable energy production capacities. The connection to be established will increase the security of electricity supply from 2033 onwards and create opportunities for receiving a larger amount of renewable energy into the electricity network of Western Estonia, contributing to the achievement of the country's climate neutrality goals for 2050. New transnational interconnections are very important as they ensure sufficient security of supply in the system. The fourth Estonian-Latvian interconnection is a European project of common interest and it is planned to be built from the funds of the European Union and congestion income, so the construction will not result in an increase in the electricity transmission fee for consumers.

The route corridor and the exact technical solution of the Estonian-Latvian transmission line 4 have not yet been in place, as its progress depends on the national designated spatial plan (REP), the environmental impact assessment and design carried out within the framework of it. The national designated spatial plan[17] for the fourth Estonian-Latvian connection was initiated at the end of 2023 and covers the planning area from Paide to the west coast of Saaremaa.

According to the current plan, the completion of the fourth Estonian-Latvian 330 kV alternating current connection (across Saaremaa) would take place in 2033. The prerequisite for this is the fixing of the connection route with the REP by 2026 at the latest.

National Energy and Climate Plan

The purpose of the communication submitted to the European Commission in 2019 is to [18] provide Estonian people, companies and other Member States with information as accurately as possible on the measures with which the Estonian state intends to achieve the energy and climate policy goals agreed upon in the European Union. REKK 2030 has been prepared as a joint work of various ministries of the time (the Ministry of Economic Affairs and Communications, the Ministry of the Environment and the Ministry of Rural Affairs) on the basis of valid development documents, such as the Fundamentals of Estonian Climate Policy until 2050, the Estonian Energy Sector Development Plan until 2030, the Climate Change Adaptation Development Plan until 2030, etc. REKK 2030 brings together the objectives of Estonia's energy and climate policy and the 71 measures developed to achieve them.

The main objectives of REKK 2030 are:

- Reducing Estonia's greenhouse gas emissions by 80% by 2050 (including 70% by 2030): greenhouse gas (GHG) emissions in 1990 were 40.4 million tonnes of CO2eq (excluding the Land Use, *Land* Use *Change and Forestry* (LULUCF) sector), in 2017, Estonia's GHG emissions were 20.9 million tonnes CO2eq (including 14.7 million tonnes CO2eq from the energy industry sector); As a result of the measures, GHG emissions in 2030 are forecast to be 10.7-12.5 million tonnes of CO2eq (excluding LULUCF).
- In the sectors covered by the Effort Sharing Regulation (transport, small energy, agriculture, waste management, forestry, industry), greenhouse gas emissions should be reduced by 13% by 2030 compared to 2005: In 2005, the GHG emissions in the sectors covered by the

[16] https://www.elering.ee/sites/default/files/2024-12/Elering_VKA_2024.pdf; Retrieved 17.03.2025
[17] https://riigiplaneering.ee/riigi-eriplaneeringud/eesti-lati-neljas-elektriuhendus/eesti-lati-neljanda-elektriuhenduse; Retrieved 17.03.2025
[18] https://mkm.ee/energeetika-ja-maavarad/energiamajandus/energia-ja-kliimakava; Retrieved 17.03.2025

Effort Sharing Regulation totalled 6.3 million tonnes of CO2eq, i.e. in 2030, the sector's emissions could be 5.5 million tonnes of CO2eq.

- The share of renewable energy in total final energy consumption must be at least 42% in 2030: in 2030, renewable energy will account for 16 TWh, i.e. 50% of final energy consumption, including renewable electricity 4.3 TWh (2018 = 1.8 TWh), renewable heat 11 TWh (2018 = 9.5 TWh), transport 0.7 TWh (2018 = 0.3 TWh).
- Final energy consumption must remain at the level of 32-33 TWh/year until 2030: the Estonian economy is growing, and therefore keeping consumption at the same level requires important measures. A cumulative energy saving of 14.7 TWh in the period 2020-2030 would allow to keep the final energy consumption at the same level. Energy consumption can be reduced by making primary energy consumption more efficient.
- Reduction in primary energy consumption by up to 14% (compared to the peak of recent years): in the period 2020-2030, Estonia has the capacity to reduce primary energy consumption, including through innovations in the oil shale industry.
- Ensuring energy security by keeping the degree of dependence on imported energy as low as possible: the use of local fuels will be kept as high as possible (including increasing the use of fuel-free energy sources), and the potential for the production and use of biomethane will be exploited.
- Compliance with the minimum criteria for interconnection of electricity networks between countries: increasing capacity in the direction of Latvia and synchronisation of the electricity network with the Central European frequency area in 2025.
- Use of R&D&I in measures to maintain the competitiveness of the economy : the implementation of the R&D program in the energy sector will enable measures to be implemented using R&D achievements.

The planned activities are in accordance with the above objectives.

Development Plan for Adaptation to Climate Change until 2030

The Climate Change Adaptation Development Plan until 2030[19] (KOHAK) and the related implementation plan were adopted by the Government of the Republic on 02.03.2017. The strategic objective of the development plan is to increase the readiness and ability of the Estonian state, regional and local levels to adapt to the impact of climate change.

In order to prepare the development plan, the researchers identified the impact of climate change on Estonia in eight key areas. These areas are:

- planning and land use,
- human health and rescue capacity,
- natural environment,
- bioeconomy,
- infrastructure and buildings,
- energy and energy supply,
- economy
- society, awareness and cooperation.

The planned activities are in line with the objectives of the Estonian Climate Change Adaptation Development Plan until 2030, supporting the fulfilment of the goals set for ensuring energy and energy supply through the development of renewable energy.

[19] https://kliimaministeerium.ee/rohereform-kliima/kliimapoliitika/kliimamuutustega-kohanemine; Retrieved 17.03.2025

The climate change adaptation development plan will be merged with the new environmental sector strategy document that is being prepared, the Environmental Sector Development Plan until 2030 (SPRING).[20] This means that KOHAK as a separate document will be abolished. SPRING will include guidelines for the planning and development of policies and measures in areas that transcend climate policy.

Fundamentals of climate policy until 2050

The fundamentals of climate policy until 2050[21] have been approved by the Riigikogu with a resolution of 05.04.2017 and the renewal of the fundamentals has been initiated in 2023.

The vision and national goal of climate policy are formulated as follows: *By 2050, Estonia will be a competitive climate-neutral country with a knowledge-based society and economy. A high-quality and species-rich living environment and the readiness and ability to adapt to climate change in order to reduce the adverse effects caused by climate change and make the best use of the positive effects are ensured. Estonia's long-term goal is to balance greenhouse gas emissions and removals by 2050 at the latest, i.e. to reduce net greenhouse gas emissions to zero by then.*

From the point of view of climate change mitigation, the development of wind energy, i.e. increasing green energy production capacity, while meeting the EU's renewable energy and climate targets, is positive.

The proposed activities are in line with the Energy and Industry Core Guidance set out in the document: *Promoting the progressive deployment of domestic renewable energy sources in all sectors of final consumption, in view of the increase in the well-being of society and the need to ensure energy security and security of supply. The widespread use of domestic bioenergy and other renewable energy resources in the production of electricity and heat as well as as transport fuels will be promoted.*

Development Plan of Saaremaa Rural Municipality 2025-2030

Saaremaa Rural Municipality Council adopted the municipality's development plan on 26.09.2024[22].

Saaremaa rural municipality is engaged in the development of economic life at the county level. The main development needs and desired conditions for 2035 are described in the Saare County Development Strategy 2022–2035, they include the development of a high-speed internet network, issues related to the construction of offshore wind farms and the future of energy in general, strengthening the electricity network, supporting the maritime industry, resolving mismatches between the labour force and the labour market, promoting sustainable tourism, etc. The role of Saaremaa rural municipality is to set cross-sectoral goals in these issues, contribute to their implementation as much as possible and monitor developments.

At the municipal level, there are problems with the security and stability of electricity supply in several areas. In a way, it is a contradictory experience that the maintenance of buildings usually becomes more expensive after renovation, because electricity-consuming equipment (forced ventilation, air conditioning) is added to them. There is a growing need to create charging infrastructure for electric vehicles and to connect solar parks to the electricity grid.

The connection with the planned activity is that although the local security of supply on the island is primarily related to the situation of the distribution network, the necessary resource to cover the growing electricity consumption comes from the transmission network. The need to connect various renewable energy sources to the electricity grid is also increasing.

[20] https://kliimaministeerium.ee/kevad; Retrieved 17.03.2025
[21] https://kliimaministeerium.ee/kliimapoliitika-pohialused-aastani-2050; Retrieved 18.03.2025
[22] RT: https://www.riigiteataja.ee/akt/405102024072

3.2. Spatial planning documents

National plan "Estonia 2030+"

The national plan "Estonia 2030+" (ÜRP)[23] was adopted by the Government of the Republic on 30 August 2012.

The main development goal of the CAP is to ensure living opportunities in every inhabited place in Estonia. Based on this, Estonia's spatial development vision for 2030 is: *Estonia is a country with a coherent spatial structure, a diverse living environment and well connected to the outside world. The decentralised space connects compact cities, suburbs and traditional villages into a whole, valuing all these ways of living equally equally. The human-friendliness and economic competitiveness of the sparsely populated space are primarily ensured by a close-to-nature environment and a well-connected network of settlements.*

In order to implement the vision, the main direction and goal of the UN is, among other things, the supply of energy infrastructure, which requires that in the development of electricity production capacity, focus on supplying Estonia with energy, placing new energy production units in space rationally and sustainably, expanding the possibilities of Estonia's energy supply, creating external connections with the energy networks of the Baltic Sea region, and avoiding undesirable effects on the climate, achieving a greater share of renewable energy in energy supply, ensuring the implementation of energy-saving measures. and reducing the environmental impact of energy production. A good connection to the electricity grids of neighbouring countries ensures good opportunities for energy purchasing, transit and export. This is important for Estonia from the point of view of security of supply, energy security and ensuring energy at the most affordable price for Estonia.

The planned activities are in accordance with the national plan "Estonia 2030+".

Thematic plan for the Estonian marine area and the adjacent coastal area, as well as the exclusive economic zone of the national plan

The national spatial plan for the Estonian marine area and the adjacent coastal area, as well as the thematic plan for the exclusive economic zone (Estonian maritime spatial plan)[24] was adopted by the Government of the Republic on 12 May 2022.

The purpose of the maritime spatial plan is to agree on the use of the Estonian marine area in the long term in order to promote the blue economy and contribute to the achievement and preservation of the good environmental status of the marine environment. In the future, the adopted maritime spatial plan will be the basis for making various decisions allowing the use of the sea area for both ministries and agencies, and it will also be the basis for planning their activities for entrepreneurs, investors, local governments and coastal communities.

Pursuant to the Planning Act, the purpose of the national maritime spatial plan is to determine the areas suitable for the development of the energy network. In terms of the maritime spatial plan solution, this also means the need to determine the principal locations of cable corridors for connecting the planned wind farms to the onshore transmission network. The determination of the principal locations of the cable corridors was necessary in the plan for assessing the impacts at the strategic level in order to make sure of the feasibility of the plan. For the same purpose, the estimated width of the corridors was set at 200 m. The actual need for space on the seabed, the technical solution and the exact location will become clear at the stage of the permit procedure. The impact assessment has been carried out in the sea area for the principal locations of the cable corridors. Guidelines have been set for land as a prerequisite for the establishment of connections.

[23] https://agri.ee/regionaalareng-planeeringud/ruumiline-planeerimine/uleriigiline-planeering#eesti-2030; Retrieved 18.03.2025
[24] https://agri.ee/regionaalareng-planeeringud/ruumiline-planeerimine/mereala-planeering; Retrieved 18.03.2025

The planned activities are in accordance with the Estonian maritime spatial plan.

Saare County Plan 2030+

The Saare County Plan 2030+[25] was adopted on 27 April 2018.

In order to shape a business and living environment that supports economic development, one of the principles of the implementation of the county plan will be to ensure the security of electricity supply on the islands, and the electricity network will be strengthened, taking into account the potential of wind and solar energy production.

According to the county plan, the main goal of the development of the transmission network is to increase the security of electricity supply in Saaremaa and Hiiumaa. The primary part of increasing the security of electricity supply is the construction of 110 kV cable lines between mainland Estonia and the island of Muhu. The construction of two cables running on alternative routes will ensure the electricity supply of Saaremaa and Hiiumaa even in a situation where one of the cables should fall out of operation for some reason.

The Saare County Plan 2030+ does not define wind energy development areas. According to the explanatory memorandum to the county plan, the transition to the extensive use of renewable energy will take place in Saare County, where the use of biofuels for local energy solutions is preferred. It is likely that there will be a growing interest in locating wind farms on the mainland of Saare County or in the coastal sea, the prerequisite for which is a decision on the respective reconstruction of the transmission networks. Saaremaa has the best potential for solar energy production in Estonia, as the duration of sunshine is longer there than elsewhere.

According to the Saaremaa County Plan 2030+, the development of the electricity network on the islands is based on the assumption that electricity consumption in Saare and Hiiu counties will increase to 73 MW by 2030. Saare County has great potential for the production of renewable energy in the form of solar and wind. As of 2021, only about 20 MW of installed production capacities were installed. This is primarily due to the fact that the production-oriented capacity of the electricity networks has been exhausted and the network needs to be strengthened.

Saaremaa has thousands of hectares of land suitable for the construction of solar parks, which are open and do not belong to valuable agricultural land. The decisive factor in the construction of solar parks with a capacity of more than 50 kW is the existence and distance of power lines and substations with sufficient strength and power.

The planning of power lines on the basis of the Saare County Plan is based on the requirements of the areas of security of supply of electricity for the network community, where possible risks to the security of supply and impacts on the environment have been taken into account. When increasing the capacity of power lines, the growing demand for the production of renewable energy must be taken into account. In addition, the existing power lines should be preferred to the construction of new ones.

The main goal of the construction of new utility networks and the design of line routes is to minimise total costs. In the selection of route routes, it is of decisive importance to minimise the total costs related to the construction and subsequent operation of the lines and possible failures. Preferably, the lines will be installed on public land (e.g. road areas, along cycle and pedestrian tracks, the use of bridges if a suitable route is selected) or in a technological zone along a national road.

Thus, the fourth Estonian-Latvian electricity connection would play an important role in the future renewal of the electricity networks in Saaremaa, as there are favourable conditions in the context of both sunshine and land use. The creation of an additional electricity connection will also ensure greater connection reliability in the future.

The planned activities are in accordance with the Saare County Plan.

[25] https://maakonnaplaneering.ee/maakonna-planeeringud/saaremaa/saare-mp-2030/; Retrieved 18.03.2025

Comprehensive plans in the area of the planned activity

Second draft solution of the comprehensive plan of Saaremaa rural municipality

The process of preparing the comprehensive plan for Saaremaa rural municipality is ongoing. The public display of the second draft solution of the comprehensive plan took place between 5 December 2024 and 31 January 2025. After that, several public consultations were held in March 2025 to present the results of the public display and discuss the proposals received. Based on the results of the public display and discussions, the planning solution will continue to be supplemented and specified. The date of adoption and adoption of the comprehensive plan is unknown.

The objectives of the comprehensive plan prepared by Saaremaa municipality include the development of infrastructure, the improvement of the local living environment and connections, and the direction of spatial development in a sustainable and balanced way. The planned installation of the submarine cable is in line with these objectives.

The explanatory memorandum to the comprehensive plan[26] emphasises the need to strengthen and diversify energy connections in order to ensure energy security, increase security of supply and support the transition to renewable energy. The planned submarine cable will play an important role in regional energy, connecting the Estonian and Latvian power grids and enabling better load distribution, more stable supply and more efficient use of energy throughout the Baltic Sea region. In addition, one of the priorities of the preparation of the comprehensive plan is to increase energy independence and plan alternative supply options. The proposed submarine cable may provide additional infrastructure for connecting renewable energy projects to the electricity grid or strengthen existing power lines, which is in line with the development directions and spatial vision of the comprehensive plan until 2035.

In the second draft solution of the comprehensive plan of Saaremaa rural municipality that is being prepared, several berths are planned in the area of the landing point of the EE-LV 4 submarine cable route corridor, as well as recreation areas and beaches next to them, as well as access to the shore path (Figure 8).

When planning the landing point of the cable corridor, the comprehensive plan prepared by Saaremaa rural municipality must be taken into account.

[26] Saaremaa rural municipality comprehensive plan, draft solution, explanatory memorandum, 2024;

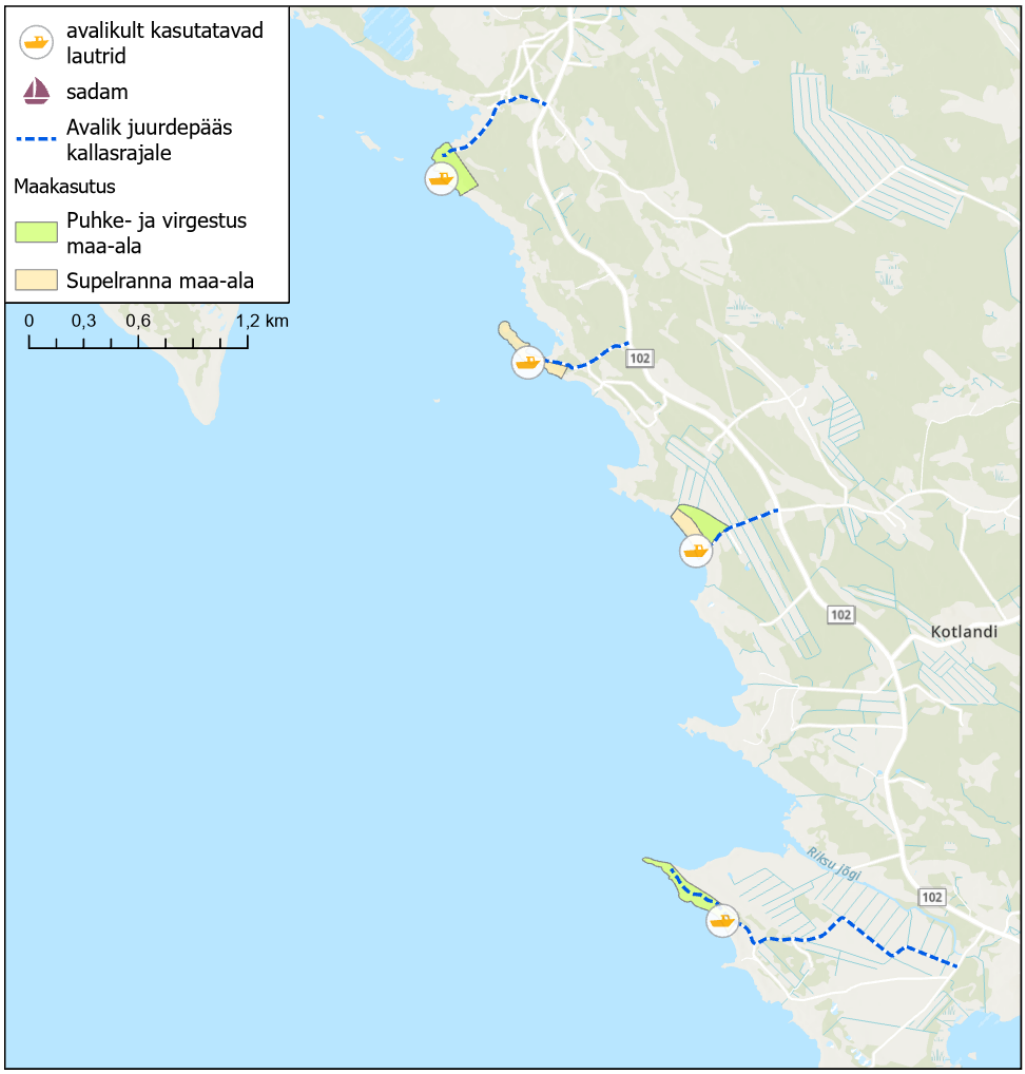


Figure 8. Planned berths, beaches and recreation areas, as well as access to the shore path in the area of the disembarkation of the EE-LV 4 submarine cable route corridor. Source: Saaremaa rural municipality comprehensive plan II draft solution (as of December 2024)

Valid comprehensive plans

In the minutes of the 21.12.2023 meeting of Saaremaa Rural Municipality Council no. 1-1/11, it is noted regarding the review of comprehensive plans that the main reason for amending the current comprehensive plan is the desire to reduce the building prohibition zone of the beach, which shows great pressure to build on the coast of Saaremaa, but all in all, the share of detailed plans amending the comprehensive plan does not predominate. The council decided to keep all the comprehensive plans of the current local governments in force until the adoption of a new comprehensive plan covering the entire territory of the municipality.

The route corridor of the EE-LV 4 submarine cable will start on the territory of the former Lümanda rural municipality. The comprehensive plan of Lümanda rural municipality[27] was adopted on 21.08.2008. According to the comprehensive plan of Lümanda rural municipality, a swimming and landing area and a recreation and recreation area are planned in the area of the planned landing point of the route alternatives (in the area between the Karala-Pilguse limited-conservation area and the Riksu coastal limited-conservation area, by the jaw-dropping of Viigipõllu). The explanatory

[27] General plan of Lümanda rural municipality until 2017, OÜ Hendrikson & Ko, 2007; https://www.saaremaavald.ee/uldplaneering#lumanda; Retrieved 18.03.2025

memorandum to the comprehensive plan of Lümanda rural municipality states that it is recommended to use existing utility lines and/or underground cable lines for the construction of power lines.

National designated spatial plan for the fourth Estonian-Latvian electricity connection (under preparation)

The construction of the fourth electricity connection between Estonia and Latvia via Saaremaa requires the construction of power lines with a voltage level of 330 kV in Saaremaa and their strong connection to the 330 kV electricity transmission network located on the mainland.

The national designated spatial plan (REP) and strategic environmental assessment (SEA) of the fourth Estonian-Latvian electricity connection were initiated on 15.02.2024 by Order No. 39 of the Government of the Republic. The purpose of the REP is to plan the part of the Estonian-Latvian fourth electricity connection located in Estonia, starting from the city of Paide towards the city of Lihula and through the Suur Väin strait to the southwest coast of Saaremaa, from where a cable connection with Latvia is planned.[28] For the location of the planned fourth electricity connection between EE-LV and the possible route alternatives of the Saaremaa transmission network, see Figure 9.

At the time of the preparation of the EIA program, it is known that in the REP solution under preparation, the disembarkation area of the cable to Latvia is planned in the area of the villages of Kotland and Lõmala in southwestern Saaremaa. Possible alternative locations for the substation are planned in Varpe village (Kotland prospective substation) and Vana-Lahetaguse village (Lõmala prospective substation) – see Figure 10.[29] The REP decides whether the connection point of the submarine cable line will be the Kotland or Lõmala substation (the preference of the substations is formed during the REP based on the preference of the route alternatives of the high-voltage overhead line).

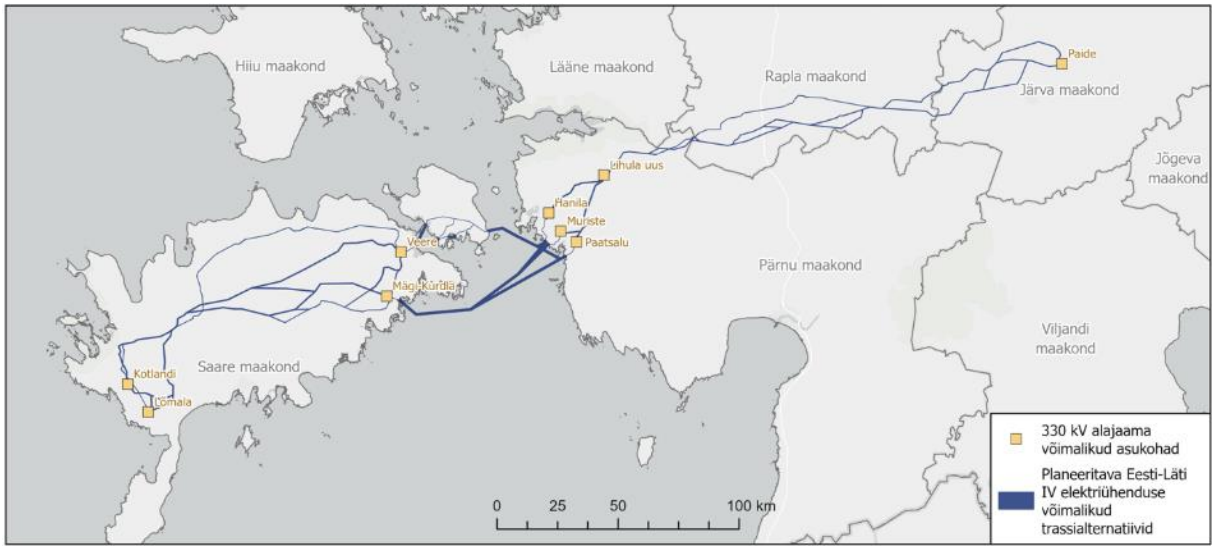


Figure 9. Possible route alternatives for the planned EE-LV fourth electricity connection and the Saaremaa transmission network. Source: EE-LV IV REP (under preparation), as of April 2025

[28] Documents of the REP of the fourth Estonian-Latvian electricity interconnection: https://riigiplaneering.ee/riigi-eriplaneeringud/eesti-lati-neljas-elektriuhendus/dokumendid; accessed 13.02.2025

[29] At the location of the substation, the EE-LV 4 cable line from Latvia to Saaremaa will be converted into an overhead line.

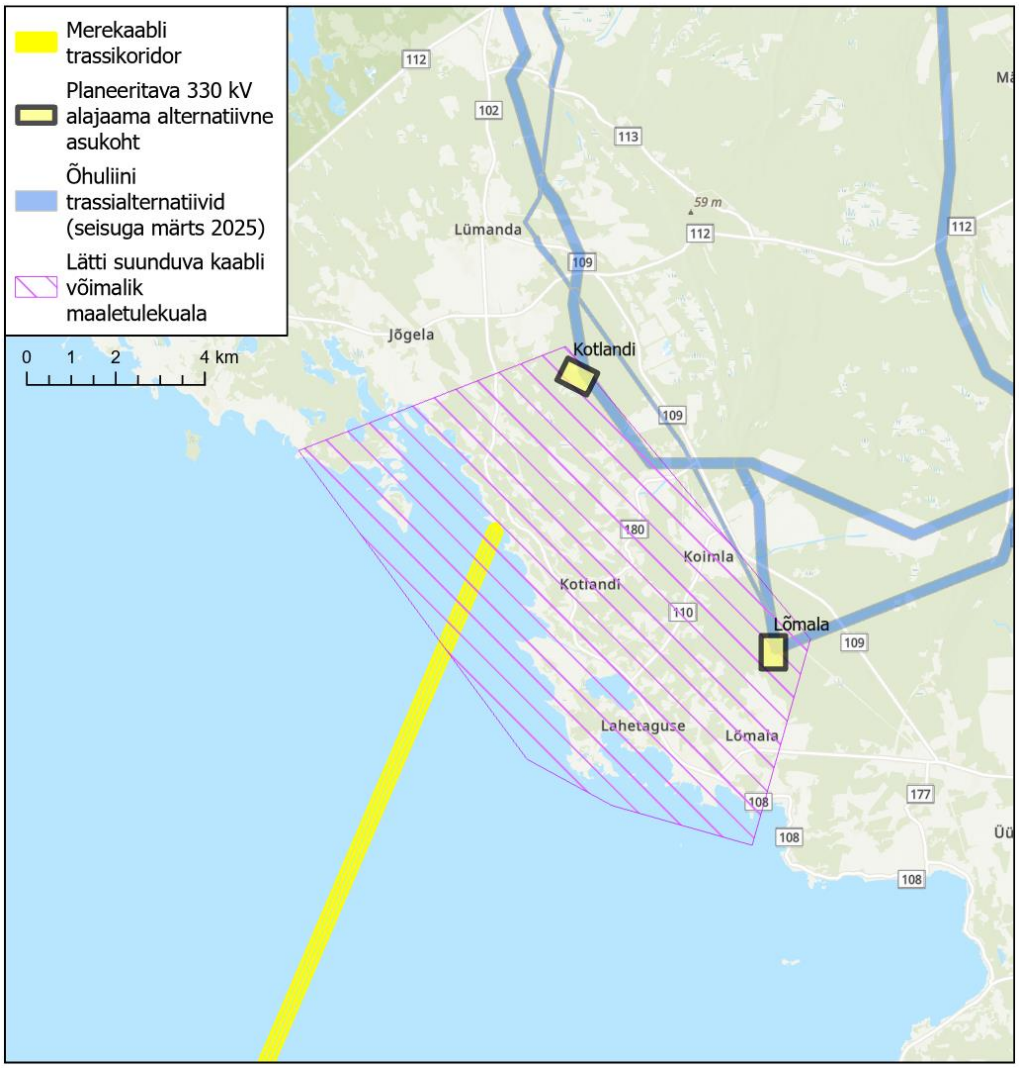


Figure 10. The possible disembarkation area of the cable to Latvia in south-western Saaremaa and the planned alternative substations (Kotlandi, Lõmala) are planned with the EE-LV IV REP. Source: REP map application (as of 29.04.2025)

In the course of assessing the impacts and carrying out studies/expert opinions, it must be taken into account that the landing site of the submarine cable specified in the application for a superficies license is preliminary and the landing site may change depending on which substation location is chosen with the REP. Therefore, until the location of the substation has been decided by the REP, an assessment must be made of the situation where the landing site of the submarine cable may be located throughout the landing, including the possibility that the Lõmala substation is chosen as the preferred connection point during the REP and in such a case the developer probably wants to change the landing point closer to the Lõmala substation. If the REP decides which substation location will be the connection point to the transmission network, the developer must provide the impact assessor (the author of the EIA report) and the performers of the surveys/expert opinions with the relevant input on the location of the submarine cable disembarkation and the coastal route corridor as soon as possible.

4. DESCRIPTION OF THE ENVIRONMENT EXPECTED TO BE AFFECTED AND ANY SIGNIFICANT ENVIRONMENTAL IMPACT

4.1. Settlement and land use in the area of the disembarkation of the submarine cable line

The expected landing point of the submarine cable line in sparsely populated south-western Saaremaa (Figure 11) is the village of Koovi, where 6 people lived according to the 2021 population and housing census. From the landing point *Ca* 500 metres to the east is the nearest neighbouring village, the village of Kotland, which had a population of 58 as of 2021.

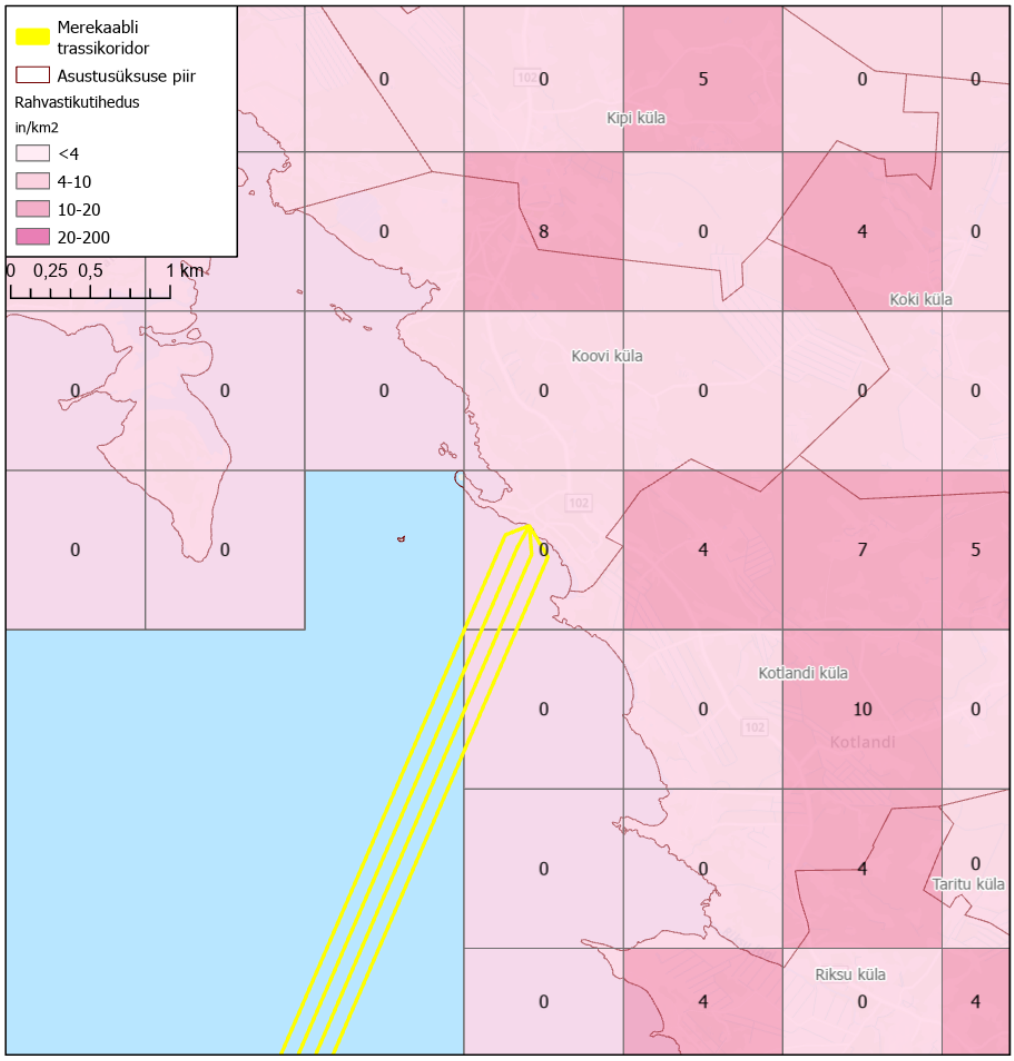


Figure 11. Population density in the area where the submarine cable line came ashore. Source: Statistics Estonia, 2025

In the region, profit-yielding land has been marked as the intended purpose of most cadastral units (Figure 12). The presumed place of disembarkation of the south-western Saaremaa submarine cable line is the Kapa-Koovi cadastral unit (apartment association code 43301:001:0414), which is also profit-yielding land. In its immediate vicinity there are registered immovables of public land and land

without a designated purpose. The nearest residential land remains *Ca* 600 meters away. The nearest residential building remains *Ca* 300 meters away.

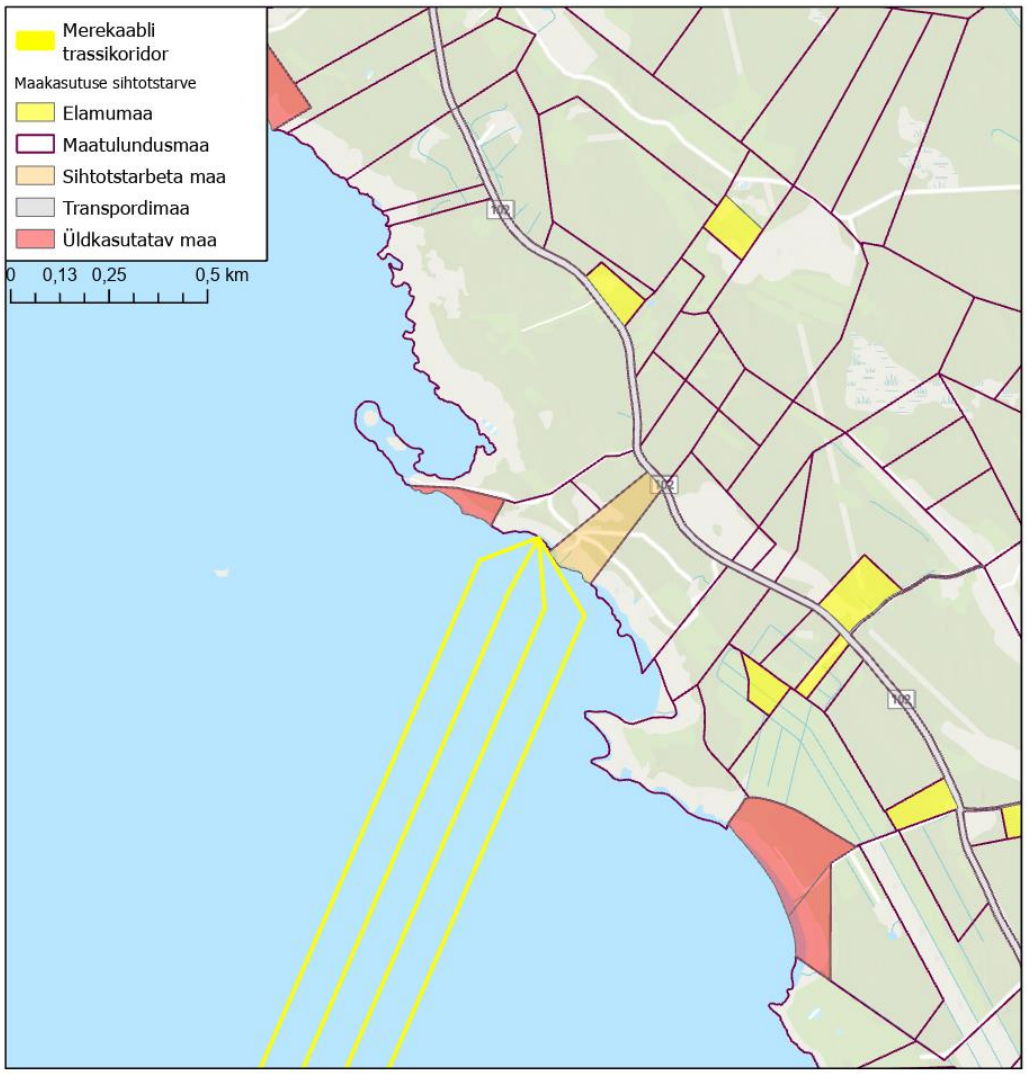


Figure 12. Land use in the area where the submarine cable line comes ashore. Source: Land and Spatial Board, 2025

The landing area is mostly covered with forest. According to the comprehensive plan prepared by Saaremaa rural municipality, there is a green network in the coastal area at the point of disembarkation of the submarine cable line (chapter 4.10) and *Ca* 90 metres to the west is an area of valuable landscape (chap. 4.12).

4.2. Technical infrastructure

4.2.1. Overhead lines, underground and submarine cables

In south-western Saaremaa, the submarine cable line is expected to come ashore *Ca* There is a medium-voltage overhead line at a distance of 750 meters, and *Ca* An underground cable line running 350 metres from the Mustjala–Kihelkonna–Tehumardi secondary road in places (Figure 13). There will be no submarine cables in this area.

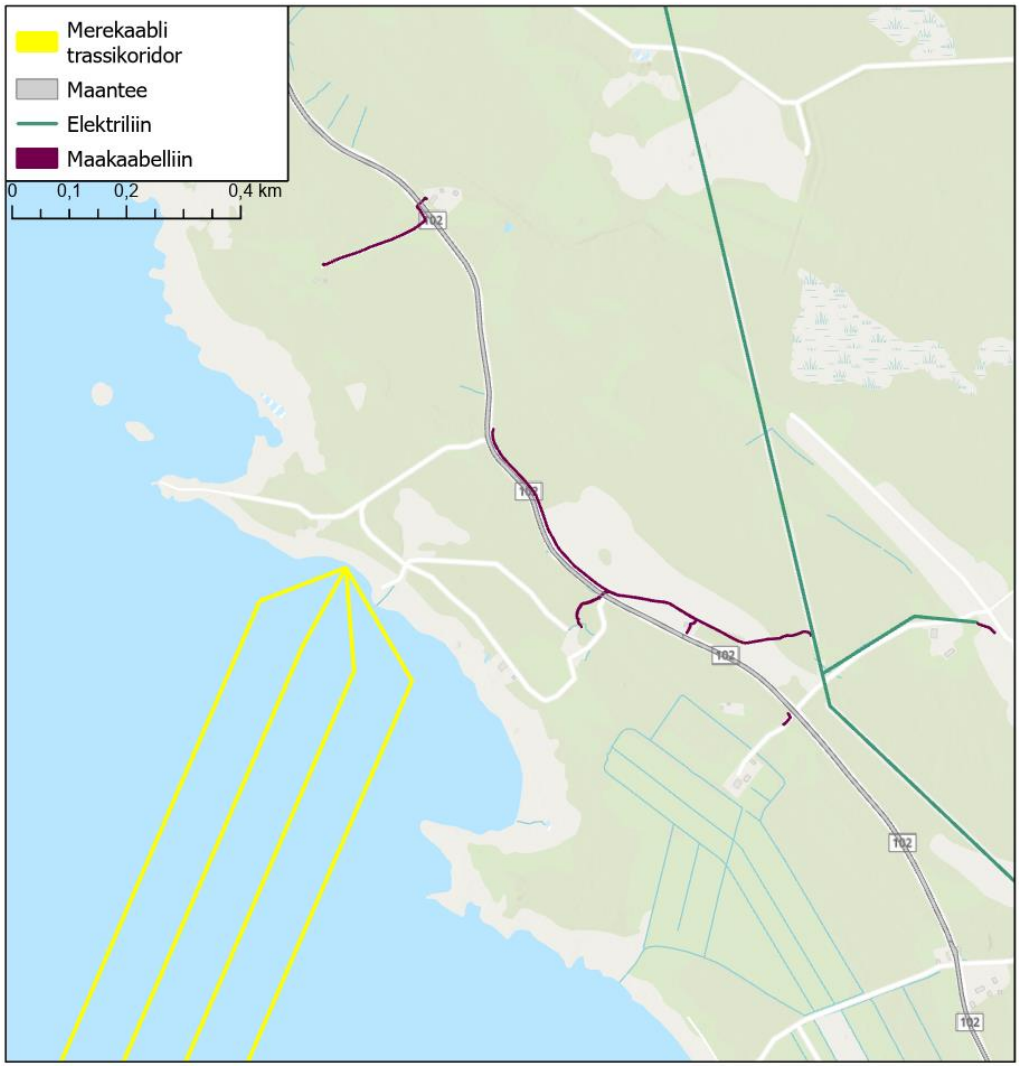


Figure 13. Location of the road and power lines in the area where the submarine cable line comes ashore. Source: Land and Spatial Board, 2025

4.2.2. Roads and shipping lanes

South-West Saaremaa submarine cable line from the area of expected disembarkation *Ca* 350 metres away runs the Mustjala–Kihelkonna–Tehumardi secondary road (Figure 13). In the vicinity of the submarine cable line, there is the Lõu fairway, which is about 11 km from the place of disembarkation (Figure 14).

Figure 14. Location of fairways near the route corridor of the submarine cable line. Source: Transport Administration, 2025

4.3. Characteristics of the marine environment

4.3.1. Seabed geology

Substratum

The bedrock is formed by the Upper Silurian and Middle Devonian deposits as a southwest-northeast belt (Figure 15).

The bedrock of the submarine cable route corridor is formed from north to south by the approximately 20 m thick Paadla Stage (S_{2pd}) (biodetritic limestone, dolostone) belonging to the Upper Silurian Deposit; the approximately 20 m thick Kuressaare Stage (S_{2kr}) (detritus and detritic limestone); the approximately 60 m thick Kaugatuma Stage (S_{2kg}) (various detritus and detritic limestones) and the up to 33 m thick Ohessaare Stage (S_{2oh}) (aleuritic domerite, dolomitic limestones). The outcrops of the deposit cover the seabed in the northern part of the Gulf of Riga as a zone about 30 km wide.[30] At the southernmost end of the submarine cable route corridor, the bedrock is represented in the

[30] Digitisation of thematic maps of the Estonian seabed (EGF 9144). Geological Survey of Estonia, 2009

bedrock by sandstone and dolostone from the Kemer Formation of the Middle Devonian Formation and the sandstone of the Pärnu Formation with aleurolite and clay interlayers, often a thin layer of dolomite ($D_{1\text{-}2km+pr}$) in the [31]bedrock.[32]

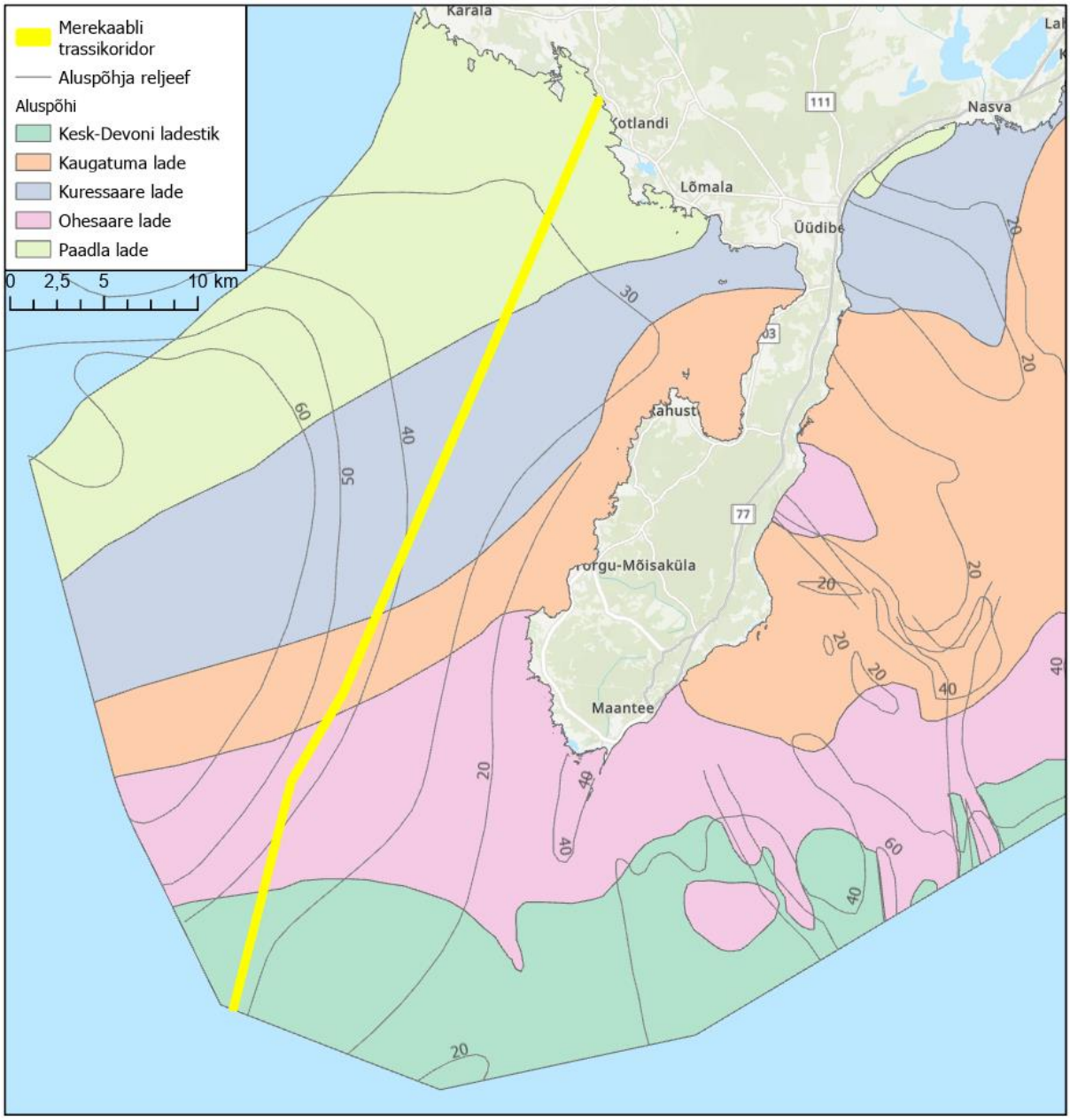


Figure 15. The geology of the bedrock of the marine area and its depth in the area of the planned submarine cable route corridor. Base map: EGF 9144

[31] Digitisation of thematic maps of the Estonian seabed (EGF 9144). Geological Survey of Estonia, 2009

[32] Stratigraphic articulation of the earth's crust on the geological base map and in the description of mineral exploration points. Land Board: https://geoportaal.maaamet.ee/docs/geoloogia/Maapoue_stratigraafiline_liigestus.pdf

Bedrock relief

The bedrock surface in the area of the submarine cable route corridor is 30–50 m below sea level (Figure 15).[33]

Surface Rocks

The surface cover in the area of the proposed submarine cable consists of sediments from the Limnean Sea (mIVlm), sediments from the Littorina Sea and the Limnean Sea (mIVlt+lm), glacial (glacial) sediments (gIIIjr3) from the Upper Pleistocene Formation of the Upper Pleistocene Formation of the Quaternary Deposit, the Upper Pleistocene Formation, the Upper Järva Subformation (gIIIjr3) and glacial lake sediments (lgIIIjr3\b)[34,35,36].

Marine sediments (Littorina Sea and Limnea Sea)

The pelitic and aleuritic liquid sediments (muds) of the unarticulated Littorina and Limnean Seas, greenish to black in colour, were formed in the sea area during the Atlantic, sub-boreal and sub-Atlantic climatic stages. This complex is characterized by a high content of organics, often microlayered texture and very extensive manifestations of H_{2S}. Pelitic sediment with a high water content and a large number (70–80%) with a diameter of less than 0.01 mm (the aleurite component is present as the main impurity) spreads in deeper areas and in some places also in half-overgrown bays.

The sediments of the coastal slope form another sedimentary complex. The formation of this sedimentary complex is still taking place today in the area affected by waves. The first of these, the flow sediments of an already broken wave or the so-called breaking wave, are formed on the slope of the waterline. These are most often coarse and little sorted sediments, mainly represented by sands, but also by gravel and pebbles. They are characterized by oblique layering and the maximum concentration of heavy mineral particles. Other wave flow sediments are formed below the waterline on the underwater slope of the beach. They form underwater coastal ridges in the wave destruction zone and are represented mainly by medium and fine sands with episodic oblique layering, with a small amount of aleurites. The third flow sediments are formed outside the zone of deformation of the initial wave, deeper from the underwater coastal ridges. Most of them are low-layered or non-layered aleurites or aleuritic fine sands.

In the coastal zone, only one genetic type of sediment is formed, which begins at the beginning of wave deformation in shallow water until their final refraction at the water's edge. This zone is called a shallow water heap plain, the depth of which can vary from a few meters to 20 m.

Upper Pleistocene sediments

The Järva Formation of the Pleistocene Formation is represented by the glacial (glacial) sediments of the Upper Järva Subformation with moraine from the last ice age (gIIIjr3) and the coloured clay of glacial lake sediments from the late ice age (lgIIIjr3\b).

Based on seismoacoustic profiles, the moraine of the last glaciation is unevenly distributed. They spread thicker mainly in drumlin-like heaps and old valleys. In the sample taken with a sedimentary tube, the moraine was usually dark grey, less often brownish or reddish-grey in colour, quite rich in pelite, with a small amount of crystalline bedrock, often with pieces of sandstone. On the basis of the material composition, it could belong to the so-called basin moraine, which is characterized by a high content of pelite, a relatively small proportion of a well-rounded coarse fragment, and an equal content of sand and aleurite. The Pleistocene cross-section is completed by Late Ice Age viira clays.[37]

In the area of the submarine cable route corridor in the landing area, the surface cover near the coast is formed by sand and gravel in the western part (mIVlm) and moraine (gIIIjr3) in the eastern

[33] Digitisation of thematic maps of the Estonian seabed (EGF 9144). Geological Survey of Estonia, 2009
[34] Digitisation of thematic maps of the Estonian seabed (EGF 9144). Geological Survey of Estonia, 2009
[35] Reality and data model of the geological base map of Estonia (1:50 000). OJ, 2022
[36] Guidelines for digital geological mapping of Estonia on a scale of 1:50 000. Land Board, 2013
[37] Digitisation of thematic maps of the Estonian seabed (EGF 9144). Geological Survey of Estonia, 2009

part. In the rest of the route corridor, moraine (gIIIjr3) and clay (lgIIIjr3\b) are exposed, and in the southern part also mud (mIVlt+lm).[38]

Coating thickness

The thickness of the surface cover in the area of the route corridor is up to 20 m thick at a distance of 3.5–6 km from the coast, decreases to 10 m in the middle of the route and increases to 20-30 m in the southern part (Figure 16)[39].

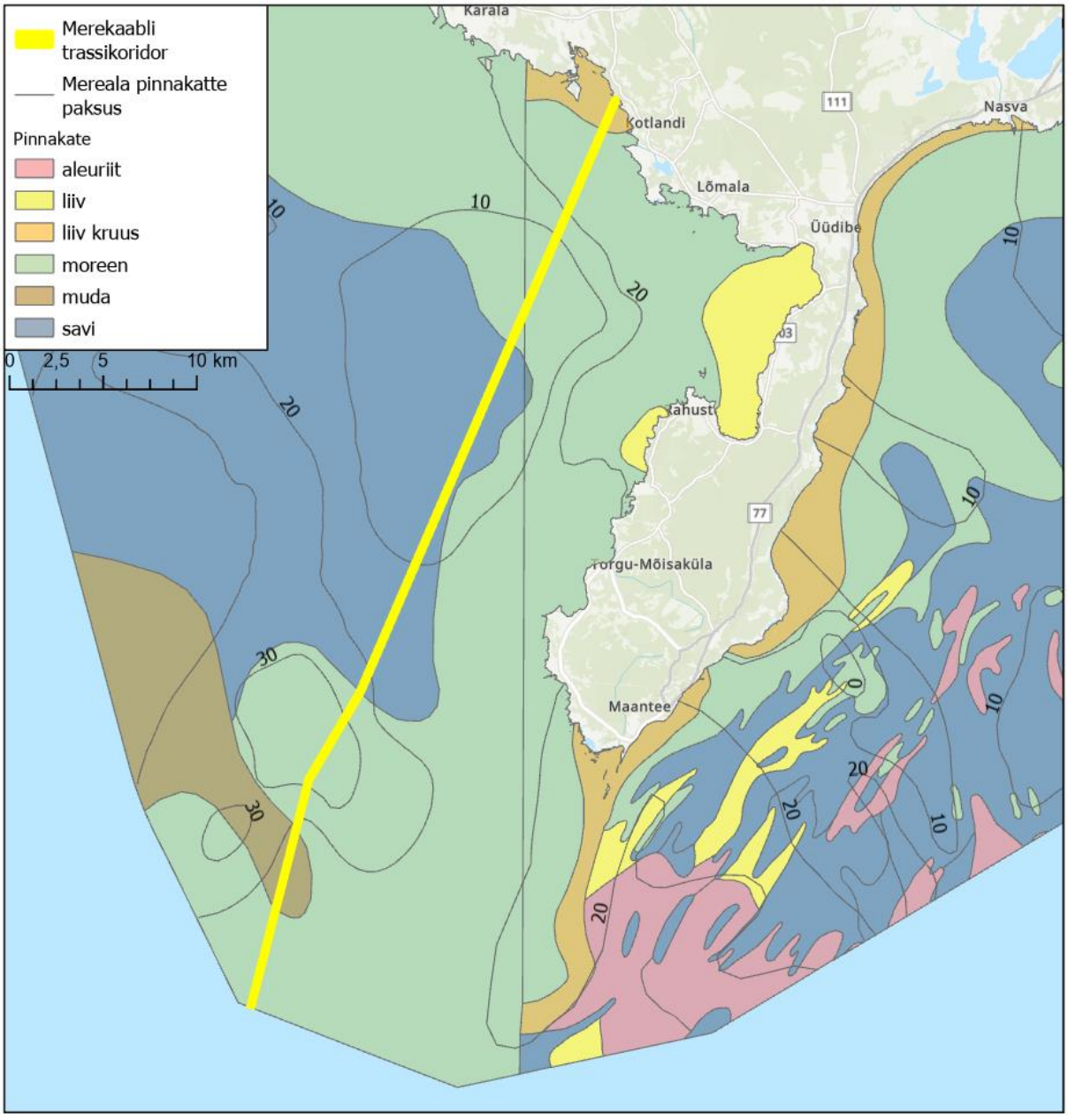


Figure 16. Surface thickness and geological map in the area of the planned submarine cable route corridor. Base map: EGF 9144

Taking all factors into account, in order to obtain a reliable and reliable picture of the sediments of the route corridor, the route corridor must be covered with a network of seismo-acoustic profiles (side view sonar, fan sonar, chirp) and bucket samples must be taken from the bottom sediments at

[38] Digitisation of thematic maps of the Estonian seabed (EGF 9144). Geological Survey of Estonia, 2009
[39] Digitisation of thematic maps of the Estonian seabed (EGF 9144). Geological Survey of Estonia, 2009

a certain distance, which can be comprehensively analysed in the laboratory (granulometry, chemistry) if necessary. The currently available information is not sufficient for decision-making and therefore additional seabed surveys are necessary (see chapter 5.3).

4.3.2. Bathymetry

In the area of the planned submarine cable route corridor, the depth of Kaugatoma Bay is 0–30 m. The water reaches a depth of 10 m *Ca* 3.5–6 km from the coast. In the middle of the route corridor, the depth of the seabed is *Ca* 30 m, in the southern part the depth decreases to 20 m (Figure 17).[40]

4.3.3. Marine water quality and the status of coastal water bodies

The inland sea and territorial sea of the Baltic Sea Estonian marine area belong to the state and are public water bodies (§ 23 of the Water Act). The location of the planned activity is in the sea part of the Baltic Sea (Estonian sea area) (EELIS code VEE3000000).

The submarine cable route corridor is located in the maritime part of the Baltic Sea (western part of the western islands) (VEE3200000), in the sea part of the open Baltic Sea (western part of the western islands) (VEE3200100) and the sea area includes Mõndelaid beach (VEE3260000).[41] These are mesochaline coastal waters of the water type, shallow and open to waves[42].

The place of disembarkation of the planned activity has restrictions on land:

- 200 m wide building prohibition zone,
- 200 m wide limited management zone,
- 20 m wide beach water protection zone,
- 10 m wide shore path of a body of water.

In the area of the planned activity, the West Estonia river basin is located in the water management plan[43] assessed coastal water body the coastal waters of Kihelkonna Bay (water body code EE_11; Figure 17).

The overall status of the coastal waters (EE_11) of Kihelkonna Bay in 2023 was poor. The 2023 ÖSE[44] is a mediocre/poor ÖP, the MIDDLE[45] is bad.

The assessment of the ÖSE is based on the monitoring of 2018. The ungood element of ÖSE is SUSE, FÜKE;[46] An ungood indicator of ÖSE is ZKI2, N-general, P-general, Secchi. A good reason for ÖSE is nutrients and the inadequacy of the evaluation system, i.e. class boundaries need to be revised. The ÖSE exception and the reason for the exception in 2023 is a mediocre SUSE, FÜKE. There is a transfer of nutrients with currents. The deadline has been extended to achieve good condition. The implementation of the measures has been delayed due to technical reasons and disproportionate costs. The more lenient target of the ÖSE has been achieved.

The assessment of KESE is based on the monitoring of 2021. KESE 2023 is bad because the poor indicator of KESE is Hg fish than before[47]. KESE 2023 exception and the reason for the exception is

[40] Digitisation of thematic maps of the Estonian seabed (EGF 9144). Geological Survey of Estonia, 2009
[41] EELIS, as of 10.03.2025
[42] EELIS Newsletter, as of 10.03.2025
[43] West Estonia river basin management plan 2022-2027. Approved on 07.10.2022 by directive no. 357 https://envir.ee/keskkonnakasutus/vesi/veemajanduskavad (accessed on 10.03.2025)
[44] ÖSE - ecological status
[45] KESE - Chemical Condition
[46] SUSE – large invertebrate benthic animals, FÜKE – physico-chemical quality indicators, P-total – total phosphorus, N-total – total nitrogen, Secchi – water transparency by Secchi disk, ZKI2 – zoobenthos community index 2
[47] Hg in fish – mercury and its compounds in fish

bad Hg fish. Hg fish – remote carrying, precipitation from the atmosphere. The deadline has been extended to achieve good condition. The implementation of the measures has been delayed due to technical reasons and disproportionate costs. KES's milder goal has been achieved.

In the plan of measures of the river basin management plan, the [48] administrative measure for achieving the good status of the coastal waters of Kihelkonna Bay (EE_11) is included in the implementation of international agreements or conventions that meet water protection objectives (RL01): Cooperation in the Baltic Sea region to achieve the good status of transboundary water bodies. In addition, measures close to the source are planned for the bodies of terrestrial waters connected to the coastal water body.

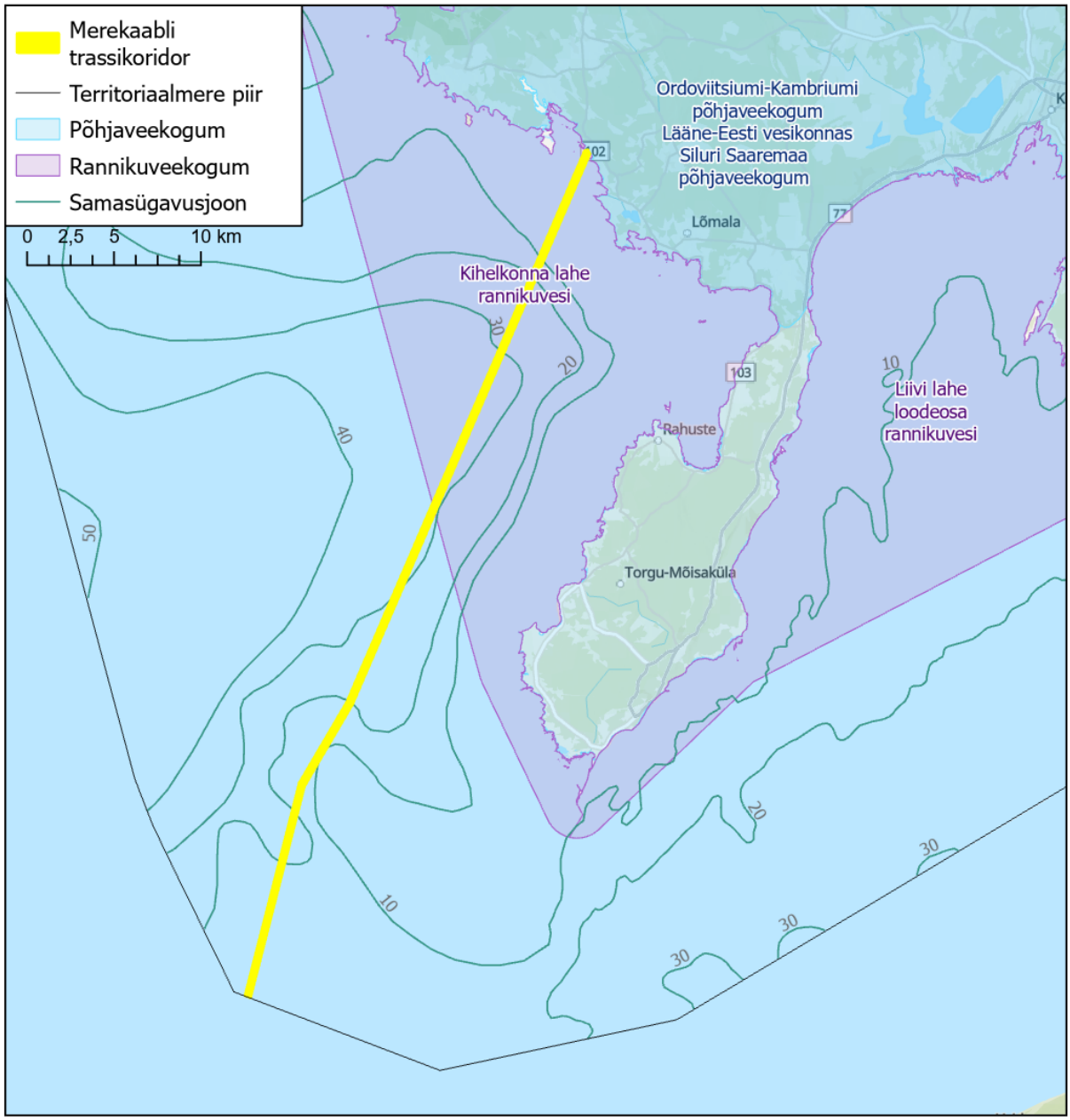


Figure 17. Coastal and groundwater bodies and seabed bathymetry in the area of the proposed activity. Base map: EGF 9144

[48] West Estonia river basin management plan 2022-2027. Approved on 07.10.2022 by directive no. 357. Action plan: https://kliimaministeerium.ee/veemajanduskavad-2022-2027#meetmeprogrammi-doku

4.3.4. Content of heavy metals and petroleum products

5 km west of the area of the planned submarine cable is the planned Saare Wind Energy offshore wind farm. In order to determine the seabed sediment integration, heavy metals and general oil products carried out by the Department of Marine Systems in the course of this EIA,[49] sediment samples were taken from the development area at a depth of 0–25 cm at a depth of 0–25 cm in three places on 3 November 2022, at a distance of 8–28 km from the area of the planned submarine cable. The results of the analyses were compared with the limit values established for hazardous substances in the soil (Regulation No. 26 of the Minister of the Environment of 28.06.2019).

The results of the thread analysis show the fraction of the sediments in the area and provide input for modelling suspended solids and sediment dispersion. The finer the fraction, the more suspended solids are produced. The results of the integration analysis are presented in the table below (Table 3). The movement of water sorts sediments in such a way that fine-grained sediments are located in deeper parts (depressions) and coarser sediments in shallower areas (elevations).

Table 3. Results of the thread analysis (fraction as % of the sample)[50]

Fraction size	A	B	I
>8 mm	0,2	0,1	<0.1
>4 mm	0,5	0,1	0,6
>2 mm	0,3	0,2	2,9
>1 mm	1,5	1,0	1,9
>500 µm	31,3	1,3	0,9
>250 µm	29,3	1,4	3,3
>125 µm	36	28,3	11,5
>63 µm	0,4	52,0	42,2
>20 µm	<0.1	10,0	26,7
>2 µm	0,2	4,2	4,4
<2 µm	0,3	1,4	5,7

Heavy metals, especially cadmium (Cd), lead (Pb) and mercury (Hg), are the most toxic and legally regulated metals in sediments today. In addition, mercury and cadmium are bioaccumulative, which means that toxic effects can also be transmitted to humans through the food chain.

The content of heavy metals and petroleum products in all samples was tens of times below the permitted target (Table 4). Thus, the condition of the sediments can be considered good.[51]

Table 4. Content of heavy metals and petroleum products in sediment samples (mg/kg)[52]

Indicator	A	B	I	Target number[53]
Arsenic (As)	3,7	1,4	1,7	20
Lead (Pb)	3,9	3,5	4,1	50
Cadmium (Cd)	<0.1	<0.10	<0.10	1
Chromium (Cr)	3,7	5,5	6,2	100
Copper (Cu)	2,2	2,7	3,9	100
Nickel (Ni)	2,1	3,1	4,3	50
Elva silver (Hg)	<0.1	<0.10	<0.10	0,5
Zinc (Zn)	16	13	17	200

[49] Environmental impact assessment of the Saare Wind Energy offshore wind farm. 2024
[50] Environmental impact assessment of the Saare Wind Energy offshore wind farm. 2024
[51] Environmental impact assessment of the Saare Wind Energy offshore wind farm. 2024
[52] Environmental impact assessment of the Saare Wind Energy offshore wind farm. 2024
[53] According to Regulation No. 26 of the Minister of the Environment of 28.06.2019

Indicator	A	B	I	Target number[53]
Petroleum products (hydrocarbons C10-C40, sum)	9,1	6,6	8,3	100

The heavy metal concentrations of the Gulf of Riga, the Väinameri Sea and the Suur Väin Strait have previously been determined by the Geological Survey of Estonia in 2020-2022 within the framework of the project of the Environmental Investment Centre, which dealt with the methodological aspects of the assessment of the environmental status of seabed sediments and their possible application. The study analysed seabed sediments at the Väinameri station and Suur Väin stations, the Gulf of Riga and the mouth of the Gulf of Finland, and paid special attention to phosphorus accumulation. By understanding the patterns and sources of phosphorus accumulation in seabed sediments, more effective strategies can be developed to manage and mitigate the impact of pollution on the Baltic Sea ecosystem[54].

As sediment is moved during the installation of submarine cables, hazardous substances may enter the water column from the sediment. Therefore, additional sampling and modelling of the spread of hazardous substances are necessary. Sediment analyses must be carried out in accordance with the requirements set out in the HELCOM dredging and dumping guidelines[55]. The impact will be assessed within the framework of the analysis of the geology of the seabed. The results obtained will serve as an input for assessing changes in water quality and impacts on marine life.

4.3.5. Seawater temperature, salinity and stratification

Seawater temperature, salinity and stratification are the primary factors shaping the ecology of the marine area.

From the point of view of seawater quality, this is a typical area of the eastern part of the open Baltic Sea, where the influence of land inflows is practically non-existent. In the context of the Estonian coastal sea, it is the marine area least affected by human activity (direct inflow of nutrients from land is minimal, there are no local sources of pollution, other uses of the sea are not intensive). The area is hydrodynamically active and the parameters of the water column are influenced by the movement of water (wind direction) and the season (seasonal stratification).

In July 2021, the University of Tartu[56] The results of the water quality measurements and analysis of the water quality measurements and samples collected from the area of the planned Saare Wind Energy offshore wind farm west of the area of the proposed activity are presented in the table below (Table 5).

Table 5. Water quality measurement and sample analysis results[57], between 5 and 32 km west of the proposed area

Station	Itching, m	Temper a tour, °C	Salinity	Chlorophyll, mg/m^3	Ph	Dissolved O_2, mg/l	Oxygen saturation, %	Turbidity FTU
SWE253	1	21,1	7,1	1,1	8,6	8,4	99,2	0,6
SWE253	5	20,0	7,1	2,2	8,6	8,6	99,3	0,7

[54] Geological mapping of the Väinameri Sea. Geological Survey of Estonia, 2024
[55] https://helcom.fi/wp-content/uploads/2024/03/HELCOM-Guidelines-for-Management-of-Dredged-Material-at-Sea.pdf
[56] Study of seabed biota, habitats and water quality of the area of the planned wind farm. University of Tartu Estonian Marine Institute, 2023
[57] Study of seabed biota, habitats and water quality of the area of the planned wind farm. University of Tartu Estonian Marine Institute, 2023

Station	Itching, m	Temperatour, °C	Salinity	Chlorophyll, mg/m³	Ph	Dissolved O_2, mg/l	Oxygen saturation, %	Turbidity FTU
SWE253	10	18,2	7,1	2,6	8,6	8,6	95,8	0,7
SWE253	15	12,2	7,3	1,9	8,2	8,3	81,0	0,3
SWE253	20	7,6	7,4	1,2	8,0	8,7	76,8	0,2
SWE253	27	6,2	7,5	1,0	7,7	7,4	62,7	0,7
SWE003	1	20,2	6,9	1,3	8,1	8,9	102,0	0,6
SWE003	5	18,8	6,9	3,0	8,6	8,9	99,3	0,7
SWE003	10	18,0	7,0	2,6	8,5	8,6	95,0	0,5
SWE003	15	8,8	7,3	1,2	8,1	8,3	74,7	0,2
SWE003	20	7,9	7,4	1,0	7,9	8,1	71,7	0,2

The measurements of the water column parameters carried out during the surveys at two stations in the middle of summer and the results of the measurements show typical readings of parameters for the time of measurements for this sea area. The water column was clearly stratified by temperature between 10 and 15 m (Table 5). The concentrations of both ammonium and phosphorus were significantly higher under the temperature jump layer than in the upper layers of the water column (Table 6). This is probably caused by the decomposition of the algae mass on the seabed after the blue-green algae bloom. The species composition and biomass of phytoplankton and zooplankton are also characteristic of this sea area and the measurement results did not reveal any anomalies.

Table 6. Nutrient content in water[58], between 5 and 32 km west of the proposed area

Station	Depth, m	NOX µg N/l	PO4 µg P/l	SiO4 µg Si/l	Ntot µg N/l	Ptot µg P/l	NH4 µg N/l
SWE003	1	2,5	3,4	217	257	4,6	5,4
SWE003	5	4,6	3,2	292	281	5,7	6,9
SWE003	10	5,3	5,8	320	314	9,1	6,2
SWE003	15	9,3	7,8	334	295	11,4	11,5
SWE003	20	12,9	9,4	340	291	14,5	23,8
SWE253	1	5,0	3,1	329	298	5,3	6,9
SWE253	5	2,9	2,9	298	329	5,1	6,2
SWE253	10	2,4	3,7	257	274	6,9	6,2
SWE253	15	7,8	5,2	491	268	7,0	10,0

[58] Study of seabed biota, habitats and water quality of the area of the planned wind farm. University of Tartu Estonian Marine Institute, 2023

Station	Depth, m	NOX µg N/l	PO4 µg P/l	SiO4 µg Si/l	Ntot µg N/l	Ptot µg P/l	NH4 µg N/l
SWE253	20	11,1	12,2	425	193	11,1	20,8
SWE253	25	26,2	20,8	595	298	19,6	40,0

4.3.6. Ice conditions[59]

Ice is an important parameter in the context of safe shipping, the construction, development and management of offshore facilities (e.g. wind farms) and coastal facilities (e.g. ports). Therefore, information describing the conditions of sea ice is also important for assessing the impact related to the construction of electricity infrastructure.

Ice conditions (e.g. ice cover) in the Baltic Sea and Estonian waters have been analysed in various scientific papers, and mostly observational data from ships and the coast have been used. At the same time, data from numerical models have also been used in the spatial analysis of the ice conditions of the Baltic Sea and in the forecasting of development scenarios. Recently, however, satellite images have become the primary source of ice information in both winter navigation and statistical climate studies. Remote sensing data provides optimal temporal and spatial separation in the monitoring and analysis of ice-related processes.

Based on the ice conditions, the Estonian marine area has been divided into six regions, of which the area of the planned activity is located in Region III on the west coast of Saaremaa and Hiiumaa.

The duration of the ice cover is a significant obstacle to offshore activities – ship traffic and the construction/maintenance/servicing of buildings. Depending on the region, the operator/developer of an offshore facility must take into account a period of up to 4.5 months during severe winters when access to the facility (e.g. maintenance work) is difficult/impossible (by sea) or costly (icebreaking service, air transport).

During severe winters (e.g. 2010/2011), the entire Estonian sea area is covered with ice, and even on the west coast of Hiiumaa and Saaremaa, ice occurs for 30 days.

In addition to the duration of the ice cover, it is important to know the date of the formation of the first ice and the date of the melting/breakup of the last ice. These dates set a timeframe for the developer and the ship/icebreaker operator to take into account potential complications caused by ice (e.g. additional costs for the maintenance and construction of coastal or offshore facilities, additional fuel costs for ship transport, need for icebreaker service). West of Saaremaa and Hiiumaa and in the western part of the Gulf of Finland, the first ice may form only in mid-January.

The probability of ice occurrence indicates the percentage of days when access to an offshore facility is restricted. On average, the probability of ice occurrence on the west coast of Saaremaa and Hiiumaa is 20% of the time (15 December to 1 May), in harsher winters 40-60% (Figure 18).

Drift ice occurs mainly in areas where the duration of the ice cover is shorter on average, including the west coast of Saaremaa. In these areas, the sea is deeper and the coastline does not allow the ice cover to adhere permanently. The movement of drifting ice causes the formation of snags, which makes it difficult for ships to move during the winter period. In harsh winters, scabies can occur in almost the entire Estonian sea area.

When analysing ice conditions, extreme ice conditions must also be taken into account (seeFigure 19). Extreme/harsh winters occur on average 1–2 times in Estonian conditions in 10 years, and then the entire Estonian sea area is covered with ice for at least 30 days.

[59] Preliminary study of the Estonian maritime spatial plan: analysis of ice conditions and compilation of maps. Department of Marine Systems at TUT, 2016

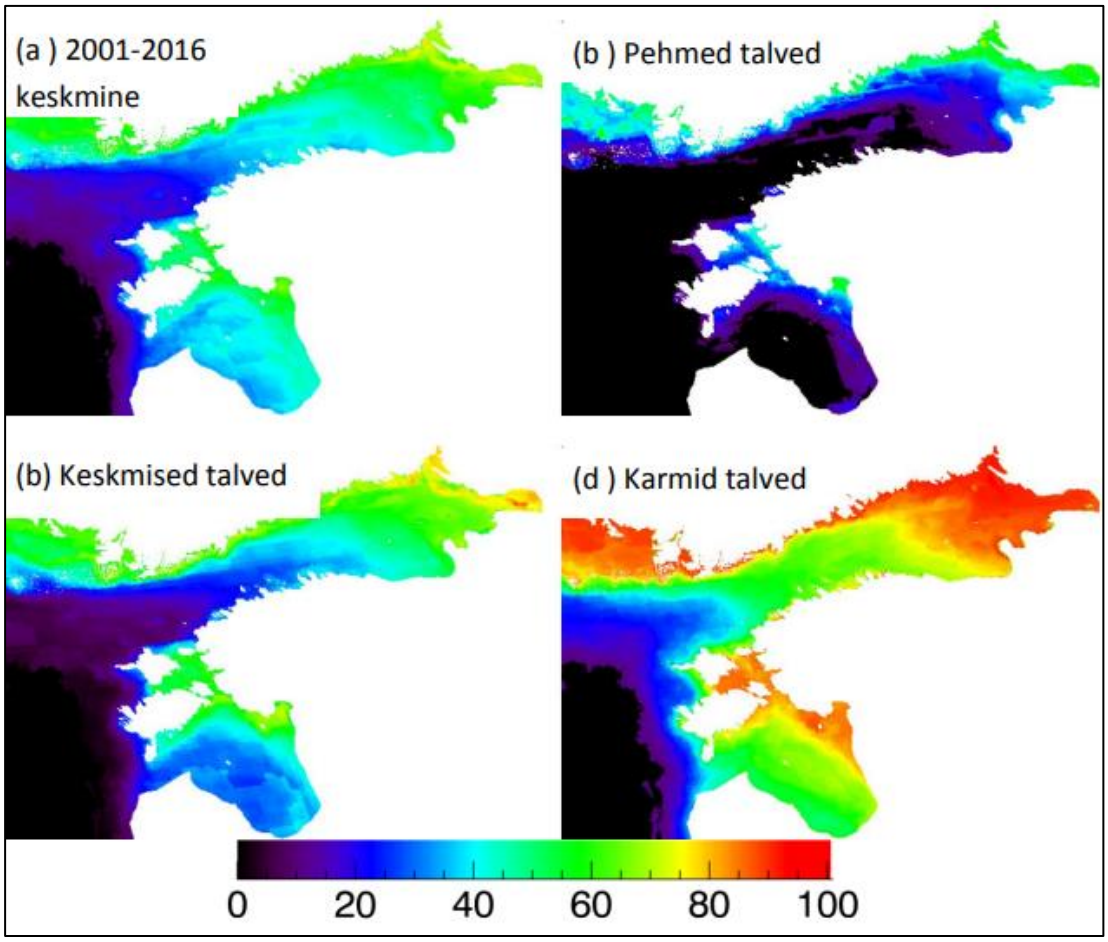


Figure 18. Probability (%) of ice occurrence in the period 2000-2016 at each point in the room. Probability of ice occurrence under different winter scenarios: (b) mild winters, (c) medium winters, and (d) harsh winters[60]

[60] Preliminary study of the Estonian maritime spatial plan: analysis of ice conditions and compilation of maps. Department of Marine Systems at TUT, 2016

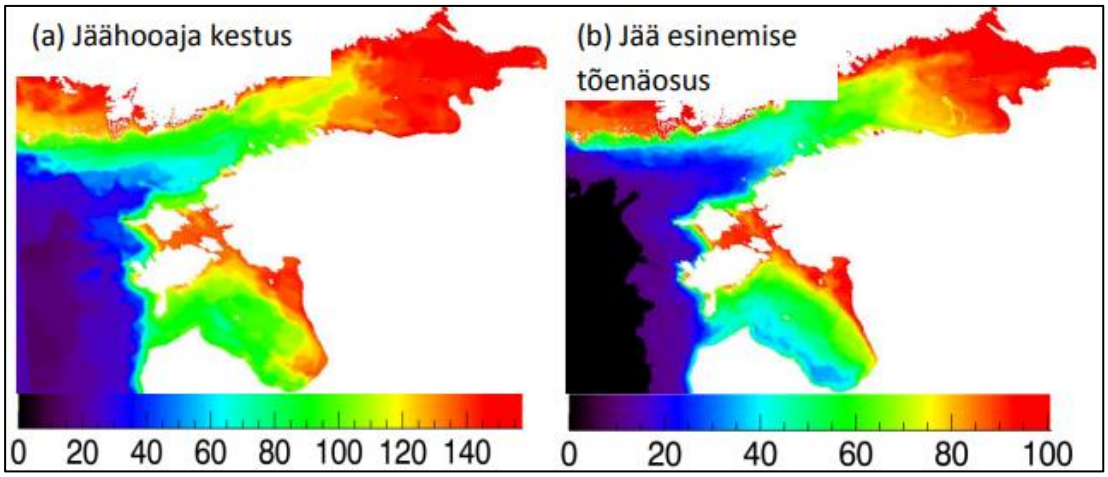


Figure 19. Map of the duration of the ice season of the harsh winter (2010/2011) (a) and the map of the probability of the occurrence of ice (b). The map characterises the ice conditions in the specific harsh winter of 2010/2011[61]

Ice conditions can have an impact on submarine cables in shallow water areas. The impact of ice conditions is assessed within the framework of the impact assessment and, if necessary, conditions are set for the construction of cables.

4.3.7. Seabenthic biota and habitats

Seabed habitat types

The treatment of seabed habitat types has been based on the dataset of habitat types modelled by the Estonian Marine Institute of the University of Tartu and entered into the EELIS database[62].

Seabed habitat types remain in the area of all four submarine cable alternatives. The most common habitat type is *reefs* (1170), which is the dominant habitat type in the area of alternatives. There are much less habitat-type *underwater sand shallows* (1110).

The most common reefs in the area of the route corridor are habitat-type *reefs* (1170). The submarine cable route corridor passes through this habitat type on a total section of approximately 21 km. Reefs can be found along the entire route corridor – in the southern, central and northern parts.

Reefs (1170) are a habitat type where a rocky seabed is inhabited by a characteristic species of a habitat type. The characteristic species of the habitat type are species that attach to the seabed and need a hard bottom substrate as a growing surface. The total proportion of different hard substrate types in the bottom substrate of the type is more than 50%. Hard substrate types include small rocks (6.4 to 20 cm), large rocks (>20 cm), and rock. The depth of the sea is not limited in the definition of a habitat type. In terms of biota, the criterion is the total coverage of one or all characteristic species ≥10 %.[63]

[61] Preliminary study of the Estonian maritime spatial plan: analysis of ice conditions and compilation of maps. Department of Marine Systems at TUT, 2016
[62] Modelling of seabed habitats and species in the Estonian territorial sea. University of Tartu Estonian Marine Institute, 2014
[63] Methodology for monitoring the conservation status of marine habitat types of the Habitats Directive. Estonian Marine Institute, University of Tartu, 2016

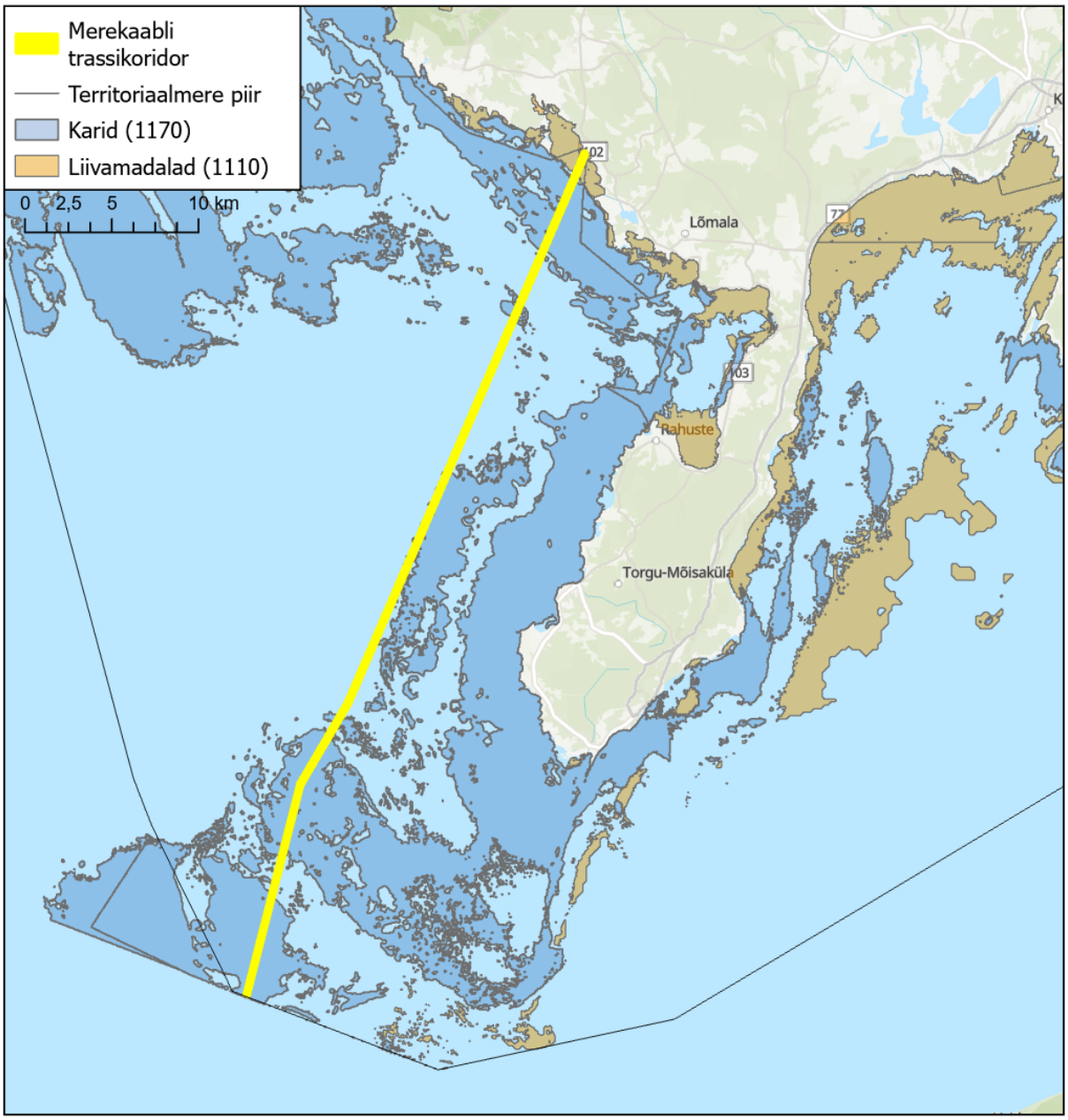


Figure 20. Distribution of seabed habitat types of the Habitats Directive in the area of the planned route corridor. Source: EELIS database, 2025

The seabed habitat type *underwater sand shoals* (1110) occurs in the area of the submarine cable route corridor, but it is distributed to a significantly lesser extent than the reef habitat type. In the area of the route corridor, sand shallows spread over a 1.6 km section in its northern part in the area of the landing site.

Underwater sand shoals (1110) are a habitat type where a permanently submerged seabed with a dominance of sand in the photonic zone is inhabited by a characteristic species of the habitat type. The characteristic species of the habitat type are species that attach to the seabed or have low mobility and need a sandy bottom substrate as a growing surface: pine algae, taller plants and mussels living in sediment. The total proportion of different sand fractions (fine sand, medium sand,

coarse sand) in the bottom substrate of the habitat type is over 50%. The minimum depth of the habitat type is not limited, the maximum depth is the maximum depth of the photonic zone.[64]

4.3.8. Marine mammals (seals)

An overview of the use of the planned electricity connection area by marine mammals is provided by the report of the seal survey of the Saare Wind Energy wind farm[65] and the seal study prepared within the framework of the EIA of the Gulf of Riga offshore wind farm[66], on which the subsequent treatment of marine mammals is largely based.

According to the data of the 2023 national monitoring, the population of grey seals in Estonia has increased from at least 1148 individuals in 2000 to 6324 individuals in 2023 during the period of the international, harmonised methodological census. Comparing the averages of the last five years, it can be seen that Estonia is inhabited by about 13% of the grey seals in the Baltic Sea during the spring moulting period, i.e. a minority. The main core area of grey seal numbers is to the north of us, in the area of the southwest coast of Finland, the Åland Islands and the Stockholm archipelago.

Estonian The distribution of grey seals can be broadly divided into four sub-regions: the Gulf of Finland, Northern Hiiumaa, the west coast of the islands and the Gulf of Riga (Figure 21). The notional division of these sub-areas is based on the location of seal pens and the geography of the coastal sea – on the basis of the general assumption, these areas are spatially separated from each other to an extent, which allows us to assume a low movement of animals between these areas during passive periods and a movement of sedentary animals in these areas mainly within the boundaries of that area during active periods, although this is not always the case. Western Saaremaa is connected to *Ca* 1000 grey seals, which makes up a fifth of Estonia's and less than 4% of the countable population of the Baltic Sea.

In the area of the planned activity, the only important resting place for grey seals is the Vesitükimaa islets at the tip of the Sõrve peninsula. The Vesitükimaa lesila is not established by seals all year round, but hundreds of animals stay there during the breeding season and the moulting period. The deterioration of ice conditions has led to an increase in the number of animals breeding in the shed. Up to *about* 1000 seal pups have been counted in Lesila. The Vesitükimaa lounge is located about 14 km from the planned submarine cable route corridor.

[64] Methodology for monitoring the conservation status of marine habitat types of the Habitats Directive. Estonian Marine Institute, University of Tartu, 2016.
[65] Saare Wind Energy wind farm seal survey report. NGO Pro Mare, 2023
[66] Seal survey of the Gulf of Riga wind farm. NGO Pro Mare, 2023

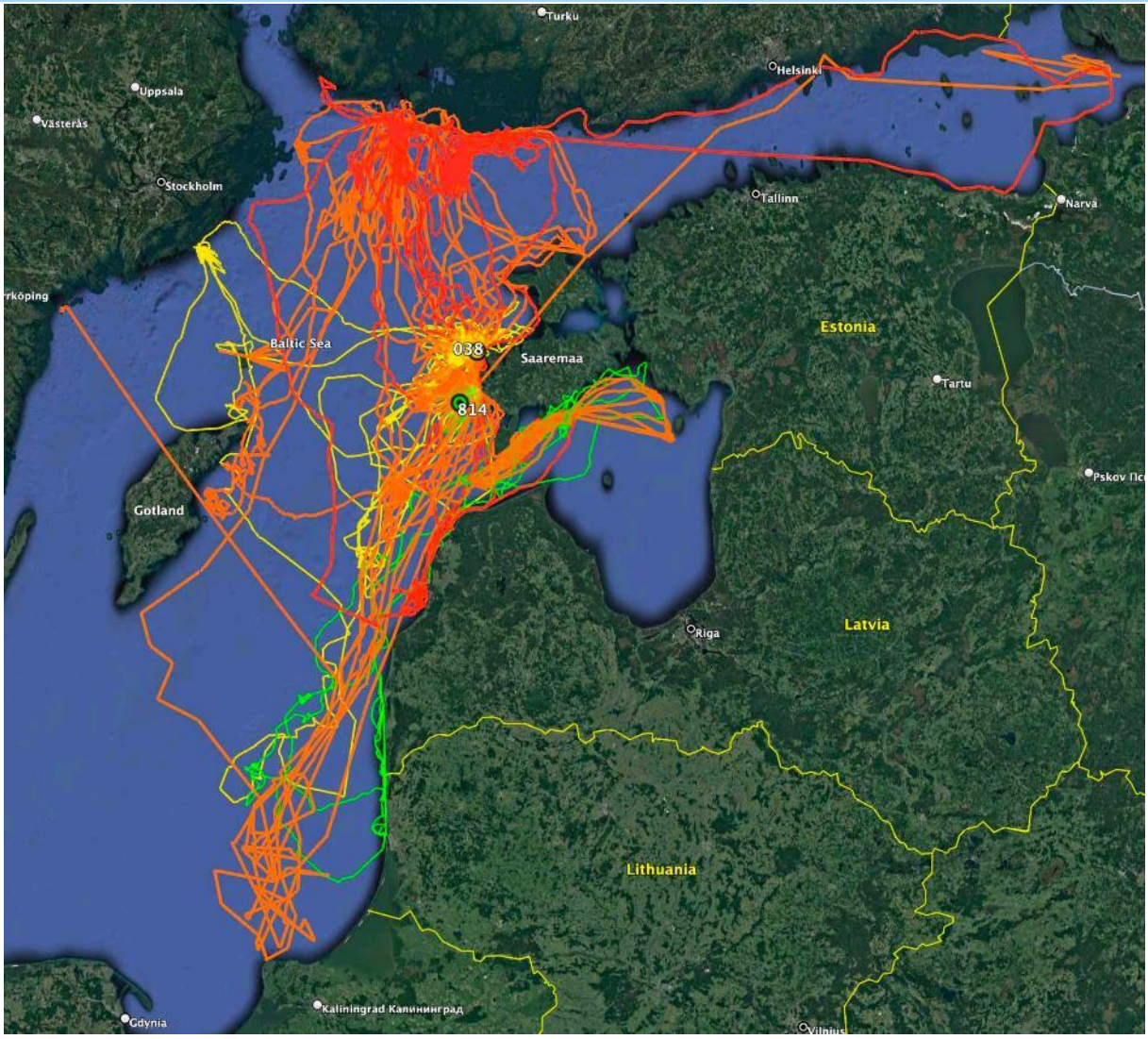


Figure 21. Spatial distribution of grey seal telemetry data used in the seal survey report of the Saare Wind Energy wind farm as movement trajectories (excerpt from the study report)

The modern population of the ringed seal is dangerously low in three of the four subpopulations. The herd in the Gulf of North is likely to exceed the critical limit of 10,000 individuals, while about 200 ringed seals can be found in the Gulf of Finland, about 150 in the Sea of Åland and less than 1000 on the west coast of Estonia. The results of the monitoring indicate a continuous decline in the size of the population, which makes the status of the ringed seal and its habitats highly noteworthy.

The main resting areas of the ringed seals on the west coast of Estonia are located in the Väinameri Sea, but a very large majority of the animals also use the Gulf of Riga for feeding and giving birth. There are not many suitable recreation areas for ringed seals in the Gulf of Riga – they can only be found constantly in the shallows of Kihnu islets and at the mouth of the Suur Väin strait in the Viirelaid and Pühadekare area. The Kihnu region has historically been rich in ringed seals, but recent censuses show that they are rather few in number, only 20–40 individuals. The reason for the decrease in numbers is unknown.

Ringed seals can use the area of the submarine cable route corridor as a habitat, but their numbers in the area are low and the importance of marine areas for the species is low. There are no resting places or areas for breeding on ice during the moulting of ringed seals in the area. The closest permanently inhabited habitat of ringed seals is the Väinameri Sea and the Gulf of Riga.

4.3.9. Fish

The Baltic Sea has a low and variable salinity, which is why the distribution of both marine and freshwater fish is limited, reducing the diversity of species compared to normal salinity in the seas. At the same time, fish populations in the Baltic Sea are numerous.

In the sea of the western and southwestern parts of Saaremaa, the "Fish Population Survey of the Offshore Wind Farm Area Planned by Saare Wind Energy" has previously been carried out under the leadership of the University of Tartu Maritime Academy. The study noted that 15 individuals of different fish species were caught in the study area. The data collected in the course of the survey provide an overview of the fish species in the area and their abundance from spring to late autumn, and enable to assess the importance of the area as a spawning, feeding and habitat for fish.

The fish fauna of the area consisted mainly of marine and estuary species typical of the Baltic Sea, which are characteristic of the open sea. The fish fauna included a total of 11 different families - *Cottidae* with 3 species; *Clupeidae* and *Gobiidae* with 2 species each; *Zoarcidae, Scophthalmidae,* Cyclopteridae, Petromyzontidae, Osmeridae, Scophthalmidae, *Cyclopteridae,* Petromyzontidae, *Osmeridae, Sand* Eels *(Ammodytidae)* and cod *(Gadidae)* each with a single species. The most abundant species in the fish fauna of the area was flounder (*Platichthys flesus*), which made up a significant part of the fish caught. Baltic herring (*Clupea harengus membras*), nolgus (*Myoxocephalus scorpius*) and cod (*Gadus morhua*) were also abundant. Spratus *sprattus*, round goby (*Neogobius melanostomus*) and motherfish (*Zoarces viviparus*) were more common. Less numerous but still common species were the sea buffalo (*Triglopsis quadricornis*), turbot (*Scophthalmus maximus*), sea smelt (*Osmerus eperlanus*) and large sand eel (*Hyperoplus lanceolatus*). Rare species of which only a few specimens were caught were the sea bull (*Taurulus bubalis*), the river *lamprey (Lampetra fluviatilis*), the sea sparrow (*Pholis gunnellus*) and the black goby (*Gobius niger*).[67]

Spawning areas

In recent decades, the proportion of herring spawning in autumn has increased in the spawning grounds of the southern coast of Saaremaa. The most important for fish are shallow coastal waters and shallows with depths of up to 15 metres. The shallower coastal waters (up to 5 m) are home to the spawning grounds of most fish species and the nursery areas of juveniles, and they are also crossed by freshwater spawning species. Deeper sea areas (over 5 m) can be the spawning grounds of herring (preferred spawning depth up to 15 m) and Baltic flounder (up to 30 m). The deepest areas of the Estonian exclusive economic zone are not suitable spawning grounds for fish, because there are no necessary conditions – a suitable salinity and oxygen regime – for the spawning of cod, European flounder and sprat.[68]

The impact on the fish population is assessed in the course of the expert assessment of the fish population, based on the results of the survey. The results are reflected in the EIA report.

4.3.10. Dumping areas and underwater obstacles

Dumping areas

In the EE-LV IV REP, the presence of a dumping area is an exclusion criterion from the point of view of the installation of a submarine cable, because damage to the cable by the material to be dumped in the dumping area cannot be ruled out. Although the area of the EE-LV submarine cable superficies license is outside the REP area, this principle should be the same everywhere.

No dumping areas have been registered in the area of the submarine cable route corridor.

There is no more detailed information about the need for dumping regarding the planned activities, as the exact geology of the seabed and the need for dredging are unknown. In the course of the

[67] Study of the fish population of the planned offshore wind farm area of Saare Wind Energy. UT EMI, 2022
[68] Estonian Fisheries Industry 2022-2023. Fisheries Information Centre, 2024

design process, construction geological surveys will be carried out, the purpose of which is to determine how deep the submarine cable can be laid, whether the cable needs additional protection and how much backfill should be stored in the sea or whether it is necessary to protect the cable with concrete mats.

Underwater obstacles and rocks

According to the XGIS nautical chart of the Land and Space Board[69] and the Nuseare[70] applications, there are several underwater obstacles and rocks in the area of the submarine cable route corridor, which do not preclude the installation of the submarine cable, but may change its location and cost. Underwater obstacles and their nature are determined in the course of seabed construction geological surveys.

Underwater cultural heritage is discussed in chapter 4.3.11.

4.3.11. Underwater cultural heritage

An underwater monument is a monument located in inland waters, the territorial sea, a transboundary water body or an exclusive economic zone, together with its archaeological and natural surroundings. An underwater monument that has no owner or the owner of which cannot be identified belongs to the state. The manager of the underwater monument belonging to the state is the National Heritage Board.[71]

In the area of the planned submarine cable route corridor, the occurrence of two shipwrecks (Nimetu-603 and Nimetu-606) is known (Figure 22). The location of the wreck Nimetu-603 is at a depth of 16.45 m at the bottom of the sea[72], the wreck is located from the cable route corridor *Ca* 1 km and from the mainland (Viirenina) *Ca* 5 km away. The location of the wreck Nimetu-606 is at a depth of 26.42 m at the bottom of the sea[73], the wreck is located from the cable corridor *Ca* 2.3 km and from the mainland (from Kaunispe harbour) *Ca* 12 km away.

In order to identify objects of cultural value located at the bottom of the sea in the submarine cable route corridor, a separate survey must be carried out (see chapter 5.3), to find out the existence of wrecks in the area and their nature. The results of the study must be taken into account in the design and impact assessment of the submarine cable. Cooperation with the National Heritage Board is necessary, in the course of which the locations of the new structures will be selected in such a way as to ensure the preservation of shipwrecks, public access, and the safe construction of the planned structures and their subsequent maintenance. Based on the nature of the discovered objects, further action is decided.

In the case of an archaeological and protected antiquity, preference should be given to preserving the archaeological relic and its context in an unchanged form, i.e. the shipwreck will be preserved *in situ*. The existence and preservation of an archaeological monument also means restrictions on activities in the vicinity of the monument, including diving on the wreck, arising from the Heritage Conservation Act. Alternatively, in order to preserve underwater cultural assets, it may be appropriate to preserve them in an underwater environment in a different location than at present. To make this possible, the Estonian maritime spatial plan has designated two shipwreck storage areas in the Gulf of Riga. The relocation of shipwrecks from an existing location to a conservation area may take place if development activities arising from the plan or legislation or natural processes endanger the preservation of cultural heritage in its current location.

[69] https://xgis.maaamet.ee/xgis2/page/app/merekaart; Retrieved 25.03.2025
[70] https://gis.transpordiamet.ee/nutimeri/; Retrieved 25.03.2025
[71] § 12 of the Heritage Conservation Act. RT: https://www.riigiteataja.ee/akt/111032023045?leiaKehtiv
[72] Hydrographic Information System of the Transport Administration (HIS): https://his.vta.ee:8443/HIS/Avalik?REQUEST=Main&WIDTH=1920&HEIGHT=919; accessed 20.03.2025
[73] Hydrographic Information System of the Transport Administration (HIS): https://his.vta.ee:8443/HIS/Avalik?REQUEST=Main&WIDTH=1920&HEIGHT=919; accessed 28.04.2025

The construction of a submarine cable may affect both the direct preservation of an object of cultural value (destruction if submarine cables are installed at the location of an object of cultural value) as well as damage to its existing condition or preservation environment (indirect impact).

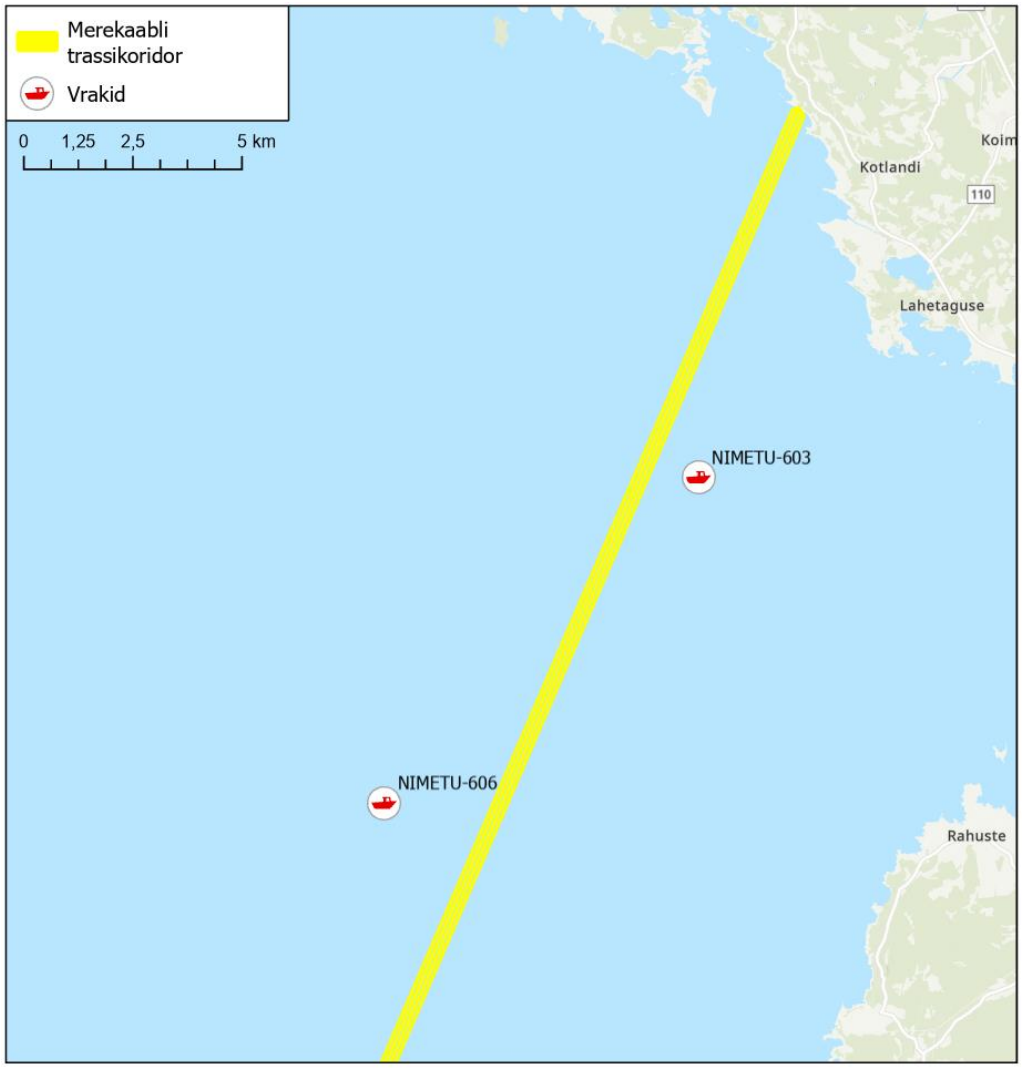


Figure 22. Known shipwrecks in the area of the planned submarine cable route corridor. Base map: EE-LV IV REP map application, accessed 28.04.2025

Damage to an object of cultural value may occur primarily in connection with the spread and sedimentation of suspended solids accompanying construction activities on or in the immediate vicinity of an object of cultural value and in the course of blasting works if underwater explosives remain in the construction area that need to be rendered harmless before the installation of the submarine cable. When explosive devices are defused, a shock wave is generated and fragments may be scattered, which may cause damage to the object of cultural value. The manifestation and significance of the impact depends on the location of the culturally valuable object in relation to the activities carried out.

When planning activities in the vicinity of protected objects (monuments), as well as objects of cultural value for which placing under protection is on the agenda, the requirements of the Heritage Conservation Act must be followed. Pursuant to § 33(1) of the NCA, everyone must refrain from activities that may endanger, spoil or destroy a cultural monument. The monument must not be destroyed or damaged. The violation of a monument consists of (subsection 34 (1) of the MuKS):

- in violation of a monument or parts thereof, due to which the physical or chemical properties, constructive and decorative elements or appearance of the monument have changed or the condition of the monument has deteriorated;
- failure to comply with the obligation to preserve, due to which the condition of the monument or parts thereof has deteriorated;
- in the case of an archaeological monument in the violation of a cultural layer or archaeological finds, which is primarily excavation or destruction as a result of other activities in such a way that further scientific research of the monument as a complete historical source becomes impossible.

The damage caused by the violation is significant if the excavation has been carried out in the top deposits of a mixed archaeological cultural layer or its filling nature (subsection 34 (2) of the MuKS).

The damage caused by the violation is great if excavations have been carried out in the deposits of an undisturbed archaeological cultural layer, archaeological finds have been extracted from the soil or the remains of building structures, wrecks and the like have been damaged (subsection 3 (3) of the Environmental Protection Act).

Anchoring, trawling, dredging and dumping of solid substances are prohibited on underwater monuments (subsection 52 (6) of the Environmental Protection Act) and diving without a permit (subsection 42 of the Environmental Protection Act, including in the protection zone). In the protection zone, the National Heritage Board must be notified of anchoring, trawling, dredging and dumping of solid substances (§ 58 (3) clause 4 of the Environmental Protection Act). The National Heritage Board refuses to allow the work specified in the notice of performance of works if the performance of the work does not ensure the fulfilment of the purpose of the protection zone of the monument or if it may pose a threat to the preservation of the monument. The protection zone of an underwater monument is usually 300-400 m.

Cultural values on land, see chapter 4.11.

4.3.12. Unexploded explosive devices and other dangerous objects[74]

The planned submarine cable route corridor passes through mine-prone areas, as a result of which additional seabed surveys are necessary in cooperation with the Ministry of Defence, including the search for explosive devices from historical mine barriers (see chapter 5.3). The results of the study are reflected in the EIA report.

In the event of findings, the Navy must be notified, who will defuse the dangerous objects.

4.4. Natura 2000 ex-ante assessment

A Natura assessment will be carried out in the volume of the EIA. Natura assessment is a procedural process carried out in accordance with Article 6(3) and (4) of the Habitats Directive 92/43/EEC.

Within the framework of this EIA (during the preparation of the EIA program), the potential impact on the sites of the Natura 2000 network will first be assessed through the ex-ante assessment process. If it is obvious that the planned activity will have a significant environmental impact or the impact cannot be ruled out at this stage, an appropriate assessment will be carried out at the stage of preparing the EIA report.

The preliminary assessment of Natura is the first stage of the Natura assessment, the purpose of which is to predict the likely impacts of the planned activity, as a result of which it can be decided whether the planned activity alone or in combination with other activities may cause an adverse impact on the conservation objectives of the Natura areas or not. As a result of the preliminary

[74] Ministry of Defence letter no. 12-3/24/84 of 05.07.2024; EIA Initiation Decision (Lisa 1)

assessment, it will become clear whether and for which Natura areas it is necessary to move to the second or appropriate stage of Natura assessment. At the appropriate assessment stage, a detailed assessment of the likely adverse impact on the Natura site will be carried out and, if necessary, mitigating measures will be planned.

The preliminary assessment of Natura has been carried out on the basis of the guidelines for carrying out a Natura assessment in the implementation of Article 6(3) of the Habitats Directive in Estonia[75].

The purpose of the relevant assessment of Natura is to:

1) a detailed assessment of the likely significant negative impact on the Natura site identified during the preliminary assessment based on the conservation objectives, structure and function of the site, and to ensure the achievement of the conservation objectives of the Natura site regardless of the planned activities;
2) development of mitigating measures that must ensure the achievement of the conservation objectives of the Natura site regardless of the planned activities.

An appropriate assessment will provide an answer to whether or not there will be a significant impact on the Natura site. The impact of an activity is considered significant if the status of the conservation objectives deteriorates as a result of the implementation of the activity or it is not possible to achieve the conservation objectives as a result of the implementation of the activity.

The conservation objectives of a Natura site have been achieved if the integrity of the site is preserved. The integrity of the site means, first and foremost, the functioning of the ecological functions of the site (relationships within and between species, food chain, etc.) in a way that ensures in the long term a sufficient number of individuals of the species in suitable habitats and the normal succession of habitat types, resistance to external influences and continuous renewal, and such an area requires minimal human assistance from outside this system.

4.4.1. Information on the proposed activities

The planned activity is the construction of the fourth Estonian-Latvian electricity connection (the fourth Estonian-Latvian joint transmission line; hereinafter EE-LV 4) with a 330 kV submarine cable. The construction of the submarine cable is necessary to create additional electricity transmission capacity between Estonia and Latvia. According to the application for a superficies license, the submarine cable of the fourth Estonian-Latvian electricity connection consists of up to three alternating current power cables with a voltage of up to 330 kV and one fibre optic communication cable line. The planned operating capacity of the submarine cable is a maximum of 1000 MW. In order to avoid mechanical damage, the cable line will be sunk at least partially into the sediments of the seabed (up to a depth of about 3 m).

The location of the EE-LV 4 South-West-Saaremaa–Ventspils route corridor planned with the application for a superficies license is located in the Kura Gorge in the sea between Saaremaa and the Curonian Peninsula (LV) (Figure 3). For a description of the location of the route corridors discussed in the EIA and Natura preliminary assessment, see chapter 2.4. The location of the route corridor planned with the application for a superficies license ends at the Estonian-Latvian border.

The area of disembarkation of the EE-LV 4 submarine cable on land (Saaremaa) is determined by the national designated spatial plan for the fourth Estonian-Latvian electricity connection (see chapter 3.2).

For a more detailed description of the purpose and location of the planned activity (including a map of the location of the activity), see chapter of the EIA program 2.

[75] Guidelines for carrying out a Natura assessment in the implementation of Article 6(3) of the Habitats Directive in Estonia. Compiled by: Aune Aunapuu, Riin Kutsar, NGO Estonian Environmental Impact Assessors' Association. Tartu, Tallinn 2019

The planned activity is not related to or necessary for the achievement of the conservation objectives of the Natura 2000 site.

4.4.2. Description of other projects likely to have a significant impact on Natura sites

Proceedings for a superficies license have been initiated for the area of the planned EE-LV 4 submarine cable route corridor to the sea, or applications for building permits for several offshore wind farms are being processed: ELWIND, Saare Wind Energy OÜ, Sunly Wind OÜ, OÜ Utilitas Wind, etc. A superficies license procedure has been initiated for the construction of the Saare Wind Energy OÜ power cable at the same landing point as the route corridor. The route corridor of the EE-LV 4 submarine cable runs parallel to the development area of the ELWIND offshore wind farm planned by the EIC (distance approx. 100 m); In the future, the connection cable of the ELWIND offshore wind farm to Saaremaa may intersect with the EE-LV 4 submarine cables.

Therefore, the Natura assessment of the EE-LV 4 submarine cable must take into account the combined impact/cumulative impact of all these wind farms and related facilities on the integrity and conservation objectives of the Curonian Gorge and Natura areas in the southwestern Saaremaa region.

4.4.3. Determining the scope of the area of influence

The area of direct impact of the proposed electricity connection is the seabed laying area of submarine cables (up to four parallel cables) and the area affected by the submergence of cables into the seabed. The area of land access of the submarine cable on the coast is also an area of direct impact. In the case of submarine cables, the direct area of influence is the area of cable excavation or otherwise the area where the cable is sunk into the seabed, as well as the zone where the works directly affect the seabed and bottom sediments. The preferred solution is to submerge the cable to the bottom of the sea. In the shallow sea, it is possible to dig a trench on floating rafts with an excavator. In deeper water, a solution is used where an underwater robot washes a "furrow" in the seabed and installs a cable in the draft. Any kind of washing and digging on the seabed causes the soil layers there to be mixed and spread according to the winds and currents.

The area of direct impact of the planned activity includes the Curonian Throat bird area (its southwestern part), which is crossed by the southern part of the route corridor (Figure 23).

The landing point of the submarine cable is not precisely fixed, but an estimated location has been sketched for it. If the landing site of the route corridor is shifted, the cable route may also pass through the Riksu coastal bird area and nature area and the Karala-Pilguse bird area and nature area. Thus, it cannot be ruled out that there will be a direct impact on these Natura areas.

The extent to which an indirect impact occurs depends on the impact factor (type of impact) and the environmental element affected. In the case of Natura areas, the extent of the impact depends on the habitat type or species that is the conservation objective. The nature and extent of the impact differ significantly in the case of marine and terrestrial areas, as well as in terms of the conservation objectives of natural areas and bird areas. Indirect impacts must be treated in the same way as direct impacts in the case of Natura sites.

In the sea area, the installation of the submarine cable involves the release of suspended solids into the water and its spread in the area of the works. Suspended solids content higher than the natural background can be carried hundreds of metres away from the cable route, and in extreme cases even kilometres. According to the water quality study of the Gulf of Riga offshore wind farm[76] , suspended solids concentrations that are higher than the natural background may be transferred a few kilometres from the area where the submarine cable is laid. Elevated suspended solids impair

[76] Study of the water quality, physical and biogeochemical parameters of the water column, and pollution spread of the Gulf of Riga wind farm. Final report. TalTech, 2024

the transparency of seawater and the feeding conditions of birds and fish. Suspended solids that precipitate on the seabed affect benthic life and marine habitat types. The movement of ships accompanying the installation of the submarine cable and the noise accompanying the works will cause disturbance to birds and fish. Visual and noise-induced disturbance from the cable-laying vessel may affect birds and marine mammals estimated at a distance of up to 1 km.

Indirect impact on the area is the Riksu coastal bird area and nature area and Karala-Pilguse bird area and nature area (Figure 23). In addition to the direct impact, there is also an indirect impact on the Curonian Throat bird area in the form of the spread of suspended solids and disturbances.

4.4.4. Location and characterisation of Natura 2000 sites

The location of the submarine cable route corridor is partly in the Curonian Gorge bird area. The area of influence of the route corridor includes the Riksu coastal bird area and nature area and the Karala-Pilguse bird area and nature area (see Figure 23). These Natura areas are nationally protected as the Curonian Gorge, the Riksu Coast and the Karala-Pilgus Conservation Area, respectively (see chapter 4.5). The Vesitükimaa nature area, located in the area of the southern and southwestern coasts of the Sõrve peninsula, is located at the closest point to the planned route corridor *Ca* 7 km away.

Figure 23. Location of the route corridor in relation to Natura areas. Source: EELIS, 2025

Curonian Throat Bird Area

The Curonian Throat bird area (RAH0000132) is located south of Saaremaa, encompassing extensive sea areas around the Sõrve Peninsula and the Gulf of Riga, and to a lesser extent also land areas on the Sõrve Peninsula. The marine areas of the bird area are crossed by a submarine cable route corridor on a 12.5 km long section.

The area of the Curonian Throat bird area is 193,987 ha, of which the sea area is 191,732 ha and land is 2255 ha. The bird area is protected domestically for the most part and in the area where all route alternatives intersects with the bird area as the Curonian Gorge limited-conservation area and in smaller parts as the species protection sites of several protected areas, limited-conservation areas and protected species.

The conservation objectives of the bird area are the following bird species, the habitats of which are protected: the Duck (*Alca torda*), the Shelduck (*Anas acuta*), the Swan-billed Duck (*Anas clypeata*), the Teal (*Anas crecca*), the Buzzard (*Anas penelope*), the Mallard (*Anas platyrhynchos*), the Shelduck

(*Anas strepera*), the Greylag Goose (*Anser anser*), Grey Heron (*Ardea cinerea*), Stone-curlew (*Arenaria interpres*), Eurasian sandpiper (*Aythya marila*), Black goose (*Branta bernicla*), Barnacle goose (*Branta leucopsis*), Common Sandpiper (*Bucephala clangula*), Meadow sandpiper (*Calidris alpina schinzii*), Common sandpiper (*Calidris canutus*), Lesser sandpiper Lesser Spotted Sandpiper (*Calidris minuta*), Chrysock (*Cepphus grylle*), Ringed Plover (*Charadrius hiaticula*), Long-tailed Duck (*Clangula hyemalis*), Lesser Swan (*Cygnus columbianus bewickii*), Mute Swan (*Cygnus olor*), Red-throated Kauri (*Gavia stellata*), White-tailed Eagle (*Haliaeetus albicilla*), Black-headed Gull (*Larus fuscus*), *Limosa lapponica*, *Melanitta fusca*, *Mergus albellus*, *Mergus merganser*, *Mergus serrator*, *Phalacrocorax carbo*, *Pluvialis squatarola*, *Podiceps auritus*, *Podiceps cristatus*, *Recurvirostra avosetta*, Eider (*Somateria mollissima*), *Sterna caspia* and *Tringa erythropus*.

Riksu coastal bird area

The Riksu coastal bird area (RAH0000127) is located on the south-western coast of Saaremaa, encompassing both the coastal sea and land areas. The bird area is 100 m from the landing area of the submarine cable route corridor. The area of the bird area is 2194.65 ha, of which the water area is 1728.6 ha and the land area is 466.05 ha. The bird area is nationally protected as a Riksu coastal limited-conservation area.

The conservation objectives of the bird area are the following bird species, the habitats of which are protected: barnacle goose (*Branta leucopsis*), meadow sandpiper (*Calidris alpina schinzii*), mute swan (*Cygnus olor*), black warbler (*Melanitta fusca*), *mergus serrator*, ruff (*Philomachus pugnax*), eider (*Somateria mollissima*) and Red-footed Plover (*Tringa totanus*).

Karala-Pilguse bird area

The Karala-Pilguse bird area (RAH0000092) is located on the south-western coast of Saaremaa, covering both the coastal sea and land areas. The bird area is located 200 m from the landing site of the submarine cable route corridor. The area of the bird area is 2658.18 ha, of which the water area is 1473.36 ha and the land area is 1184.82 ha. The majority of the bird area, including the area where the submarine cable comes ashore, is nationally protected as the Karala-Pilgus limited-conservation area. To a lesser extent, the area is protected as a separate part of Vilsandi National Park and as a species protection site for Pussa orchids and Pilguse as a species protection site for white-tailed eagles.

The conservation objective of the bird area is to protect the following bird species, the habitats of which are protected: the swan-billed duck (*Anas clypeata*), the teal (*Anas crecca*), the buzzard (*Anas penelope*), the mallard (*Anas platyrhynchos*), the barnacle goose (*Branta leucopsis*), the goldeneye (*Bucephala clangula*), the mute swan (*Cygnus olor*), the white-tailed eagle (*Haliaeetus albicilla)*), the spike-billed (*Recurvirostra avosetta*), the red-footed tilder (*Tringa totanus*) and the lapwing (*Vanellus vanellus*);

Riksu Coastal Nature Area

The Riksu Coastal Nature Area (RAH0000599) is located on the southwest coast of Saaremaa, encompassing both the coastal sea and land areas. The nature area is located 100 m from the landing area of the submarine cable route corridor. The area of the nature area is 2194.65 ha, of which the water area is 1728.6 ha and the land area is 466.05 ha. The natural area is nationally protected as a Riksu coastal limited-conservation area.

The conservation objectives of the natural area are the following habitat types listed in Annex I of the Habitats Directive: coastal jaws (*1150), primary coastal ridges (1210), rocky beaches with permanent vegetation (1220), small islands and islets (1620), coastal meadows (*1630), sandy beaches with permanent vegetation (1640), grey dunes (established coastal dunes – *2130), juniper forests (5130), dry meadows on calcareous soils (*important orchid growing areas – 6210), alvars (alvars – *6280), mollusc communities (6410) and wooded pastures (9070).

Karala-Pilguse Nature Area

The Karala-Pilguse Nature Area (RAH0000617) is located on the southwest coast of Saaremaa, encompassing both the coastal sea and land areas. The nature area is located 200 m from the landing point of the submarine cable route corridor. The area of the nature area is 2658.18 ha, of which the water area is 1473.36 ha and the land area is 1184.82 ha. The nature area is mainly protected as a Karala-Pilgus limited-conservation area in the area where the submarine cable came ashore. To a lesser extent, the natural area is protected as a separate part of Vilsandi National Park and as a permanent habitat for Pussa orchids and Pilguse as a permanent habitat for white-tailed eagles.

The conservation objectives of the natural area are the following habitat types listed in Annex I of the Habitats Directive: coastal dunes (*1150), primary coastal ridges (1210), pebble beaches with permanent vegetation (1220), cliffs open to the sea (1230), small islands and islets (1620), coastal meadows (*1630), sandy beaches with permanent vegetation (1640), white dunes (mobile coastal dunes – 2120), grey dunes (fixed coastal dunes – *2130), juniper stands (5130), dry meadows on calcareous soils (*important orchid habitats – 6210), alvars – *6280), mollusk communities (6410), calcareous fens with western swordgrass (*7210), species-rich fens (7230), old natural forests (*9010), old broad-leaved forests (*9020) and swampy and deciduous bog forests (*9080).

The species listed in Annex II to the Habitats Directive, whose habitat is protected in the natural area, is the beautiful goldenrod (*Cypripedium calceolus*).

Vesitükimaa Nature Area

The Vesitükimaa Nature Area (RAH0000406) is located in the southern and southwestern parts of the Sõrve Peninsula, encompassing both the coastal sea and land areas. The submarine cable route corridor is located about 7 km from the natural area.

The area of the nature area is 1308.56 ha, of which the water area is 829.28 ha and the land area is 479.28 ha. The nature area is nationally protected as the Curonian Throat Conservation Area, the Vesitükimaa Conservation Area and the Sääre Nature Reserve.

The conservation objectives of the natural area are the following habitat types listed in Annex I to the Habitats Directive: reefs (1170), primary coastal ridges (1210), pebble beaches with permanent vegetation (1220), mud and sandy beaches with salt marshes (1310), small islands and islets (1620), coastal meadows (*1630), sandy beaches with permanent vegetation (1640), grey dunes (fixed coastal dunes – *2130), alvars (alvars – *6280), mollusc communities (6410), calcareous fens with western swordgrass (*7210) and swampy and deciduous swamp forests (*9080).

The species listed in Annex II to the Habitats Directive whose habitats are protected in the natural area are the grey seal (*Halichoerus grypus*) and the female seal (*Angelica palustris*);

4.4.5. Forecasting likely significant impacts on the conservation objectives and integrity of Natura sites

Expected impact on the Curonian Throat bird area

The sea area of the Curonian Gorge bird area is crossed by the submarine cable route corridor on a 12.5 km section.

The installation of the submarine cable using both the ploughing and waterfall dredging methods involves interference with the seabed of the bird area, which will have an impact on benthic biota. Influencing or changing the seabed takes place in the area of cable excavations and in their vicinity. The laying of cables will lead to the temporary loss of benthic communities and, in the long term, their transformation. This affects the feeding conditions of waterfowl that feed on benthic fauna. As the area of the directly affected seabed makes up a very small part of the bird area, the impact on the feeding conditions of birds is relatively small.

During the installation of the submarine cable, the suspended solids that are transferred from the installation site and precipitate on the seabed have an impact on the bottom communities. Suspended solids also affect the fish population. In conclusion, the spread of suspended solids affects marine life more broadly and thereby also the feeding conditions of waterfowl. The suspended solids that are dispersed during the work reduce the transparency and visibility of the seawater for birds in search of food, thus worsening the birds' feeding conditions. After the installation of the submarine cable, the impact on birds will be manifested through the affected marine life. The extent and strength of the effect of suspended solids dispersed in the sea depends on the nature of the sediments and the installation technology (ploughing or jet dredging) and will be determined by modelling carried out within the framework of the EIA.

Although the spread of suspended solids is a temporary effect, based on current knowledge, an adverse impact on the species that are the conservation objective of the Curonian Throat bird area cannot be ruled out.

The installation of the submarine cable will be accompanied by disturbances that will scare away flocks of birds that stop and feed in the bird area beyond the work zone. The impact of forcing birds to relocate depends significantly on the period of the works, being greater during the winter period, when Arctic waterfowl such as long-tailed ducks and whales winter in the area, and during the spring and autumn migration periods. The smallest, i.e. insignificant, impact occurs if the cable installation works take place in the summer. The impact also depends on the ice conditions during the cable laying period, which depend on the presence of birds in the area and the possibilities of bird relocation. At the current stage of planning the works, the time of performance of the works is not known and measures to mitigate the impact cannot be taken into account. Therefore, a negative impact on bird species in connection with disturbance cannot be ruled out.

Proceeding from the above, in connection with the installation of the submarine cable, it cannot be ruled out that the adverse impact on the waterfowl species that are the conservation objective of the Curonian Gorge bird area, primarily the long-tailed duck and the black wagtail, which use the marine areas of the bird area as wintering and feeding areas.

As an unfavourable impact on the bird species that are the conservation objective of the bird area cannot be ruled out, an impact on the integrity of the bird area cannot be ruled out.

Cumulative impacts on the bird area may occur in connection with the construction of offshore wind farms and their electricity connections (submarine cables) planned for the area. Cumulative impacts may occur if the works are carried out simultaneously or consecutively (the total impact period is longer). The impact can manifest itself in the form of both water quality (spread of suspended solids) and disturbances.

In conclusion, at the preliminary assessment stage of Natura, an adverse impact on the Curonian Throat bird area in connection with the construction of an electricity connection (submarine cable) cannot be ruled out, and therefore an appropriate assessment of Natura must be carried out within the framework of the EIA for this bird area.

Expected impact on the Riksu coastal bird area

The Riksu coastal bird area is located on the southwest coast of Saaremaa, encompassing both the coastal sea and land areas. The bird area is 100 m from the landing area of the submarine cable route corridor. In the nearest area, both the land areas located on the coast and the coastal sea remain in the bird area. Starting from the coast, the route of the submarine cable moves away from the bird area, but on a section of about 3.2 km, this bird area is closer than 1 km to the marine areas.

According to the location of the cable corridor on which the impact assessment is based, the submarine cable corridor does not pass through the bird area and has no direct impact on it. This corridor is a preliminary sketched solution, which may change due to the solution of the electricity connection and the location of the substation in Saaremaa. Thus, at the moment, it cannot be ruled

out that the submarine cable will pass through the bird area and its landing place will be in the bird area.

In connection with the laying of the submarine cable, the suspended bird area may be transferred to the marine areas and affect the marine life and feeding conditions of birds during the cable laying period. In connection with the construction works, there will also be disturbances to birds stopping and nesting in the coastal area and to birds staying in the marine area of the bird area. The habitats of bird species that are the conservation objective of the bird area have not been registered in the area of the submarine cable landing, but they cannot be ruled out. If the submarine cable does not pass through the bird area and its landing site is outside the bird area, the area of the habitats in the impact zone is small and there is unlikely to be an adverse impact on the bird species that are intended for protection. If the cable nevertheless passes through the bird area, the bird area will be directly affected and the impact of suspended solids and disturbance will be stronger and manifest itself on a larger scale in the bird area. In such a case, an unfavourable impact on the bird species that are the conservation objective of the bird area and thereby an impact on the integrity of the area cannot be ruled out.

As the electricity connection corridor of the Saare Wind Energy offshore wind farm is also planned for the area, the construction of the two cable connections may have cumulative effects on the bird area.

In conclusion, at the Natura preliminary assessment stage, an adverse impact on the Riksu coastal bird area in connection with the establishment of an electricity connection cannot be ruled out, and therefore an appropriate assessment of Natura must be carried out in the EIA regarding the bird area.

Expected impact on the Karala-Pilguse bird area

The Karala-Pilguse bird area is located on the southwest coast of Saaremaa, encompassing both the coastal sea and land areas. The bird area is located 200 m from the landing site of the submarine cable route corridor. In the nearest area, the bird area consists mainly of shallow coastal sea areas and, to a lesser extent, land areas. Starting from the coast, the submarine cable route will move away from the bird area, but on a section of about 1.2 km, this bird area will be closer than 1 km to the sea area.

According to the cable corridor on which the impact assessment is based, the submarine cable does not pass through the bird area and has no direct impact on it. This corridor is a preliminary sketched solution, which may change due to the solution of the electricity connection and the location of the substation in Saaremaa. Thus, at the moment, it cannot be ruled out that the submarine cable will pass through the bird area and its landing place will be in the bird area.

In connection with the laying of the submarine cable, the suspended bird area may be transferred to the sea area and affect the marine life and feeding conditions of birds during the cable laying period. In connection with the construction works, there will also be disturbances to birds stopping and nesting in the coastal area and to birds staying in the marine area of the bird area. The habitats of bird species that are the protection objective of the bird area have not been registered in the area of the submarine cable landing, but they cannot be completely ruled out. If the submarine cable does not pass through the bird area and its landing site is outside the bird area, the area of the habitats in the impact zone is small and there is unlikely to be an adverse impact on the bird species that are intended for protection.

If the submarine cable nevertheless passes through the bird area, the bird area will be directly affected and the impact of suspended solids and disturbances will be stronger and manifest on a larger scale in the bird area. In this case, an unfavourable impact on the bird species that are the conservation objective of the bird area cannot be ruled out and thus also an impact on the integrity of the area.

As the submarine cable of the electricity connection of the Saare Wind Energy offshore wind farm is also planned for the area, the construction of the two electricity connections may have cumulative effects on the bird area.

In conclusion, at the stage of the preliminary assessment of Natura, an adverse impact on the Karala-Pilguse bird area in connection with the establishment of an electricity connection cannot be ruled out, and therefore an appropriate assessment of Natura must be carried out within the framework of the EIA regarding the said bird area.

Expected impact on the Riksu coastal natural area

The Riksu coastal nature area is located on the southwest coast of Saaremaa, encompassing both the coastal sea and land areas. The bird area is 100 m from the landing area of the submarine cable route corridor. In the nearest area, both the land areas located on the coast and the coastal sea remain in the natural area. Starting from the coast, the route of the submarine cable moves away from the natural area, but on a section of about 3.2 km, this natural area is closer than 1 km to the marine areas.

According to the cable corridor on which the impact assessment is based, the submarine cable does not pass through a natural area and has no direct impact on it. This corridor is a preliminary sketched solution, which may change due to the solution of the electricity connection and the location of the substation in Saaremaa. Thus, at the moment, it cannot be ruled out that the submarine cable will pass through a natural area and that its landing place will also remain in a natural area.

The closest habitat types to the cable route, coastal *meadows* (*1630) and *rocky beaches with permanent vegetation* (1220), are located 120 m from the expected landing site of the submarine cable. No impact on these habitat types is foreseen in connection with the laying of the submarine cable, as the spread of suspended solids does not significantly affect coastal habitat types. In the coastal sea, the level of natural suspended solids is also high in case of strong winds and waves. Underwater sand shallows (1110), a habitat type that is widely distributed in the marine areas of the natural area near the cable line , is not a conservation objective of the nature area. Nor have any species that would be related to the sea or coastal areas set as a conservation objective of the natural area (the only species that is protected is the beautiful goldenrod). Thus, the spread of suspended solids and disturbances to fauna accompanying the installation of the submarine cable will not cause an adverse impact on the conservation objectives of the natural area. In the shallow coastal sea of the natural area, where the natural suspended solidity level is also high in the event of wind and waves, the spread of suspended solids does not cause a significant impact on the marine ecosystem of the natural area, nor does it cause an overall negative impact on the natural area.

In the event that the submarine cable still runs through a natural area, it cannot be ruled out that the coastal *meadows* (*1630) and *pebble beaches with permanent vegetation* (1220) will have an adverse impact on habitat types , which may occur if the cable route should pass through these habitat types.

As the submarine cable of the electricity connection of the Saare Wind Energy offshore wind farm is also planned for the area, cumulative impacts on the natural area may be manifested in connection with the construction of two electricity connections.

In conclusion, at the preliminary assessment stage of Natura, an adverse impact on the natural area of the coast of Riksu in connection with the establishment of an electricity connection cannot be ruled out, and therefore an appropriate assessment of Natura must be carried out in the context of the EIA.

Expected impact on the Karala-Pilguse Nature Area

The Karala-Pilguse Nature Area is located on the south-western coast of Saaremaa, encompassing both the coastal sea and land areas. The nature area is 200 m from the expected landing site of the submarine cable. In the nearest area, the natural area consists mainly of shallow coastal sea areas

and, to a lesser extent, land areas. Starting from the coast, the submarine cable route moves away from the natural area, but on a section of about 1.2 km, this natural area is closer than 1 km to the sea area.

According to the location of the cable corridor on which the impact assessment is based, the submarine cable does not pass through a natural area and has no direct impact on it. This corridor is a preliminary sketched solution, which may change due to the solution of the electricity connection and the location of the substation in Saaremaa. Thus, at the moment, it cannot be ruled out that the submarine cable will pass through a natural area and that its landing place will also remain in a natural area.

The closest habitat type to the cable route that is a conservation objective is *small islands and islets* (1620) and it is 340 m from the landing site of the submarine cable. No impact on this habitat type is foreseen in connection with the installation of the submarine cable, as the spread of suspended solids does not affect the habitat types located on land. Underwater sand shallows (1110), a habitat type that is widely distributed in the marine areas of the natural area near the cable line , is not a conservation objective of the nature area. No species have been set as a conservation objective of the natural area. Thus, the spread of suspended solids and disturbances to fauna accompanying the installation of the submarine cable will not cause an adverse impact on the conservation objectives of the natural area. In the shallow coastal sea of the natural area, where the natural suspended solidity level is also high in the event of wind and waves, the spread of suspended solids does not cause a significant impact on the marine ecosystem of the natural area and does not cause a significant negative impact on the natural area.

As the submarine cable of the electricity connection of the Saare Wind Energy offshore wind farm is also planned for the area, cumulative impacts on the natural area may be manifested in connection with the construction of two electricity connections.

However, if the submarine cable still runs through a natural area, it cannot be ruled out that an adverse impact on the habitat type *of small islands and islets* (1620) should the cable route pass through this habitat type.

In conclusion, at the stage of the preliminary assessment of Natura, an adverse impact on the Karala-Pilguse natural area in connection with the establishment of an electricity connection cannot be ruled out, and therefore an appropriate assessment of Natura must be carried out in the EIA regarding the area.

Expected impact on the Vesitükimaa nature area

The Vesitükimaa Nature Area is located in the southern part of the Sõrve Peninsula, encompassing both the coastal sea and land areas. The submarine cable route corridor is located about 7 km from the marine area of the nature area .

The majority of the marine area of the natural area is covered by the habitat type *reefs* (1170), which is a conservation objective. The reefs are located in a relatively shallow coastal sea, where the suspended solids content can be relatively high naturally due to waves. The deposition of suspended solids in the area of a habitat type may have some short-term impact on benthic biota, but it does not have an adverse effect. It is unlikely that as a result of the installation works of the submarine cable, suspended solids could be transferred from the area of the route corridor to the area of the habitat type to such an extent that it would significantly increase the suspended solids content compared to the natural background and thus affect the condition of the habitat type. Thus, the planned activity will not lead to a deterioration of the condition of the habitat type.

In connection with the planned activity, there are no known sources of impact, the impact of which could spread to coastal and terrestrial habitat types that are the conservation objective of the natural area located more than 7 km away, as well as to the habitats of motherwort protected as a species, and affect their condition.

The conservation objective of the nature area is the grey seal, whose important resting place and calving area is located in the natural area on the islets of Vesitükimaa. During the calving period in February-March, up to about 1000 seal pups have been counted in Lesila[77]. Seals also use the marine areas of the nature area and the marine areas surrounding the nature area as a habitat and, if the ice conditions are suitable, also as a calving area. The route corridor of the planned submarine cable will be *located about* 13 km from the grey seal shelter, which is a sufficient distance to prevent significant disturbance to the seals in the shelter in the form of ambient air and underwater noise, ship movement and changes in water quality.

In conclusion, in connection with the establishment of an electricity connection at the preliminary assessment stage of Natura, an adverse impact on the species and habitat types that are the conservation objective of the Vesitükimaa natural area and, accordingly, on the integrity of the area can be ruled out. Proceeding from the above, it is not necessary to carry out an appropriate assessment of Natura in the Vesitükimaa natural area within the framework of the EIA.

4.4.6. Summary and conclusions of the Natura ex-ante assessment

The preliminary assessment of Natura established that an unfavourable impact may probably be exerted **on the species that are the conservation objective of the Curonian Throat bird area** and thereby also on the integrity of the area. On the basis of the current available information, an adverse impact on the conservation objectives and integrity of the following Natura 2000 areas cannot be ruled out: **Riksu coastal bird area**, **Karala-Pilguse bird area**, **Riksu coastal nature area** and **Karala-Pilguse nature area**. An adverse effect may occur if the submarine cable passes through these Natura areas if the landing point of the submarine cable route corridor is specified.

As a conclusion of the preliminary assessment of Natura, an appropriate assessment of Natura must be carried out within the framework of the EIA for all of the above-mentioned Natura areas.

In the course of the preliminary assessment of Natura, it was concluded that the planned activity will not result in the deterioration of the condition of the habitat types and species that are the conservation objective of the Vesitükimaa nature area. Thus, in the case of the Vesitükimaa natural area, there is no need to move to the appropriate assessment stage.

4.5. Protected natural objects

Protected natural objects are: 1) protected areas; 2) limited-conservation areas; 3) protected species and fossils; 4) species protection sites of protected species; 5) protected individual natural objects; 6) natural objects protected at the local government level.[78]

The southern part of the planned route corridor passes through the southwestern part of the Kura Throat Limited-Conservation Area. In the expected area of influence of the planned activity, including the landing site of the submarine cable, the Riksu Coastal Limited-Conservation Area and the Karala-Pilguse Limited-Conservation Area (Figure 24). About 6–11 km from the planned route corridor, there are several protected areas and habitats of protected species.

In the sea area, the installation of the submarine cable involves the release of suspended solids into the water and its spread in the area of the works. Suspended solids content higher than the natural background can be carried hundreds of metres away from the cable route, and in extreme cases even kilometres. According to the water quality study of the Gulf of Riga offshore wind farm[79] , suspended solids concentrations that are higher than the natural background may be transferred a few kilometres from the area where the submarine cable is laid. Elevated suspended solids impair

[77] Report of the seal survey of the Gulf of Riga wind farm. NGO Pro Mare 2023.
[78] Subsection 4 (1) of the Nature Conservation Act
[79] Study of the water quality, physical and biogeochemical parameters of the water column, and pollution spread of the Gulf of Riga wind farm. Final report. TalTech, 2024

the transparency of seawater and the feeding conditions of birds and fish. Suspended solids that precipitate on the seabed affect benthic life and marine habitat types. The movement of ships accompanying the installation of the submarine cable and the noise accompanying the works will cause disturbance to birds and fish. Visual and noise-induced disturbance from the cable-laying vessel may affect birds and marine mammals estimated at a distance of up to 1 km.

No permanent habitats, protected fossils, protected individual natural objects and natural objects protected at the local government level have been registered in the presumed area of influence of the planned activity, including the landing site of the submarine cable.

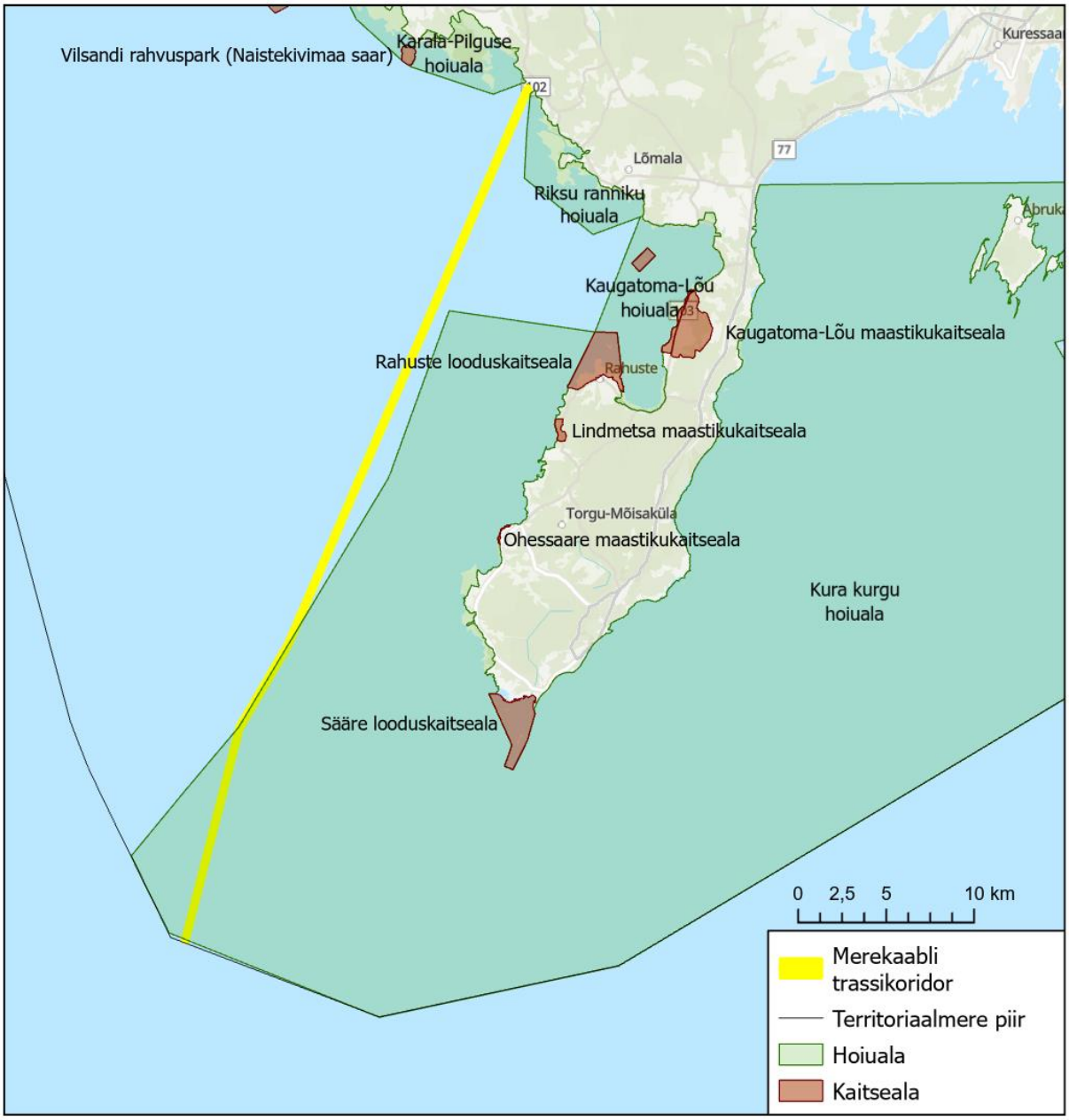


Figure 24. Location of the route corridor in relation to protected areas and limited-conservation areas. Source: EELIS, 2025

4.5.1. Protected areas

Protected areas include national parks, nature reserves and landscape protection areas.[80]

National park

The closest protected area to the planned activity area is ***the Naistekivimaa island*** in Vilsandi National Park *(KLO1000250),* which is located in the coastal sea about 6.5 km west of the landing point of the planned route corridor. The habitats of several protected bird species, including categories I and II, have been registered on the detached plot.

In the course of the impact assessment, it will be determined whether the construction activities of the planned submarine cable may have an impact on the protected bird species living on the detached plot of Vilsandi National Park. If necessary, mitigation measures are developed to prevent or mitigate the impact. The activities planned during the period of use will not have an impact on the birds living on the detached plot of the national park.

Nature reserves

At the nearest point to the planned route corridor, about 8.5 km from the planned route corridor, on the west coast of the Sõrve peninsula, there is a ***Rahuste Nature Reserve*** (KLO1000305). The area of the nature reserve is 692.1 ha, of which 515.3 ha is water area and 176.8 ha is land. The nature reserve is located in the Natura 2000 network's Kaugatoma-Lõu bird area (chapter 4.4).

The conservation objective of the Rahuste Nature Reserve is to protect:

(1) the species listed in Annex I to the Birds Directive, which are also category II protected species, the barnacle goose (*Branta leucopsis*) and the tern tern (*Sterna paradisaea*), which are also category III protected species; protection of the protected species of category II, the sand ringed plover (*Charadrius hiaticula*) and red-footed sandpiper (*Tringa totanus) of the protected species of category III*, as well as migratory bird species;

2) conservation of coastal meadow *(1630*) of the* habitat type listed in Annex I of the Habitats Directive.

Located in the area of the southern tip of the Sõrve peninsula, ***Sääre Nature Reserve*** (KLO1000662) mainly covers marine areas and is about 11 km from the planned route corridor. The area of the nature reserve is 551.4 ha, of which 538.7 ha is water and 12.7 ha is land. The nature reserve is located in the Curonian Throat bird area of the Natura 2000 network and the Vesitükimaa nature area (chapter 4.4).

The conservation objective of the Sääre Nature Reserve is to protect:

1) the diversity of marine and coastal biota, nesting, migrating and wintering waterfowl, as well as protected species and their habitats;
2) habitat types listed in Annex I of the Habitats Directive. These are *reefs* (1170), *primary coastal embankments* (1210), *small islands and islets* (1620) and *coastal meadows* (1630*);
3) protected bird species listed in Annex I of the Birds Directive and their habitats. These species are the river tern (*Sterna hirundo*), the common tern (*Sterna paradisaea*), the common tern (*Sterna caspia*), the crested tern (*Sterna sandvicensis*), the little tern (*Sterna albifrons*) and the lesser waterfall (*Mergus albellus*);
4) the protected bird species Larus *fuscus* and its habitats;
5) the bird species eider (*Somateria mollissima*) and its habitats;
6) protected animal species listed in Annex II of the Habitats Directive and its habitats. This species is the gray seal (*Halichoerus grypus*);

[80] Subsection 4 (2) of the Nature Conservation Act

7) protected plant species, the common tuberous root (*Herminium monorchis*) and its habitats.

In the course of the impact assessment, it will be determined whether the planned activity may have an impact on the conservation objectives of these nature reserves, focusing primarily on the bird species and grey seal related to the marine environment and the landing site of the area of the planned activity, which are conservation objectives. If necessary, mitigation measures are developed to prevent or mitigate the impact. The activities planned during the period of use will not have an impact on the conservation objectives of nature reserves.

Landscape protection areas

There are three landscape protection areas (MKA) on the west coast of the Sõrve peninsula: Kaugatoma-Lõu MKA[81], Lindmetsa MKA[82] and Ohessaare MKA[83] (Figure 24), distances from the route corridor according to *Ca* 12.6, 8.6 and 8.3 km. These landscape protection areas are located on land (the water part is minimal).

In these landscape protection areas, coastal and terrestrial habitat types and species are protected, which are not affected by construction activities in the sea more than 6 km away, nor are they affected during the period of use. Therefore, it is not necessary to address these landscape protection areas in the EIA report.

4.5.2. Limited-conservation areas

The area of influence of the submarine cable route corridor includes the Curonian Throat limited-conservation area. The area of influence includes the Riksu coastal limited-conservation area and the Karala-Pilguse limited-conservation area, which are located near the landing site. The limited-conservation areas are part of the Natura 2000 network as the Curonian Throat Bird Area, the Riksu Coastal Bird Area and Nature Area, and the Karala-Pilguse Bird Area and Nature Area, respectively (see chapter 4.4).

Curonian Throat Conservation Area

The Curonian Throat Limited-Conservation Area (KLO2000316) is located south of Saaremaa, encompassing extensive sea areas around the Sõrve Peninsula and the Gulf of Riga, and to a lesser extent also land areas on the Sõrve Peninsula. The marine areas of the limited-conservation area are crossed by a 12.5 km long submarine cable route corridor. The area of the limited-conservation area is 189,447.1 ha, of which 188,962.6 ha is water area and 484.5 ha is land. The limited-conservation area overlaps with the Curonian Throat bird area, which is part of the Natura 2000 network.

The conservation objective of the Curonian Throat Limited-Conservation Area is:

- The habitat types listed in Annex I of the Habitats Directive – *reefs* (1170), *primary coastal ridges with annual vegetation* (1210), *coastal meadows* (1630*), *small islands and islets* (1620), *sandy beaches with permanent vegetation* (1640), *grey dunes or fixed coastal dunes* (2130*), *mollusc communities* (6410) – and the grey seal of the species listed in Annex II (*Halichoerus grypus*) protection;
- Conservation of the habitats of the bird species listed in Annex I to the Birds Directive and of the migratory bird species not listed in Annex I. The bird species whose habitats are protected are the red-throated deer (*Gavia stellata*), the black-throated grebe (*Gavia arctica*), the cormorant (*Phalacrocorax carbo*), the mute swan (*Cygnus olor*), the lesser swan (*Cygnus columbianus bewickii*), the grey goose (*Anser anser*), the barnacle goose (*Branta*

[81] Environment portal: https://register.keskkonnaportaal.ee/register/protected-nature-object/7353343; accessed 24.04.2024
[82] Environmental portal: https://register.keskkonnaportaal.ee/register/protected-nature-object/7354778; accessed 24.04.2024
[83] Environment portal: https://register.keskkonnaportaal.ee/register/protected-nature-object/7352053; accessed 24.04.2024

leucopsis), the black goose (*Branta bernicla*), the buzzard (*Anas penelope*), teal (*Anas crecca*), mallard (*Anas platyrhynchos*), marsh duck (*Anas acuta*), swan-billed duck (*Anas clypeata*), shelduck (*Anas strepera*), red-throated duck (*Aythya marila*), eider (*Somateria mollissima*), long-tailed duck (*Clangula hyemalis*), black warbler (*Melanitta fusca*), goldeneye (*Bucephala clangula*), Red-breasted Red-breasted Red-breasted Goldeneye (*Mergus albellus*), Red-breasted Waterfall (*Mergus serrator*), Red-breasted *Sandpiper (Mergus merganser*), Spike-billed Sandpiper (*Charadrius hiaticula*), *Pluvialis squatarola*, Black-throated Sandpiper (*Calidris canutus*), Lesser Sandpiper (*Calidris minuta*), the marsh sandpiper (*Calidris alpina*), the banded godwit (*Limosa lapponica*), the dark-billed sandpiper (*Tringa erythropus*), the stone-rollers (*Arenaria interpres*), the alder (*Alca torda*) and the chryson (*Cepphus grylle*).

Riksu coastal limited-conservation area

The Riksu Coastal Limited-Conservation Area (KLO2000327) is located on the south-western coast of Saaremaa, covering both the coastal sea and land areas. The limited-conservation area is located 100 m from the landing area of the submarine cable route corridor. The area of the limited-conservation area is 2188 hectares, of which the water area is 1728.6 hectares and the land area is 4,459.4 hectares. The limited-conservation area overlaps with the Riksu coastal bird area and nature area, which are part of the Natura 2000 network.

The conservation objective of the Riksu coastal limited-conservation area is:

- Conservation of habitat types listed in Annex I of the Habitats Directive – coastal jaws (1150*), primary coastal ridges (1210), rocky beaches with permanent vegetation (1220), small islands and islets (1620), coastal meadows (1630*), sandy beaches with permanent vegetation (1640), grey dunes or fixed coastal dunes (2130*), juniper forests (5130), dry meadows on calcareous soils (6210*), alvars (6280*), mollusc communities (6410), wooded pastures (9070);
- Conservation of the habitats of the bird species listed in Annex I to the Birds Directive and of the migratory bird species not listed in Annex I. The bird species whose habitats are protected are the grey-cheeked grebe (*Podiceps grisegena*), the horned grebe (*Podiceps auritus*), the mute swan (*Cygnus olor*), the whooper swan (*Cygnus cygnus*), the lesser white-fronted goose (*Anser erythropus*), the barnacle goose (*Branta leucopsis*), the mallard (*Anas platyrhynchos*), the crested duck (*Aythya fuligula*), the eider (*Somateria mollissima*), Long-tailed Duck (*Clangula hyemalis*), Black Wheatear (*Melanitta nigra*), Eurasian Warbler (*Melanitta nigra*), Common Red-breasted Goldfinch (*Bucephala clangula*), Red-breasted Red-breasted Red-breasted Goldfinch (Mergus serrator*), Eurasian Red-breasted* Duck (*Circus aeruginosus*), Ringed Plover (*Charadrius hiaticula*), Lapwing (*Vanellus vanellus*), Meadow Sandpiper (*Calidris alpina schinzii*), Tundra Sandpiper (*Calidris alpina alpina*), Ruff (*Philomachus pugnax*), Dark Sandpiper (*Tringa erythropus*), Red-footed Sandpiper (*Tringa totanus*), Ringa *nebularia*, Tern (*Sterna paradisaea*), Shrewd Warbler (*Sylvia nisoria*) and Red-backed Shrike (*Lanius collurio*).

Karala-Pilguse limited-conservation area

The Karala-Pilguse limited-conservation area (KLO2000310) is located on the south-western coast of Saaremaa, encompassing both the coastal sea and land areas. The limited-conservation area is located 200 m from the landing point of the submarine cable route corridor. The area of the limited-conservation area is 2502.7 ha, of which the water area is 1422.6 ha and the land area is 1080.1 ha. The limited-conservation area overlaps with the Karala-Pilguse bird area and nature area, which are part of the Natura 2000 network.

The conservation objectives of the Karala-Pilguse limited-conservation area are:

- The habitat types listed in Annex I of the Habitats Directive – coastal jaws (1150*), primary coastal ridges (1210), cliffs open to the sea (1230), small islands and islets (1620), coastal

meadows (1630*), sandy beaches with permanent vegetation (1640), white dunes or mobile coastal dunes (2120), grey dunes or fixed coastal dunes (2130*), juniper forests (5130), dry meadows on calcareous soils (6210*), alvars (6280*), mollusc communities (6410), calcareous fens with western swordgrass (7210*), species-rich fens (7230), old-growth forests (9010*) – and the protection of the beautiful goldenrod (*Cypripedium calceolus*) of the species listed in Annex II;

- Conservation of the habitats of the bird species listed in Annex I to the Birds Directive and of the migratory bird species not listed in Annex I. The bird species whose habitats are protected are the mute swan (*Cygnus olor*), the barnacle goose (*Branta leucopsis*), the teal (*Anas crecca*), the mallard (*Anas platyrhynchos*), the swan-billed duck (*Anas clypeata*), the goldeneye (*Bucephala clangula*), the white-tailed eagle (*Haliaeetus albicilla*), the crane (*Grus grus*), the spike's beak (*Recurvirostra avosetta*), ringed plover (*Charadrius hiaticula*), lapwing (*Vanellus vanellus*), meadow dunlin (*Calidris alpina schinzii*), ruff (*Philomachus pugnax*), red-footed plover (*Tringa totanus*), tawny owl (*Bubo bubo*), heath lark (*Lullula arborea*), striped warbler (*Sylvia nisoria*) and red-backed shrike (*Lanius collurio*).

In the course of the impact assessment, it will be determined whether the planned activity may have an impact on the conservation objectives of these limited-conservation areas, focusing primarily on the bird species and grey seal related to the marine environment and the landing site of the area of the planned activity, which are conservation objectives. If necessary, mitigation measures are developed to prevent or mitigate the impact. The activities planned during the period of use will not have an impact on the conservation objectives of limited-conservation areas.

4.5.3. Protected species

This chapter deals with protected species and their habitats registered outside protected areas (protected areas, limited-conservation areas, permanent habitats). Of the terrestrial species, the EE-LV IV REP will cover the landing area of the submarine cable planned for south-western Saaremaa (Figure 10).

The following information about EELIS is as of March 2025. The EIA report must be prepared on the basis of the results of the relevant biota studies and the current status of EELIS.

The habitats of species of protection category I have not been registered in the area or in the vicinity of the submarine cable route corridor, as well as in the vicinity of the cable landing site.

The habitat (KLO9121560) of the Lesser Swan (*Cygnus columbianus bewickii*) is registered as a 50–70 m wide zone in the coastal sea at the landing point of the submarine cable route corridor, which is crossed by all individual cables to be laid.

The habitat (KLO9200581) of the insect species of protection category III is 490 m from the landing site of the submarine cable route corridor.

The habitats of protected fungal and lichen species have not been registered within a radius of 2 km from the landing point of the submarine cable route corridor.

In the course of the impact assessment, it will be determined whether the planned activity may have an impact on the habitat of the lesser swan (KLO9121560) located at the landing site of the submarine cable during the construction period. If the landing site of the submarine cable changes for some reason, the current status of protected species must be taken into account in the course of the impact assessment. If necessary, mitigation measures are developed to prevent or mitigate the impact. The activities planned during the period of use will not have an impact on protected species.

4.5.4. Species protection sites

The closest species protection sites to the landing site of the submarine cable route corridor are the Pussa Orchid Habitat (KLO3001236), which is 2.1 km away, and the Riksu white-tailed eagle species

protection site (KLO3002367), which is 3 km away. These species protection sites are located on land and do not border the coast. The sources of impact of the planned activity during construction and use are not known, the impact of which could extend to species protection sites and directly or indirectly affect the species protected there.

4.6. Birds

The Curonian Gorge and the Gulf of Riga are important areas for birds (Figure 25), as it is crossed by an important migration corridor of Arctic waterfowl, and the migration of several other bird groups is also concentrated on the west coast of Estonia. The Gulf of Riga is an important stopping area, moulting area and/or wintering area for many bird species, especially Arctic waterfowl. It is a so-called bottleneck area for migratory birds of international importance[84].

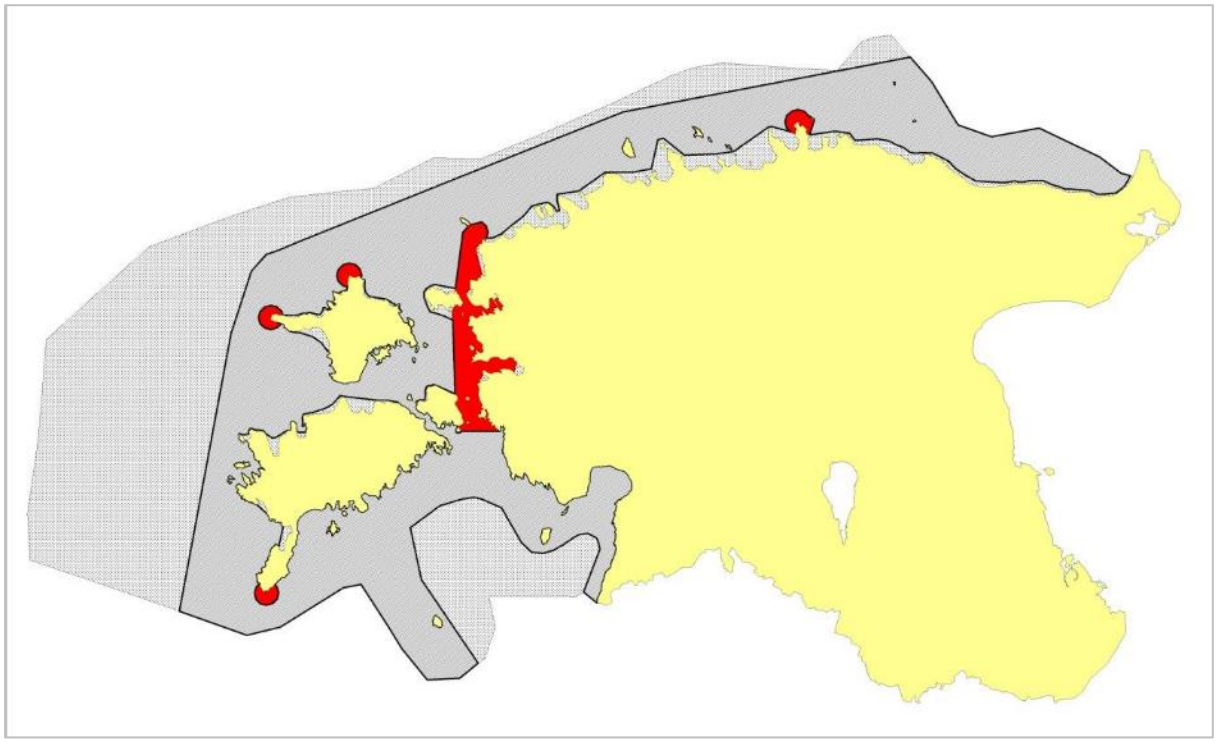


Figure 25. Zoning of the Estonian marine area according to the intensity of bird migration: I – areas of particular importance (red); II – areas of major importance (darker grey); III – important areas (lighter grey); land yellow. Excerpt from the basic study of the Maritime Spatial Plan[85]

In the area of the Saare Wind Energy wind farm planned to the west of Saaremaa, the most numerous bird species stopping at sea were the Long-tailed Duck (*Clangula hyemalis*), the Black Warbler (*Melanitta nigra*), the Little Gull (*Hydrocoloeus minutus*), the Herring Gull (*Larus argentatus*) and the Common Gull (*Larus canus*)[86].

According to the analysis of bird stopping areas carried out on Estonian marine areas[87], the area of the planned electricity connection route corridor has important wintering areas for Arctic waterfowl and areas of migration stopping places. According to the censuses, a very large number of long-

[84] County spatial plan for the maritime area bordering Pärnu County. SEA report. Hendrikson&Ko, 2016
[85] Preliminary study of the maritime spatial plan: compilation of existing data on the migration corridors of birds located in the Estonian sea area, compilation of map layers and preparation of an analysis of the impact of wind farms on bird feeding areas. Estonian Ornithological Society, 2016
[86] Bird surveys of the Saare Wind Energy wind farm. Estonian Ornithological Society, 2023
[87] Analysis of bird stopping areas. Estonian Ornithological Society, 2019

tailed ducks, black wagtails and black wagtails (*Melanitta fusca) stop in the area*. The stopping of Arctic waterfowl in this area is facilitated by the sea that remains ice-free for a long time and the relatively shallow sea depth, which allows diving waterfowl to feed from the bottom. Also abundant in the area are deer (*Gavia spp*), cormorant (*Phalacrocorax carbo*), little gull, herring gull and eider (*Somateria mollissima*). The most important bird stopping areas are located around the Sõrve peninsula, especially south of the peninsula. In the area of the southern tip of the Sõrve peninsula and the Curonian Gorge, there is a so-called migration bottleneck for both waterfowl and terrestrial birds, which means that the migration of a large number of birds is concentrated in a narrow area.

The number of waterfowl wintering in the area depends significantly on the ice conditions in the specific area. In colder winters, when the Gulf of Riga freezes, wintering waterfowl move to areas with open water on the west coast of Saaremaa.

4.7. Bats

During the spring period, the spring feeding and migration of stationary bat species to summer habitats and the spring migration of bats take place. By the end of this period, bat calving colonies will gather. During the summer period, bats give birth, raise offspring and become able to fly. Females are relatively sedentary at this time and stay around colony sites. In the autumn period, migratory species migrate and sedentary species prepare for hibernation and move around the landscape more widely than in the summer period.

Near the landing site of the planned electricity connection route corridor, there are most likely bat habitats, which are sparsely populated forests and coastal areas. The nearest habitats of bats registered in the EELIS database (water bat, pond bat and northern bat) are located 3 km from the landing point of the route corridor to an inland water body. Bats can also make feeding flights over the coastal sea. The spring and autumn migration of migratory bat species also takes place over the Gulf of Riga and the Curonian Throat area, and it may also take place along the west coast of Saaremaa.

The bat survey carried out within the framework of the EIA of the offshore wind farm in the Gulf of [88] Riga showed that the spring migration of bats is mainly taking place across the Gulf of Riga. The bat survey carried out within the framework of the EIA of the Saare Wind Energy offshore wind farm[89] showed that the migration of bats is relatively low in numbers west of Saaremaa.

There are no more detailed studies of bats in the area of the Curonian Throat, but due to the narrower sea area, it is likely that bats may concentrate in this area during migration.

All bat species are under nature protection.

4.8. Terrestrial fauna

There is no more detailed information about the terrestrial fauna of the area where the submarine cable route corridor will be disembarked. Taking into account the sparsely populated area and the predominant natural landscapes, the area of the landing site offers habitats for a large part of the most common species of the Estonian game fauna, such as roe deer, wild boar, fox, raccoon dog and grey hare.

Species related to coastal areas and species of coniferous and mixed forests are likely to predominate in birdlife. The habitats of protected bird species have not been registered in the vicinity of the landing site. There are also no recorded habitats for protected amphibians or reptiles, but it is likely that the moist forests and meadows in the area of the landing site provide habitats for the most

[88] Pre-construction study of hand-winged birds of the Gulf of Riga offshore wind farm. OÜ Elustik, 2023
[89] Study of bats at sea west of Saaremaa from May to October 2021. NGO Sicista Development Centre, 2022

common amphibians such as the grass frog, the marsh frog and the common toad. Of reptiles, the occurrence of the common lizard, grass snake and viper is relatively likely in the area.

At a distance of 490 m from the landing point of the submarine cable route corridor, the *habitat (KLO9200581)* of the insect species of protection category III has been registered (Coenonympha hero).

4.9. Terrestrial vegetation and key habitats

In the area of the landing site of the power line corridor, the coastline is bordered by a narrow (*about* 20–40 m wide) strip of coastal meadow, from which there is a streak of young mixed forest towards the inland, behind which there are sparsely populated areas, which have probably been formed from former coastal pastures. In a slightly wider area (*about* 100–400 m from the sea), relatively young secondary pine-dominated forests or forested meadow areas are spread, and behind the coastal formations, mixed mixed forests in areas with a lower relief. No Natura habitat types or forest key habitats have been registered at the point of landing of the submarine cable or inland from it. There are also no habitats of protected plant species registered in the area.

The closest habitat type to the landing site*, coastal meadows* (1630*), is located 160 m to the northwest. The habitat type *coastal meadows* (1630*) has also been mapped 440 m southeast of the landing site. The nearest key habitat (VEP000561) is located 540 m north of the chess birthplace.

4.10. Green Network

The comprehensive plan of Saaremaa rural municipality that is being prepared[90] , the landing point of the route corridor is not in the area of green network support areas or green corridors, but a blue network area has been designated on the coast, which runs along the coast as a 200 m wide zone (Figure 26).

The nearest green corridor is 1 km from the submarine cable route corridor area and the green network support area is 2.2 km away.

[90] Draft solution II of the comprehensive plan of Saaremaa rural municipality as of December 2024: https://gis.saaremaavald.ee/portal/apps/storymaps/stories/1f2979f0b92043bcb91fb52bca69e14a; accessed 27.03.2025

Figure 26. Location of the elements of the green network in the area of the landing point of the route corridor. Source: Saaremaa comprehensive plan II draft solution as of December 2024

4.11. Cultural Heritage on Land

4.11.1. Monuments

A monument is an[91] immovable or movable property of cultural value that has been placed under state protection pursuant to the procedure provided for in the Heritage Conservation Act, a part thereof, a set of things, an area of land or a building complex. A protection zone may be established for the protection of an immovable monument.

[91] RT: https://www.riigiteataja.ee/akt/111032023045?leiaKehtiv

The following monuments have been registered in the area of the disembarkation point of the submarine cable route corridor (as of 20.03.2025; Figure 27):

- Eye Spring (reg no. 12483): archaeological monument, historical natural sacred site;[92]
- Rannalauter (reg no. 31009): historical monument, underwater monument;[93]
- The main building of Kotlandi Manor (reg no. 20913): an architectural monument;[94]
- Cemetery "Kalmumägi" (reg no. 12484): archaeological monument;[95]
- Ancient fields "Põlemaruske" (reg no. 12488): archaeological monument;[96]
- Rannalauter (reg no. 31010): historical monument, underwater monument;[97]
- Kivikalme (reg. no. 12485): archaeological monument;[98]
- Kivikalme (reg no. 12486): archaeological monument;[99]
- Ancient fields (reg no. 12487): archaeological monument;[100]
- Rannalauter (reg no. 31007): historical monument, underwater monument.[101]

Underwater cultural heritage, see chapter 4.3.11.

The protection of monuments is regulated by the Heritage Conservation Act[102]. As the place of disembarkation of the submarine cable is indicative and it cannot be ruled out that it may change for some reasons, contact with cultural monuments cannot be ruled out at the EIA program stage. In the course of the EIA, when the place of disembarkation of the submarine cable route corridor is specified, the impact on monuments within the possible area of influence of the cable route will be assessed.

[92] Register of Cultural Monuments: https://register.muinas.ee/public.php?menuID=monument&action=view&id=12483
[93] Register of Cultural Monuments: https://register.muinas.ee/public.php?menuID=monument&action=view&id=31009
[94] Register of Cultural Monuments: https://register.muinas.ee/public.php?menuID=monument&action=view&id=20913
[95] Register of Cultural Monuments: https://register.muinas.ee/public.php?menuID=monument&action=view&id=12484
[96] Register of Cultural Monuments: https://register.muinas.ee/public.php?menuID=monument&action=view&id=12488
[97] Register of Cultural Monuments: https://register.muinas.ee/public.php?menuID=monument&action=view&id=31010
[98] Register of Cultural Monuments: https://register.muinas.ee/public.php?menuID=monument&action=view&id=12485
[99] Register of Cultural Monuments: https://register.muinas.ee/public.php?menuID=monument&action=view&id=12486
[100] Register of Cultural Monuments: https://register.muinas.ee/public.php?menuID=monument&action=view&id=12487
[101] Register of Cultural Monuments: https://register.muinas.ee/public.php?menuID=monument&action=view&id=31007
[102] RT: https://www.riigiteataja.ee/akt/111032023045?leiaKehtiv

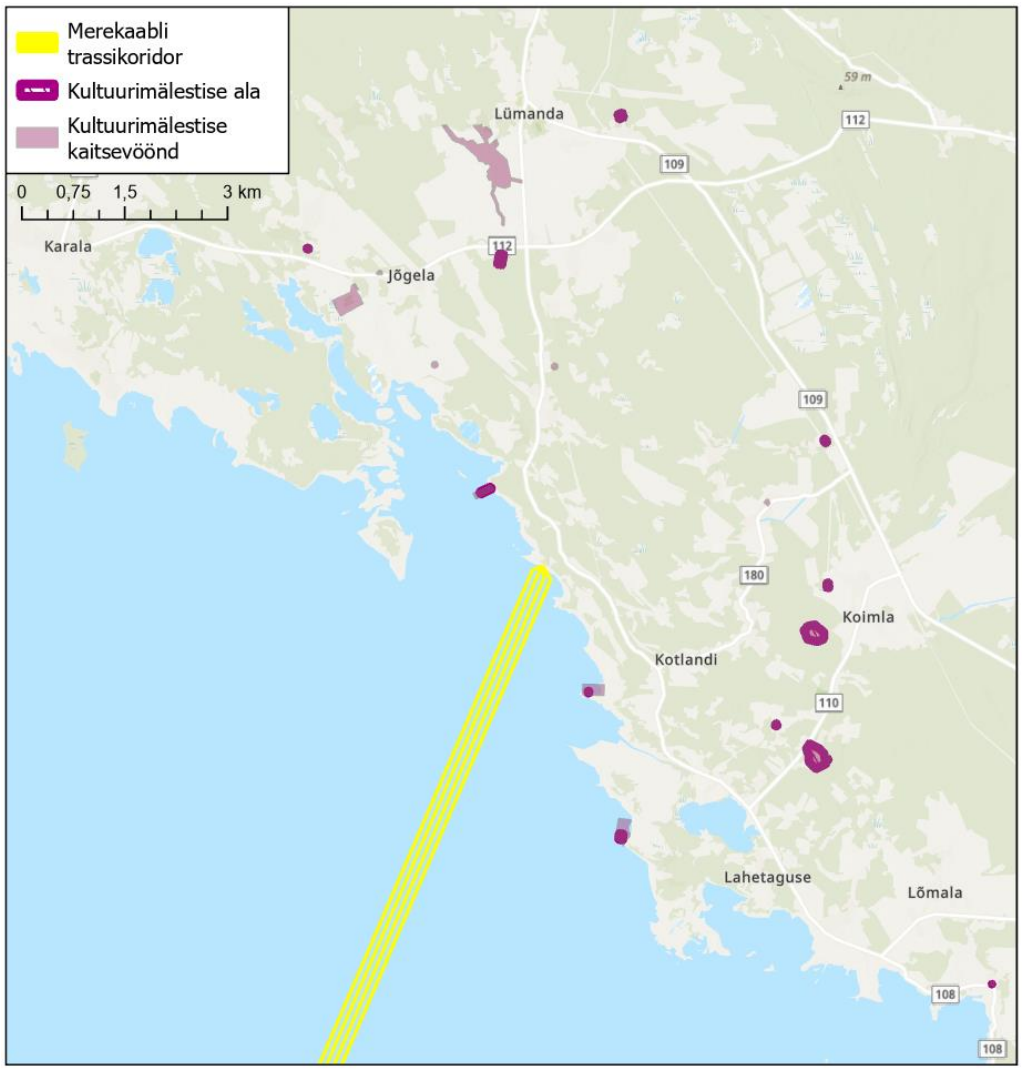


Figure 27. Location of cultural monuments in the area between the disembarkation site of the submarine cable route corridor and the locations of the alternative substations of Kotland and Lõmala[103]

4.11.2. Cultural heritage sites

Numerous cultural heritage objects have been registered in the area of the landing point of the submarine cable route corridor (in the possible location/landing area of the cable to Latvia as determined by the EE-LV IV REP) (Figure 28). As the place of disembarkation of the submarine cable in the referred drawing is indicative and it cannot be ruled out that it may change for some reasons, contact with cultural heritage objects cannot be ruled out at the EIA program stage.

In the course of the EIA, when the place of disembarkation of the submarine cable route corridor is specified, the impact on heritage cultural objects within the possible area of influence of the cable route will be assessed.

[103] Information on cultural monuments comes from the register of cultural monuments and the map application of MaRu cultural monuments (as of March 2025)

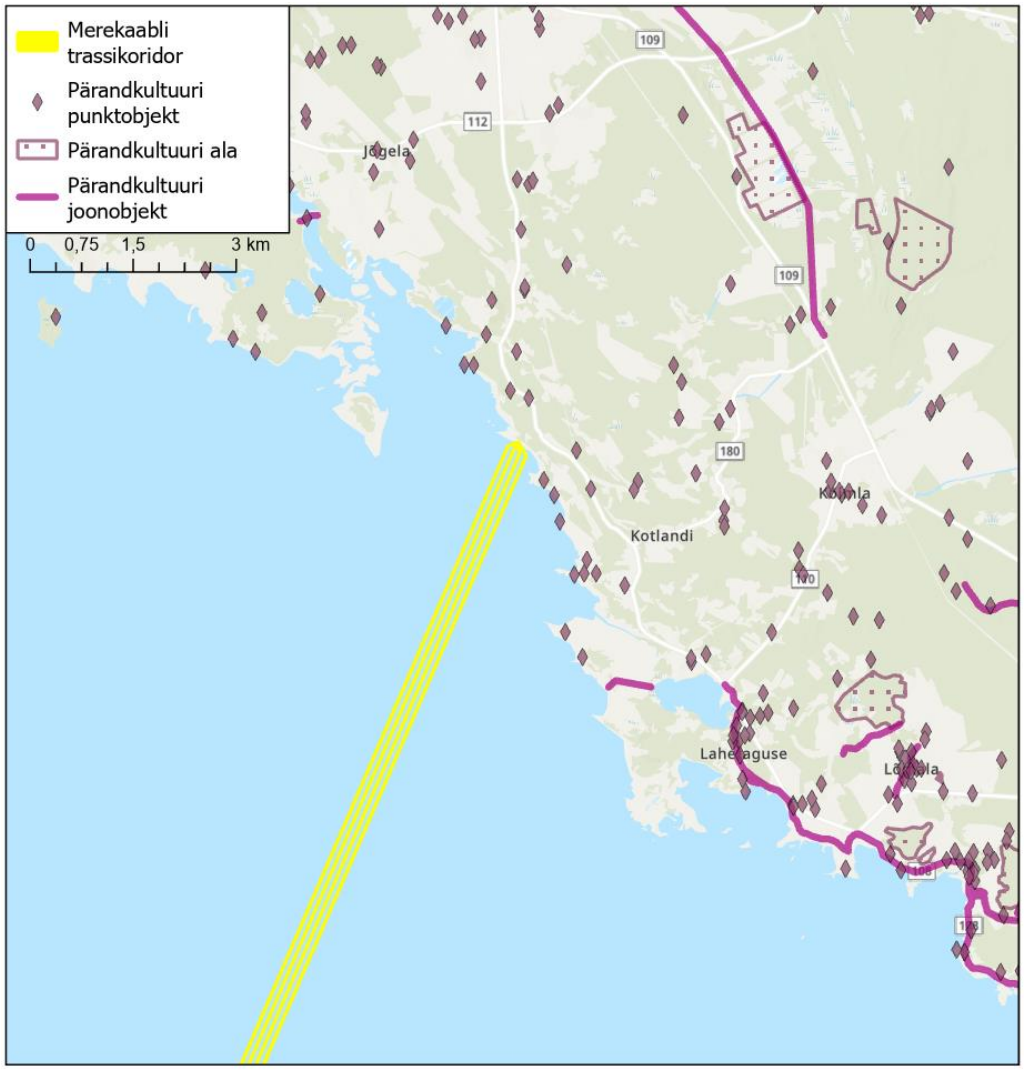


Figure 28. Location of heritage cultural objects in the area between the disembarkation site of the submarine cable route corridor and the locations of the alternative substations of Kotland and Lõmala[104]

4.12. Valuable landscapes, valuable views and beautiful road sections

Valuable landscapes

The comprehensive plan prepared by Saaremaa rural municipality[105] states that valuable landscapes are areas that have a higher value than the surrounding areas due to their cultural-historical background, relief, natural features and recreational value, which is why these areas also deserve more attention, preservation and maintenance. The basis for determining valuable landscapes is the basic study "Areas of Cultural and Environmental Value and Valuable Landscapes of Saaremaa".[106]

[104] Information on cultural heritage objects comes from the map application of MaRu cultural objects (as of March 2025)

[105] Chapter 7.5 of the explanatory memorandum to the draft solution of the comprehensive plan, as of December 2024: https://gis.saaremaavald.ee/failid/yp_koostamine/Saaremaa_YP_seletuskiri.pdf; accessed 19.03.2025

[106] https://gis.saaremaavald.ee/failid/yp_koostamine/MV2022/Osa%205%20V%C3%A4%C3%A4rtuslikud%20maastikud.pdf; Retrieved 19.03.2025

In the area of the landing point of the submarine cable route corridor on the coast, valuable landscapes have been planned with the comprehensive plan prepared by Saaremaa municipality (Figure 29). To the northwest of the landing place is the valuable landscape of Lümanda (a landscape of cultural-historical and identity value) and to the southwest is the valuable landscape of Riksu-Lõpe (a landscape of aesthetic and recreational value). As the place of disembarkation of the submarine cable in the referred drawing is indicative and it cannot be ruled out that it may change for some reasons, contact with valuable landscapes cannot be ruled out at the EIA program stage.

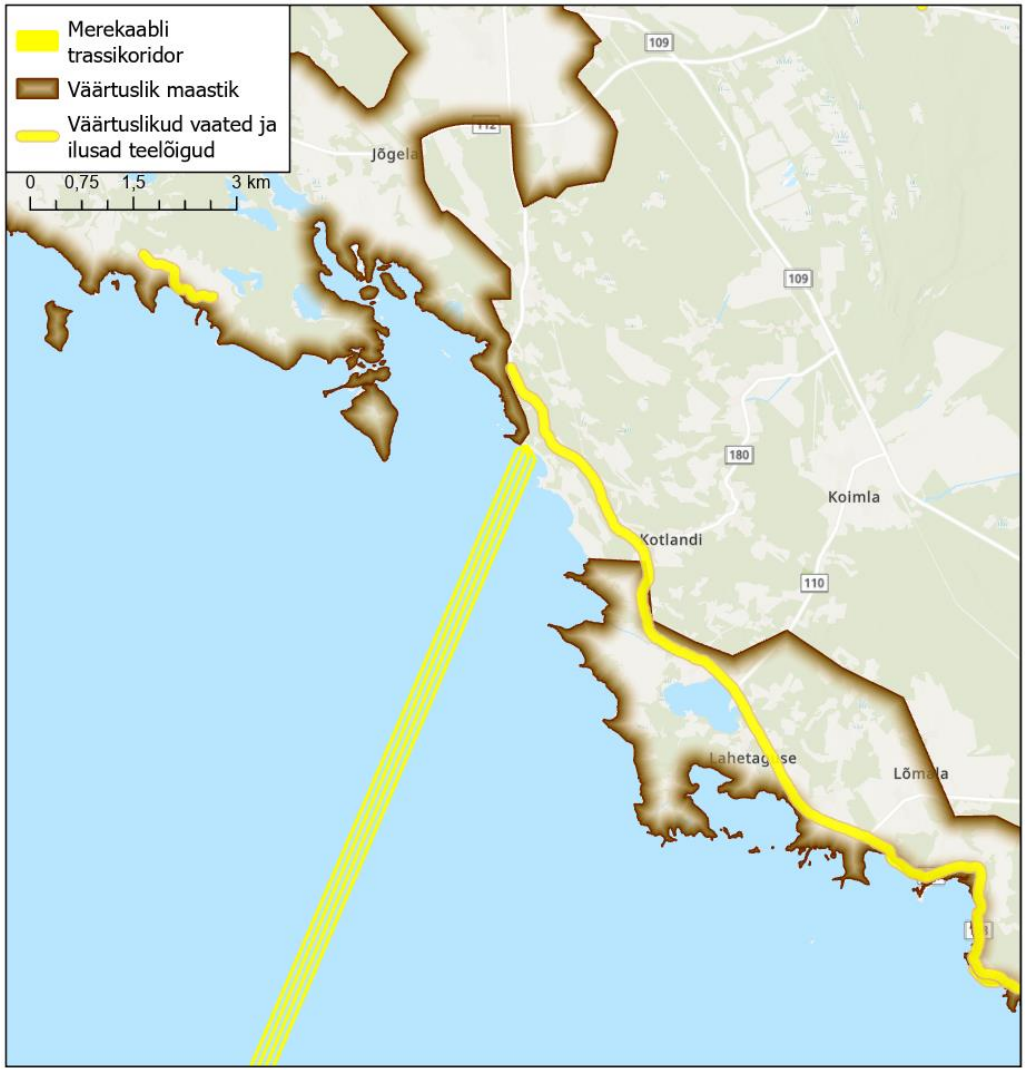


Figure 29. Location of valuable landscapes and a beautiful road section in the area between the landing point of the submarine cable route corridor and the locations of the alternative substations of Kotland and Lõmala[107]

The submarine cable and the underground cable planned for the coast up to the substation of the main network will not affect valuable landscapes, as the cable will not remain visible. The underground cable trench must be filled and the ground must be restored so that it blends in with the surrounding landscape. When planning a coastal substation, a location and solution must be found that has the least impact on valuable views. If these principles are followed, the planned cable route will not affect valuable terrain even if the cable route passes through an area designated as a valuable landscape.

[107] The information about the valuable landscapes and the beautiful road section comes from the draft solution of the comprehensive plan of Saaremaa municipality (as of December 2024)

Valuable views and beautiful sections of the road

Places with valuable views are generally easily accessible and have a wide view of the sea and/or the surrounding area from the road or coast. Beautiful road sections are part of a valuable landscape and are generally associated with the views they offer and the adjacent landscapes, in many cases with views of the sea and the beach. The road can also be a value in itself, e.g. historical alley or cobblestone roads.[108]

In the area of the disembarkation point of the submarine cable route corridor, the Mustjala-Kihelkonna-Tehumardi road (state secondary road No. 21102) running along the coast has been designated as a beautiful road section (with beautiful views); See Figure 29.

The submarine cable and the underground cable planned for the coast up to the main network substation will not affect valuable views, as the cable will not remain visible. The underground cable trench must be filled and the ground must be restored so that it blends in with the surrounding landscape. When planning a coastal substation, a location and solution must be found that has the least impact on valuable views. If these principles are followed, the planned cable route will not affect valuable views and beautiful road sections.

4.13. Valuable agricultural land

The comprehensive plan prepared by Saaremaa rural municipality[109] states that the general purpose of defining valuable agricultural land and setting the conditions for its use is to ensure their preservation to the greatest extent possible and to use them purposefully for agricultural activities. Agricultural land with above-average land quality as a limited and non-renewable resource is a value that must be used primarily for food production. Valuable agricultural land can be arable land (arable land), permanent grassland and land under permanent crops, where agricultural land use must continue.

Consequently, it is also important to find a location for the underground cable between the substation planned for connection to the substation for connection to the substation that is not harmful to valuable agricultural land.

In the area between the submarine cable route corridor and the alternative locations of the substation (Kotland and Lõmala), valuable agricultural land exists in relatively small, scattered pieces (Figure 30).[110]

[108] [108] Chapter 7.6 of the explanatory memorandum to the draft solution of the comprehensive plan, as of December 2024: https://gis.saaremaavald.ee/failid/yp_koostamine/Saaremaa_YP_seletuskiri.pdf; accessed 19.03.2025

[109] Chapter 8.7 of the explanatory memorandum to the draft solution of the comprehensive plan, as of December 2024: https://gis.saaremaavald.ee/failid/yp_koostamine/Saaremaa_YP_seletuskiri.pdf; accessed 19.03.2025

[110] Information on the location of valuable agricultural land comes from the second draft solution of the comprehensive plan of Saaremaa rural municipality (as of December 2024): https://www.saaremaavald.ee/uldplaneering

Figure 30. Location of valuable agricultural land (VPM) in the area of the landing point of the submarine cable route corridor. VPM information comes from the draft solution of the comprehensive plan of Saaremaa municipality (as of December 2024)

4.14. Fisheries

Fishing is divided into trawling, coastal fishing and recreational fishing according to fishing methods. The share of trawling in Saare County has been on a downward trend since 2020. The main fish species that are caught in trawls in this area are sprat and herring. Recreational fishing is rather on the rise, it can be assessed by the fishing cards issued in recent years, but this does not mean that fish catches have increased significantly as a result of recreational fishing. The main coastal fishing areas are the southern coast of Saaremaa (Gulf of Riga), the Väinameri Sea, Küdema Bay and Tagalaht. Fishing also takes place on a smaller scale around Papissaare, in the nearby sea of Vilsandi and on the west coast of Harilaid. The main fishing gear is traps and nets. However, around 40% of the fishing gear with purchased fishing rights has not been put on hold.[111]

There are flounder fishing areas on the west coast of Saaremaa, where mainly the same fish species are caught as elsewhere in the coastal sea of Saaremaa. The fish catch on the west coast of Saaremaa accounts for 8% of the total catch volume of coastal fisheries. In recent years, the total catch has

[111] Saaremaa Fisheries Region Strategy 2021-2029+. Island Fisheries, 2024

been lower than in previous years. The most commonly caught fish species in the western and southern coastal areas of Saaremaa are perch, flounder, roach, pike, Baltic herring, round goby, and sand pike.[112]

The main fishing areas of the Saare County fishing area are the Gulf of Riga (large fishing area 28-1), the central part of the Baltic Sea (large fishing squares 28-2 and 29) and inland water bodies the Nasva River and Mullutu Bay. The area of the submarine cable route corridor belongs to fishing square 28-2 (Figure 31).

The location of the submarine cable route corridor overlaps with small fishing squares in coastal sea numbers 314, 328 and 329 (Figure 31). Based on 2023 data[113] The most active fishing took place on 314 fishing plots (22 tonnes). The next were fishing squares 329 (1.05 tonnes) and 328 (0.14 tonnes). Fishing plot 342 is not related to coastal fishing, but trawling is relatively intensive there.

[112] Estonian Fisheries Industry 2022-2023. Fisheries Information Centre, 2024
[113] Information from the Agricultural and Food Board

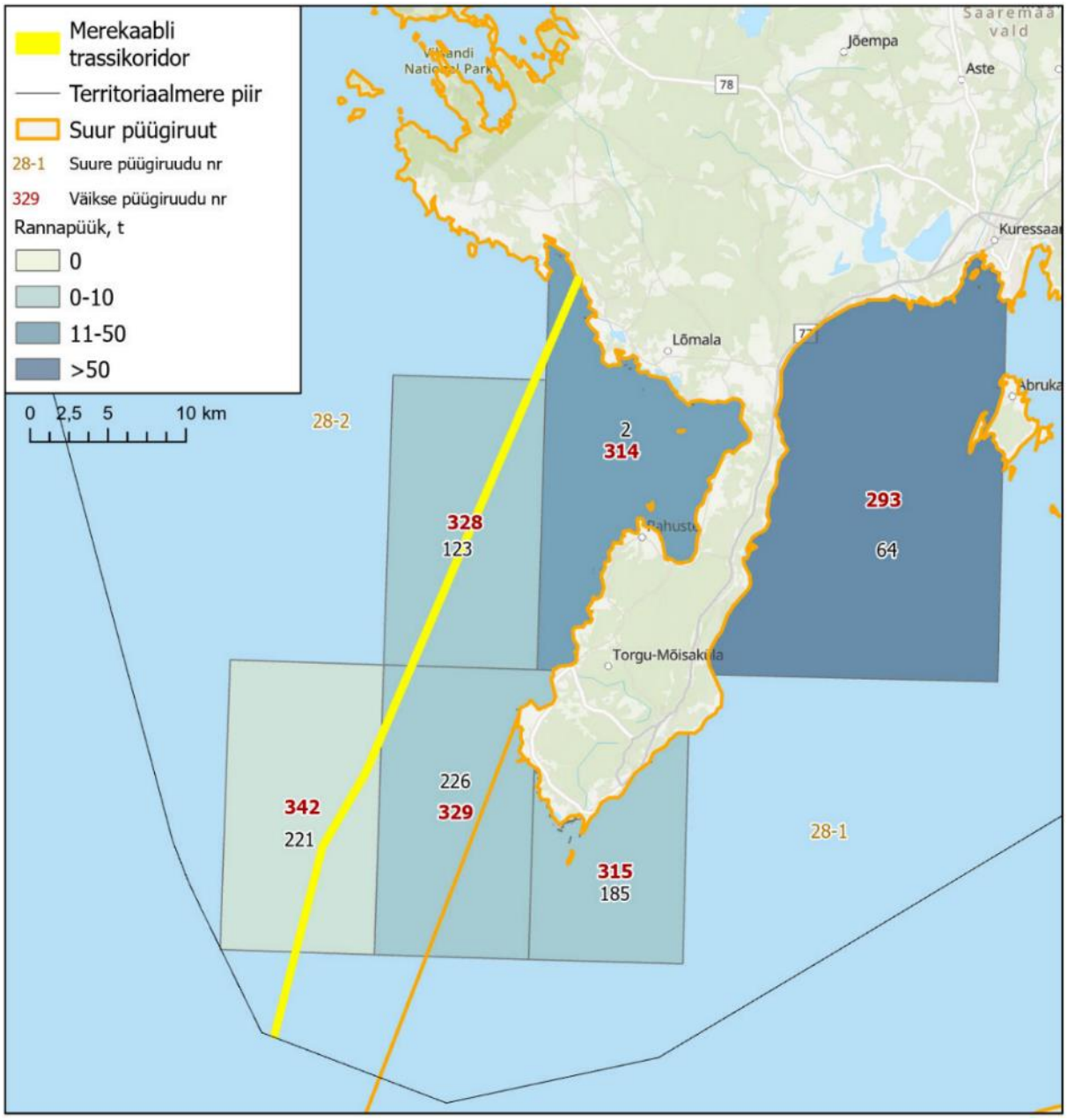


Figure 31. Location of the submarine cable route corridor in relation to the fishing squares. Sources: Ministry of Regional Affairs and Agriculture, Environment Portal

According to fishermen, the biggest problem in the Saaremaa fishing area is the constant growth of the grey seal population and the damage they cause to both fish stocks and fishing gear. Unfortunately, no thorough studies have been carried out in Estonia that would provide an accurate overview of the impact of birds and marine predators on fish stocks.[114]

The construction of submarine cables may affect trawling, as the laying of submarine cables limits the opportunities for trawling. The Building Code and Regulation No. 73 of the Minister of Economic Affairs and Infrastructure established on the basis thereof "Extent of the protection zone of a building, the procedure for operating in the protection zone and the requirements for the marking of the

[114] Saaremaa Fisheries Region Strategy 2021-2029+. NGO Saarte Fiske, 2024; https://www.saartekalandus.ee/wp-content/uploads/2024/12/Saaremaa_kalanduspiirkonna_strateegia_2021_2029_MUUTMINE_2024_2.pdf; retrieved 25.03.2025

protection zone" stipulate that the protection zone of the submarine cable route corridor is 100 m from the outermost cable in both directions. In the protection zone of a submarine cable, it is prohibited to anchor a watercraft, move with dropped anchors, chains, logs, trawls and nets, install traffic signs and boys for watercraft, and store ice. In addition, according to subsection 45 (8) of the Maritime Safety Act, activities that may damage the cable (anchoring, trawling, etc.) are prohibited closer than 0.5 nautical miles to the cable published in the navigation information.

A more detailed overview of the situation of the fishing areas in the catchment area is given in the EIA report on the basis of the information collected in the course of the fish population survey and expert assessment. The EIA report should also assess the impact of the restrictions arising from the protection zone of the submarine cable corridor on coastal fishing.

4.15. Land geology

Substratum

The bedrock in the landing area of the cable route is mainly formed by the Paadla stage ($S_{3PD)}$ limestone, dolostone and marl; In the area of Kotlandi village, the Kuressaare stage ($S_{3-4\ KR)}$ limestone and marl. In the Lahetaguse area, there is a valley buried in the bedrock (Figure 32).[115]

[115] MaRu geological map 1 : 400 000. EGT, as at 12.03.2025

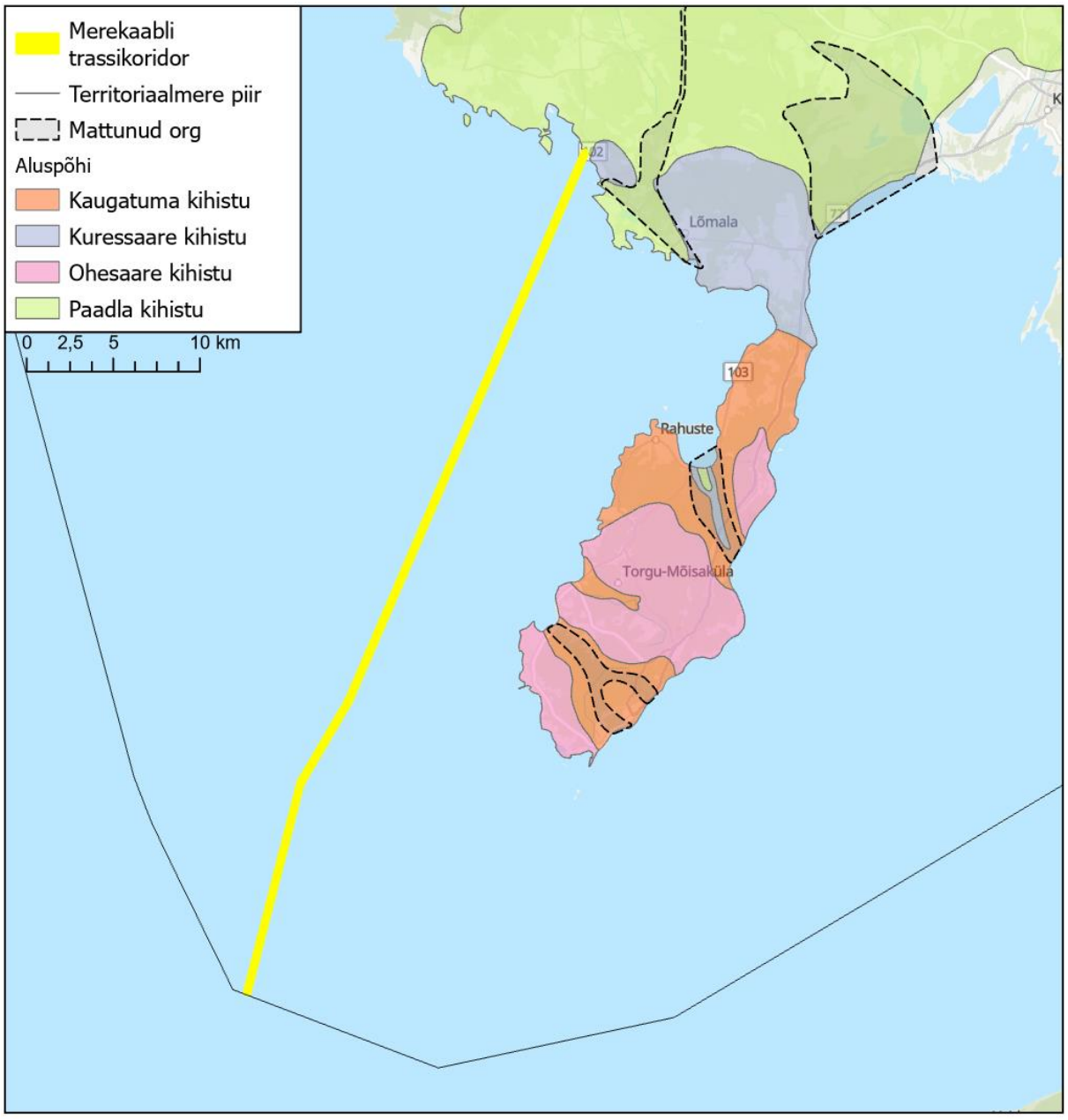


Figure 32. Land bedrock geology in the area of the landing point of the cable route. Base map MaRu geological map 1:400 000, EGT, 2025

Coating

On land, the surface cover in the landing area of the route corridor is mainly formed by marine sediments – pebble, sand, mollusk, clay sand, sandy loam, clay and sapropel; In the Lahetaguse area, moraine – sandy loam and clay sand with stones and silt (Figure 33).

According to the nearest borehole (PRK0053132), the surface covering at the point of disembarkation of the submarine cable route corridor is 3.5 m thick clay sand moraine and 3 m thick limestone. On land, the thickness of the ground cover is 2–31 m, increasing in the southeast direction – 2–15 m in the area of Pilguse Bay, up to 31 m in the buried valley in the area of Lahetaguse Bay[116].

[116] MaRu geological map 1 : 50 000. EGT, as at 28.02.2025

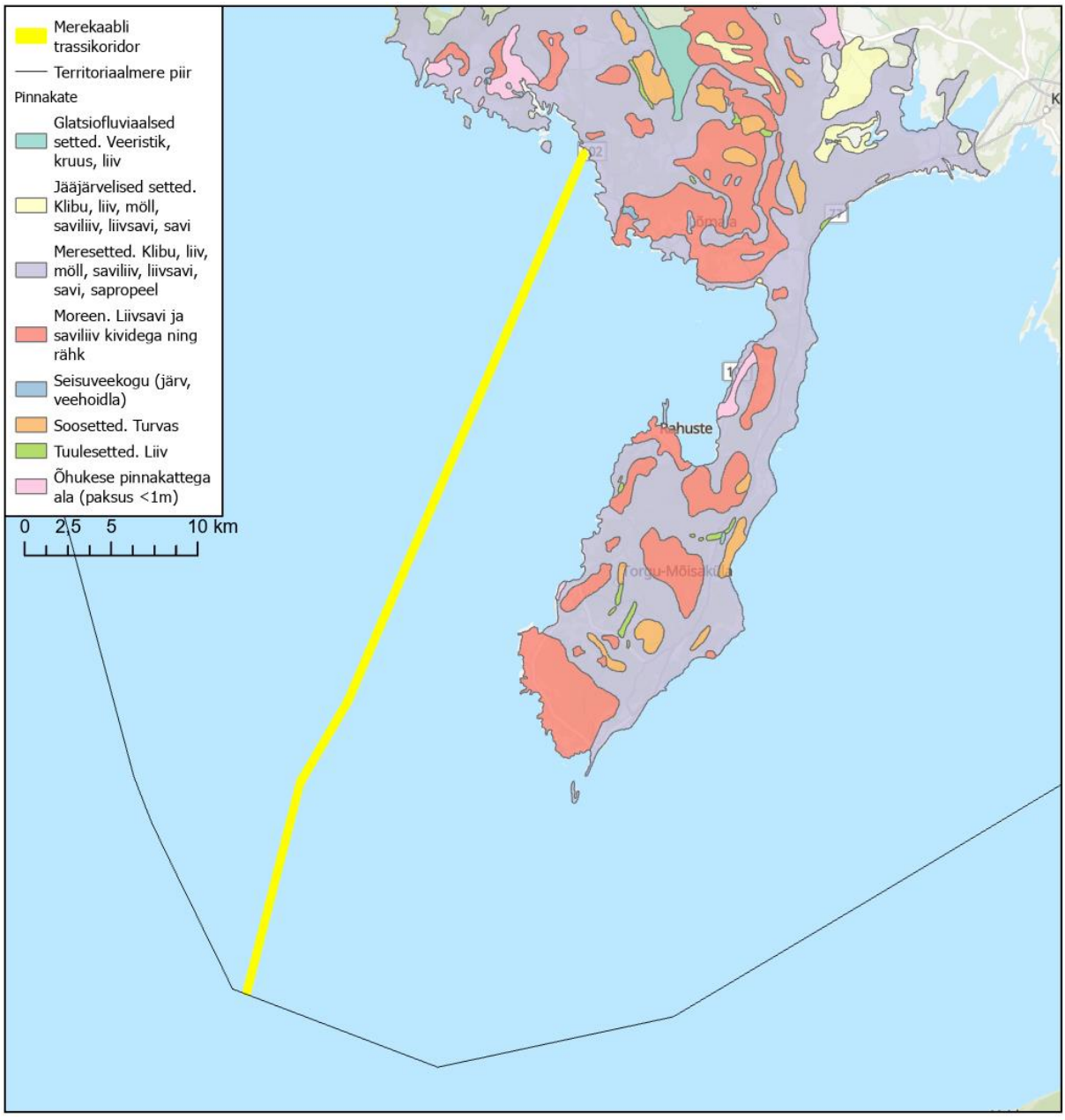


Figure 33. Geology of land cover in the area of the disembarkation of the cable route. Base map MaRu geological map 1:400 000, EGT, 2025

4.16. Mineral resources and deposits

The area of the planned activity in the sea area and on land and in its immediate vicinity does not include deposits, mining claims, perspective areas, hotspots or deposits.

4.17. Groundwater and drinking water resources

On land, the following are distinguished: West-Estonian river basin[117] belong to groundwater bodies (Figure 17):

- Silurian Saaremaa groundwater body (09§2019);
- Ordovician-Cambrian groundwater body in the West-Estonian river basin (04§2019).

The combined status of both groundwater bodies in 2020 is good, but endangered. The quantitative aggregate estimate for 2020 is good, the chemical aggregate estimate for 2020 is good, but endangered.

In order to assess the chemical status of the Silurian Saaremaa groundwater body based on the risk of salty or other water intrusion, the analysis of time series shows that the annual average chlorine (Cl) concentrations in observation well no. 12700 in Salme village have remained above the threshold value throughout the observation period, but there is no upward trend in the concentration of pollutants. The values of the baseline levels are also above the established threshold value in the observation well, which refers to the naturally high Cl content of the well. The groundwater body is in a good but endangered state. The reliability of the estimate is low.

According to the assessment of groundwater quality indicators in the West-Estonian basin of the Ordovician-Cambrian groundwater body, the threshold value established for Cl (250 mg/l) has been exceeded in observation well no. 12443 on the northern coast of Saaremaa. There is no upward trend of the pollutant in the monitoring well and the Cl content has been steadily above the threshold value in the period 2015-2019. The condition is good, but endangered. The reliability of the estimate is low. In order to assess the chemical status of a groundwater body based on the risk of saltwater or other water intrusion, the chemical status of the groundwater body can be considered good, but due to the existence of an upward trend in the annual average chloride concentrations of the national monitoring wells of the groundwater body, the groundwater body is endangered.

Both groundwater bodies (09§2019 and 04§2019) are represented in the area where the submarine cable route corridor comes ashore. At the point of disembarkation of the submarine cable route corridor, the first bedrock water complex from the ground is unprotected against pollution from the ground, in the landing area more broadly, groundwater is unprotected, weakly protected, moderately protected, and relatively protected in the Lahetaguse area[118] (Figure 34). The first bedrock water complex, the Silurian Saaremaa groundwater body, is located at a depth of 6.5 m according to the bore well closest to the landing site[119]. 110 m northeast of the landing site is bore well PRK0053132, which has a 10 m wide maintenance area. The borehole is 6.5 m deep and consumes water from the Silurian Saaremaa groundwater body (09§2019). The depth of the aquifer is 6.5 m. Three springs have been registered on the shore of Pilguse Bay in the land entry area: unnamed (VEE4726002, VEE4726000) and Hiieallikas (Pihlaranna Hiieallikas) (VEE4726200).[120]

[117] West Estonia river basin management plan 2022-2027. Approved on 07.10.2022 by directive no. 357 https://envir.ee/keskkonnakasutus/vesi/veemajanduskavad; Retrieved 12.03.2025
[118] Geological Base Map of Estonia, EGT 2025
[119] The borehole PRK0053132. EELIS, as of 07.03.2025
[120] EELIS, as of 07.03.2025

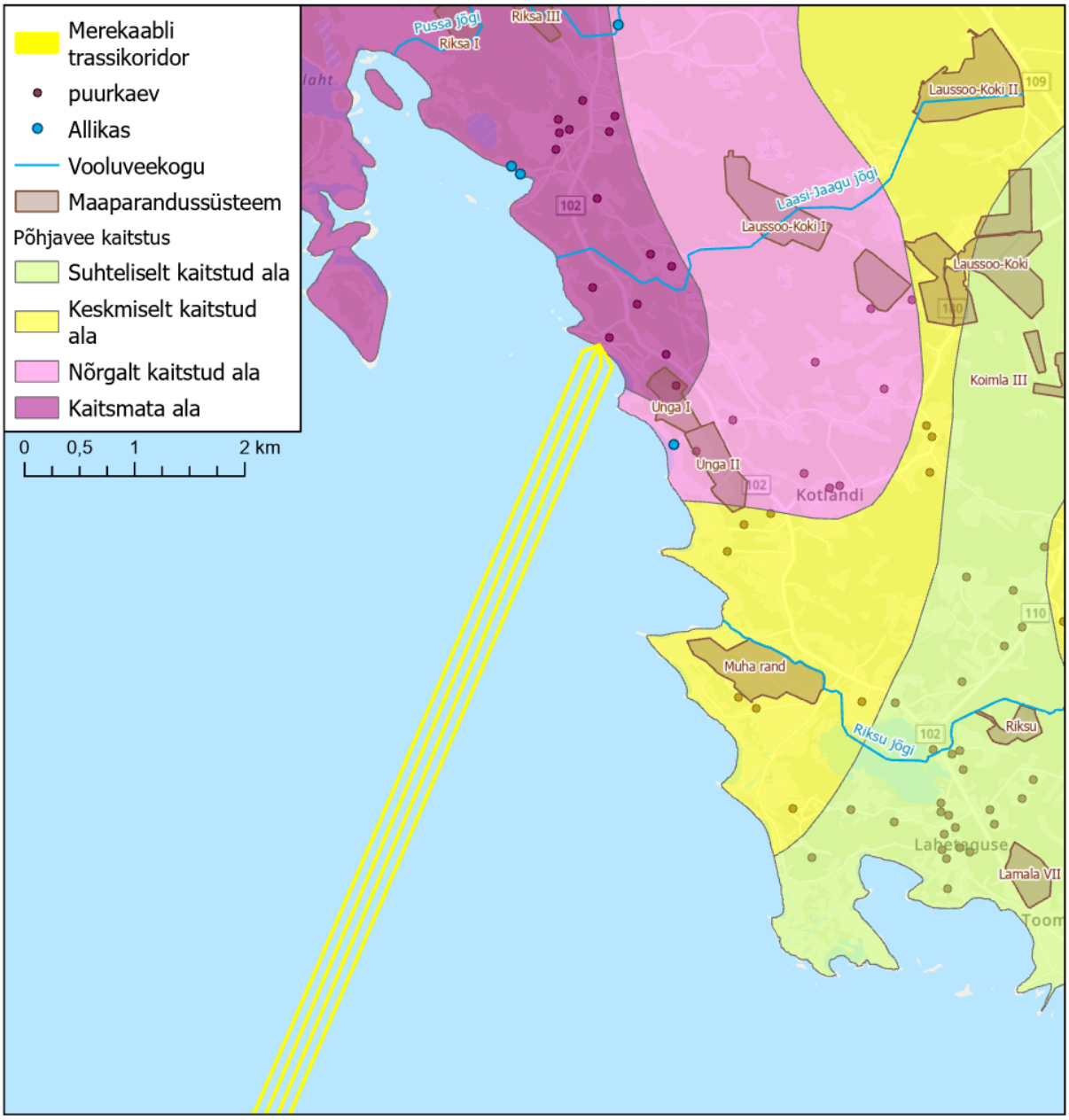


Figure 34. Protection of groundwater, bore wells, springs and watercourses in the area of the landing site of the planned submarine cable. Base map: MaRu geological map, EGT, 2025

In order to protect the status of groundwater, a condition has been set in the Saare County Plan, according to which additional measures must be used to avoid groundwater pollution when building in areas with poorly protected and unprotected groundwater and developing economic activities.[121] There are no groundwater intake supply areas in the vicinity of the area of the planned activity, and the location of the activity is not in the area of influence of the water intake of the city of Kuressaare.

[121] Saare County Plan. Strategic Environmental Assessment Report. Skepast&Puhkim OÜ, 2016

4.18. Surface water bodies and land reclamation systems

Surface water bodies on land

There are no bodies of surface water on land at the point of disembarkation of the route corridor. In the landfall area, the distance of 10 to 25 km running at a distance of more than 600 m from the landing point is more than 600 m^2 main ditch with catchment area Laasi-Jaagu River (VEE1167700; Figure 34). At a distance of 80 m to the east there is a small, 2–4 m wide, ditch (ETAK ID 2460984).

The south-eastern part of the landing area is crossed by the Riksu River (VEE1167500) flowing into Riksu Bay with a catchment area of more than 25 km2 and the Möldri Stream (VEE1167400) flowing into Möldri Bay with a catchment area of 10 to 25 km2, and in the north-western part, the main ditch Pussa River (VEE1167800) flowing into the inner part of Pilguse Bay with a catchment area of more than 25 km2.

Coastal waters

Although coastal waters (coastal water bodies) are counted as surface water bodies, this EIA program deals with coastal water bodies and their status among marine environment topics – see chapter 4.3.3.

Land improvement systems

There are no land improvement systems (Figure 34).

In the landing area of the route corridor, *about* 500 m southeast of the landing site, there is the land improvement system Unga I and Unga II, the headstream of which flows *into the sea about* 800 m away.

The land improvement systems Muha beach, Riksu, Lõmala II, Lõmala III, Lõmala I-II-III, Lõmala IV, Lõmala VI, Lõmala VII, Lõmala VIII, Vananõmme TTP-355-I and Vananõmme TTP-335-VII are located in the Lahetaguse area. The Koimla area is home to the land improvement systems Koimla I and Koimla II. The headwaters of the Koimla III, Koimlasoo, Laussoo-Koki, Laussoo-Koki I, Laussoo-Koki II and Kuusmaasoo land improvement systems flow into the main ditch of the Laasi-Jaagu River. The headwaters of the Rüüsa I and Rüüsa III land improvement systems flow into the main ditch of the Pussa River.[122]

4.19. Noise and vibration

4.19.1. Ambient noise

For the purposes of the Atmospheric Air Protection Act, ambient air noise is unwanted or harmful sound caused by human activity and transmitted in ambient air, which is produced by stationary or moving sources.

The standard levels of ambient noise are:

- noise limit value – the maximum permissible noise level, exceeding which causes significant environmental nuisance and above which noise reduction measures must be taken;
- Noise target value – the maximum permitted noise level in areas with new comprehensive plans.

According to the main purpose of land use in the comprehensive plan, the noise categories are determined as follows:

- Category I: areas of recreational facilities;

[122] MaRu Register of Land Improvement Systems, as of 13.03.2025

- Category II: land areas of educational institutions, health care and social welfare institutions and residential buildings, green areas;
- Category III: Land areas of the centre;
- Category IV: land areas of public buildings;
- Category V: production areas;
- Category VI: traffic areas.

A noise-sensitive area is defined in Regulation No. 71 of the Minister of the Environment of 16.12.2016 "Normative levels of ambient noise and methods for measuring, determining and assessing noise levels"[123] as an area designated by the main purpose of the comprehensive plan, for which noise norm levels have been established.

Noise-sensitive buildings are defined in Regulation No. 42 of the Minister of Social Affairs of 04.03.2002 "Noise Norm Levels in Residential and Recreation Areas, Residential Buildings and Buildings in Common Use and Methods for Measuring Noise Levels"[124] as residential buildings, care institutions, health care institutions, children's and educational institutions and other buildings for which the same regulation establishes increased requirements for noise.

The normative values for environmental noise are set out in Annex 1 to Regulation No. 71 of the Minister of the Environment of 16.12.2016.

For the purposes of the Regulation, traffic noise is noise caused by regular car, rail and air traffic and watercraft traffic, for which the average year-round traffic volume (car, rail and air traffic) or regular traffic during the period has been taken into account. For the purposes of the Regulation, industrial noise means noise caused by stationary noise sources, including wind turbines and ports.

Table 7. Normative levels of traffic noise. The noise descriptor is the estimated noise level *L* [dB]

Category	Period	Traffic noise limit value [dB]	Traffic noise target
I	day (*Ld*) night (*Ln*)	55 50	50 40
II	day (*Ld*) night (*Ln*)	60 (651) 55 (601)	55 50
III/IV	day (*Ld*) night (*Ln*)	65 (701) 55 (601)	60 50

[1] - *Permitted on the roadway side of noise-sensitive buildings*

The maximum sound pressure level of traffic noise in areas with noise-sensitive buildings *LpA, max* must not exceed 85 dB during the day and 75 dB at night.

Table 8. Normative levels for industrial noise. The noise descriptor is the estimated noise level *L* [dB]

Category	Period	Industrial noise limit value [dB]	Industrial noise target value
I	day (*Ld*) night (*Ln*)	55 40	45 35
II	day (*Ld*) night (*Ln*)	60 45	50 40
III/IV	day (*Ld*) night (*Ln*)	65 50	55 45

[123] https://www.riigiteataja.ee/akt/121122016027?leiaKehtiv (accessed 19.02.2025)
[124] https://www.riigiteataja.ee/akt/163756?leiaKehtiv (accessed 19.02.2025; the regulation is valid until 31.08.2025)

In the case of industrial noise, the maximum noise level shall not exceed the standard level established for the type of noise in the area of the corresponding noise category by more than 10 dBA.

The target value for industrial noise shall be applied as the limit value for noise emitted by technical equipment and commercial and commercial activities.

According to Annex 1 to Regulation No. 71 of the Minister of the Environment of 16.12.2016, the equivalent limit values for noise related to construction activities are standardised only in the evening and at night (between 21.00 and 7.00). Between 21:00 and 07:00, the industrial noise norm level of the relevant noise category is applied to construction noise as a limit value. During the day (7:00–21:00), no standard levels have been established for noise caused by construction works.

The industrial noise norm level of the relevant noise category is applied as the limit value for impulse noise. Work that causes impulsive noise, such as blasting, ramming, etc., can be carried out on working days from 7:00 a.m. to 7:00 p.m.

Although, according to the Atmospheric Air Protection Act, there are also noise categories V and VI, environmental noise requirements have not been set for them.

In connection with the laying of cables, there will be noise during construction caused by installation vessels (at sea) and construction machinery and trucks (on the coast in the area of the disembarkation site). During the period of use, there is generally no noise nuisance, except for periodic maintenance works of the cable corridor (removal of woody vegetation) in the coastal area. An exception is possible emergency work. When carrying out an EIA, the impact of the noise related to the planned activity on residential buildings in the vicinity of the landing point of the submarine cables must be analysed. An assessment of possible noise nuisance will be given in the EIA report once the place of disembarkation of the submarine cable and the working methods to be applied have been specified. When assessing the impact, the possible combined effect with other activities in the area must also be taken into account.

4.19.2. Underwater noise

Underwater noise has been recognised as a type of marine pollution that has a detrimental effect on marine life. Sources of continuous underwater noise include, for example, ship traffic and dredging works. Explosions that cause underwater impulse noise, etc. Sound-sensitive marine animals use sound, for example, for hunting, communication and sensing dangers. Underwater noise has harmful effects in the form of direct physiological damage, as well as by masking sounds, disrupting vital functions and increasing stress.[125]

During the construction of the Balticconnector gas pipeline between Estonia and Finland (dredging works, installation of the pipeline, filling of the trench), underwater sound monitoring was carried out in Lahepere Bay. According to the monitoring report[126] , the harmful impact of underwater sound on biota was assessed with the following limit values and the following assessment results were obtained:

Seals (exposure level):

- permanent increase in hearing threshold - 203 dB re: 1 $\mu Pa^{in\ 2s}$[127]
- temporary increase in hearing threshold - 183 dB re: 1 $\mu Pa^{in\ 2s}$

[125] The terms of reference for the underwater noise study of the Suur Väin fixed link. Annex 13 to the national designated spatial plan and strategic environmental assessment of the Suur Väin fixed link and the infrastructure necessary for its operation

[126] Environmental monitoring of the undersea part of Balticconnector in the territorial waters and exclusive economic zone of Estonia before and during construction works. Final report of monitoring during construction. Skepast & Puhkim OÜ, Maves AS and TUT. 2019

[127] *dB re: 1 µPa – decibel, decimal logarithmic relative unit of measurement in water, starting value is 1 µPa*

- sound pressure level of behavioural reactions 110 dB re: 1 µPa
- communication masking sound pressure level 20 dB re: 1 µPa over natural background

Pisces:

- Sound pressure level of behavioural reactions 150 dB re: 1 µPa

Risks to grey seals:

- The sound cards suggest that there were no exposure levels likely to result in permanent or temporary increases in the hearing threshold during the construction works. Level 189 dB re: 1 μPa^{2s} occurred during dredging operations only in the immediate vicinity of the vessel carrying out the work;
- June is the shedding season for grey seals, so their movement in the assessment area is unlikely. At the same time, the sounds related to the construction work do not spread to the island of Krassi, where the nearest grey seal den is located. Exposure levels near the island of Krassi exceeded the natural background by only a few decibels;
- The seals in the dredging area may have exhibited noise-avoidance behavioural reactions (exposure level greater than 110 dB re: 1 μPa^{2s}), which, however, do not pose a major risk to the population.

Risks to fish:

- it is possible that the works related to the installation of the gas pipeline disturbed the spawning and the development of juveniles in Lahepere Bay. At the same time, there is no information on the sound sensitivity of juveniles of fish for an adequate risk assessment;
- During the period of pipe installation work, the herring in Lahepera Bay may have exhibited behavioural reactions related to noise avoidance. Although the noise exposure levels in the sea area are less than 150 dB re: 1 µPa, considering that the actual noise is not continuous but consists to a large extent of pulsed sounds, behavioural reactions can also occur at lower exposure levels. Flounder and perch are probably less sensitive fish and their reactions may have been less frequent.

Based on the above, the above-mentioned monitoring report on the man-made underwater noise caused by the construction of Balticconnector concludes that it does not pose significant risks to grey seals and fish, but may temporarily affect the abundance of fish in Lahepera Bay.

Although the EE-LV 4 submarine cable line is smaller in volume compared to the Balticconnector gas pipeline, it must be taken into account that up to 4 parallel cables are planned to be installed and the cables will be sunk to the seabed into sediments *Ca* To a depth of 3 m (see chapter 2.5). Thus, when carrying out an EIA, the impact of the noise related to the planned activity on residential buildings in the vicinity of the landing point of submarine cables and the impact of underwater noise on seals and fish must be analysed. When assessing the impact, the possible combined effect with other activities in the area must also be taken into account.

4.19.3. Vibration

Vibrations can be caused by the installation of the cable using a closed method (drilling) and the traffic of related heavy equipment, such as excavators and trucks, in the coastal area. This is a short-term activity that takes place in a limited area.

Vibration levels are regulated by Regulation No. 78 of the Minister of Social Affairs of 17.05.2002 "Vibration limit values in residential and shared buildings and methods for measuring vibration", [128]which establishes the general vibration limit values in residential buildings and buildings in shared use. For the purposes of the regulation, wholebody vibration is a mechanical oscillation that is transmitted to a person standing, sitting or lying down through support surfaces. Construction works must be carried out in accordance with the requirements of the above-mentioned regulation.

[128] https://www.riigiteataja.ee/akt/110061?leiaKehtiv (accessed 19.02.2025; the regulation is valid until 31.08.2025)

No vibration is expected during use. In the event of cable repairs, the additional car traffic in the coastal area is short-term and local. In conclusion, vibration does not have a significant environmental impact if the provisions of the above-mentioned regulation are followed.

4.20. Electromagnetic field

Working power cables installed on the seabed create an electromagnetic field around them, which can affect fish. According to the report of the fish population survey carried out within the framework of the EIA of the building permit for the Gulf of Riga offshore wind farm[129] , the strength of the magnetic field of submarine cables decreases relatively quickly as the cable moves away from the cable, e.g. in the case of a cable buried at a depth of 1.5 m, in increments of 10 µT/m, and therefore the potential area of influence remains within the limits of a few, up to a maximum of a few tens of metres. The EE-LV 4 submarine cable is planned to be installed at a depth of up to 3 m. Therefore, the impact of electromagnetic radiation generated during the exploitation of submarine cable lines sunk into the seabed should remain minimal or non-existent.

In order to determine which fish communities occur in the area of the route corridor of the planned submarine cable line, a fish population survey must be carried out within the framework of the EIA (see chapter 5.3), the results of which will be used to assess the potential impact of the planned activity on the fish population, including an expert assessment of the possible impact of the electromagnetic field of the submarine cable on the fish population during construction and operation.

4.21. Residual pollution objects

In southwestern Saaremaa, no residual pollution objects have been registered in the area where the submarine cable line corridor came ashore.[130] There is no need to address the topic in the EIA report.

4.22. Waste generation

The generation of waste related to the installation of the submarine cable (construction activities) is minimal. The main principle to be followed is the separate collection of generated waste and its handing over to a waste handler with the relevant competence. If possible, apply the principles of the circular economy, i.e. recycle waste. If the activities are based on the requirements of the Waste Act and the local government's waste management rules, no significant environmental impact will be caused.

Under normal circumstances, no waste is generated during the use phase of the submarine cable. In the event of an emergency, e.g. during cable repairs, a small amount of waste may be generated, but the same requirements apply to waste management as to the construction phase.

Elering AS is applying for a superficies license for 50 years. At the end of the period of use of the submarine cable line, it must be decided whether the cables will be replaced with new ones, removed or left on the seabed. When removing/replacing cables with new ones, the old cables must be disposed of in accordance with the waste management requirements in force at that time.

There is no need to assess the impact of waste generation at the EIA report stage, as it does not have a significant negative environmental impact if the relevant legislation is followed.

[129] The impact of the offshore wind farm and cable route of Liivi Offshore OÜ on the fish population. Report. Estonian Marine Institute of the University of Tartu, 2024

[130] Environment Portal; Retrieved 18.02.2025

4.23. Flood areas and flood area risk areas

Flood is the temporary overlapping of an area of land that is usually not covered by water, including flooding, caused by rising water levels in a watercourse or rising sea levels in coastal areas. A flood caused by a sewer system is not considered a flood. A flood risk is the possibility of a flood that may have an adverse impact on human health and property, the environment, cultural heritage and economic activities.[131]

Flood risk area maps[132] show the likely rise in water levels in the 10, 50, 100 and 1000 year scenarios and reflect the extent of flooding and water levels. At the point of disembarkation of the submarine cable on land, the absolute water level heights in the risk area are 1.44 m (10 years), 1.85 m (50 years), 2.10 m (100 years), 2.90 m (1000 years), according to the probability of flooding.

The current areas with a recurrent risk of flooding and the high water line in the area of the planned landing site of the submarine cable in the vicinity of the village of Kotland in southwestern Saaremaa are shown in the figure below (Figure 35).

[131] Water Act § 106; RT: https://www.riigiteataja.ee/akt/122022019001?leiaKehtiv; accessed 31.01.2025
[132] Flood Risk Management Plan for Western Estonia 2022-2027. Ministry of the Environment, 2022

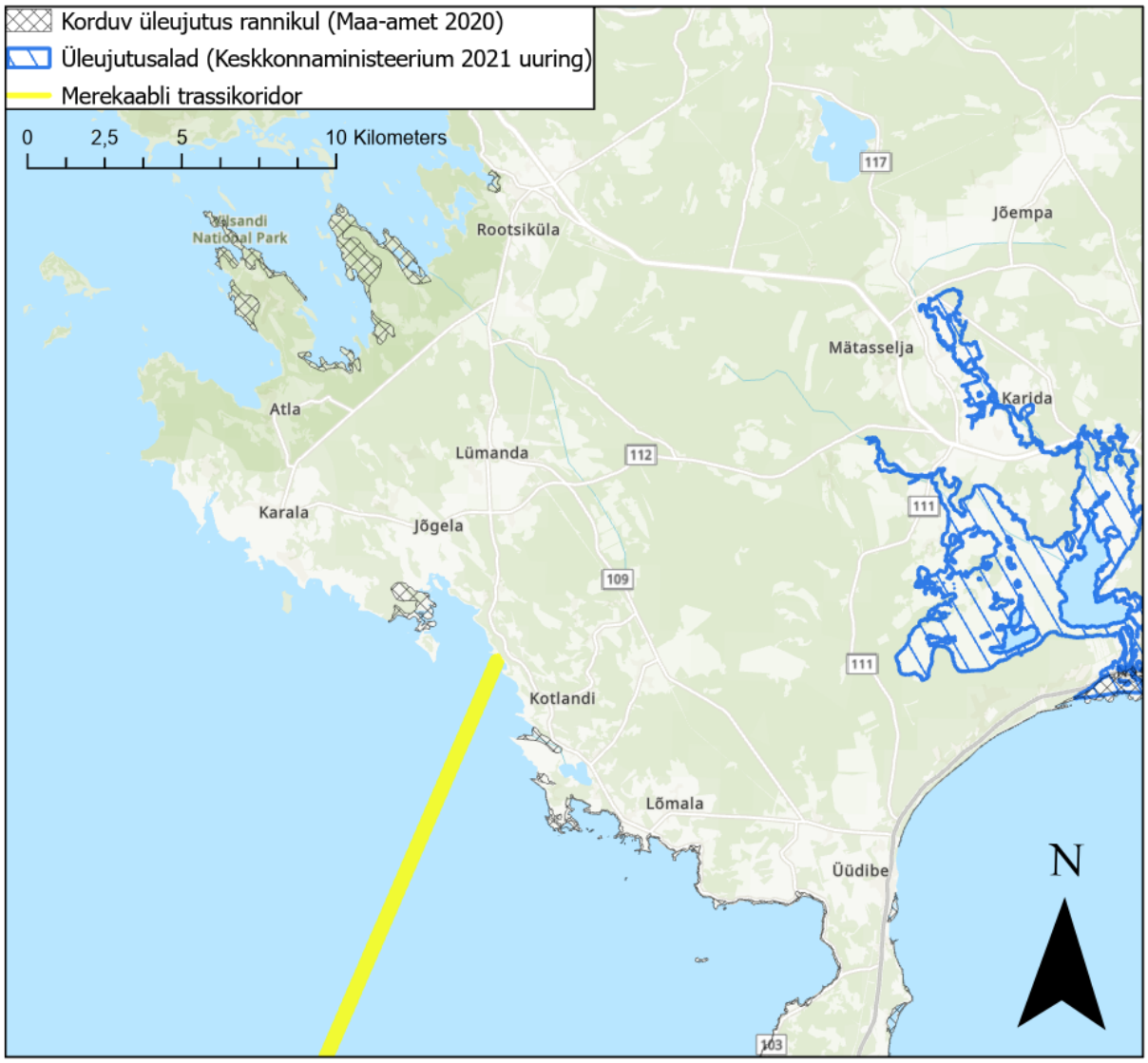


Figure 35. Location of the planned landing site of the submarine cable in relation to the high water line, flood areas and areas with recurrent flooding

It should be mentioned here that the above probable flood areas are based on statistical probability and in reality their frequency may change. In addition, the data on flood areas compiled by the Land Board are based on the EU Directive 2007/60/EC[133], on the basis of which the future rise in sea level and other climatic factors caused by climate change are not assessed in the case of flood area risk areas, so these flood areas only reflect the current situation. Therefore, in the future, in the conditions of climate change, the frequency of flood areas and the maximum rise in the water level will probably be higher than the current description based on the data of the Land Board.

The variations in the sea level in the Baltic Sea are mainly caused by the water exchange process through the Danish straits[134], which results in a slow water exchange process with the ocean because the Danish straits are narrow and have little water permeability between the Baltic Sea and the Atlantic Ocean. Therefore, the tide of the sea in the Baltic Sea is relatively small – it rarely exceeds

[133] https://eur-lex.europa.eu/legal-content/Et/TXT/?uri=CELEX%3A32007L0060
[134] Suursaar, Ü. and Kall, T. (2018) Decomposition of Relative Sea Level Variations at Tide Gauges Using Results from Four Estonian Precise Levelings and Uplift Models. *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, vol. 11, no. 6, pp. 1966-1974DOI: 10.1109/JSTARS.2018.2805833

10 cm[135]. If we do not take into account the short-term variability of the sea level, then in the Baltic Sea the impact of the tidal wave on the rise of the sea level is smaller and the effects of possible storm surges and floods are smaller than globally. In addition, Estonia is located on the Fennoscandian Shield, where the earth's crust and land surface rise after the disappearance of ice masses after the last ice age[136]. Thus, the projected rise in the water level in the Baltic Sea and in the coastal areas of Estonia will be lower than the global rise in sea level by 2100. It is estimated that this is *about* 87% of the global sea level rise, remaining between 61 and 104 cm by 2100[137]. According to the Development Plan for Adaptation to Climate Change until 2030[138] , the rise in sea level in Estonia's coastal areas will be between 20 and 60 cm by 2100 according to different scenarios.

In relation to the risk of flooding, the particularly dangerous sea level is considered to be at least 160 cm in Pärnu, 140 cm in Haapsalu, 160 cm in Narva-Jõesuu, 80 cm in Kopli and Pirita in Tallinn, 120 cm in the city centre harbour and 150 cm above the long-term average in Kuressaare. In planning and developing rescue systems, it must be taken into account that in the future, the corresponding contour lines of the area at risk of flooding will be located inland due to the rise in sea level. In the context of the planned activity and the landing point of the EE-LV4 submarine cables, the limit of the estimated dangerous level may be *Ca* At 150 cm. In order to characterise the potentially dangerous sea level limit by 2100 in view of the rise in sea level due to climate change and the risk of flooding in the context of the proposed activities, height data with a height of 225 cm (a notional sea level rise of 75 cm compared to the current level) have been used to illustrate the dangerous sea level and flood threshold at the point of disembarkation of submarine cables (Figure 36).

[135] Mälkki, P. and Tamsalu, R. (1985) *Physical feature of the Baltic Sea,* Finnish Marine Research, Helsinki, p86-87. http://hdl.handle.net/10138/167788 (accessed 31.01.2025)

[136] Ågren, J., Svensson, R., (2007) Postglacial Land Uplift Model and System Definition for the New Swedish Height System RH 2000 (LMV-Report 2007:4). Lantmäteriet. Available: https://www.lantmateriet.se/contentassets/4a728c7e9f0145569edd5eb81fececa7/lmv-rapport_2007_4.pdf (accessed 31.01.2025)

[137] Meier, H.M., Dieterich, C., Gröger, M., Dutheil, C., Börgel, F., Safonova, K., Christensen, O.B. and Kjellström, E., 2022. Oceanographic regional climate projections for the Baltic Sea until 2100. *Earth System Dynamics*, *13*(1), pp.159-199. Available: https://esd.copernicus.org/articles/13/159/2022/ (accessed 31.01.2025)

[138] Development Plan for Adaptation to Climate Change until 2030. Ministry of Climate. Can be found here: https://kliimaministeerium.ee/rohereform-kliima/kliimapoliitika/kliimamuutustega-kohanemine (accessed 31.01.2025)

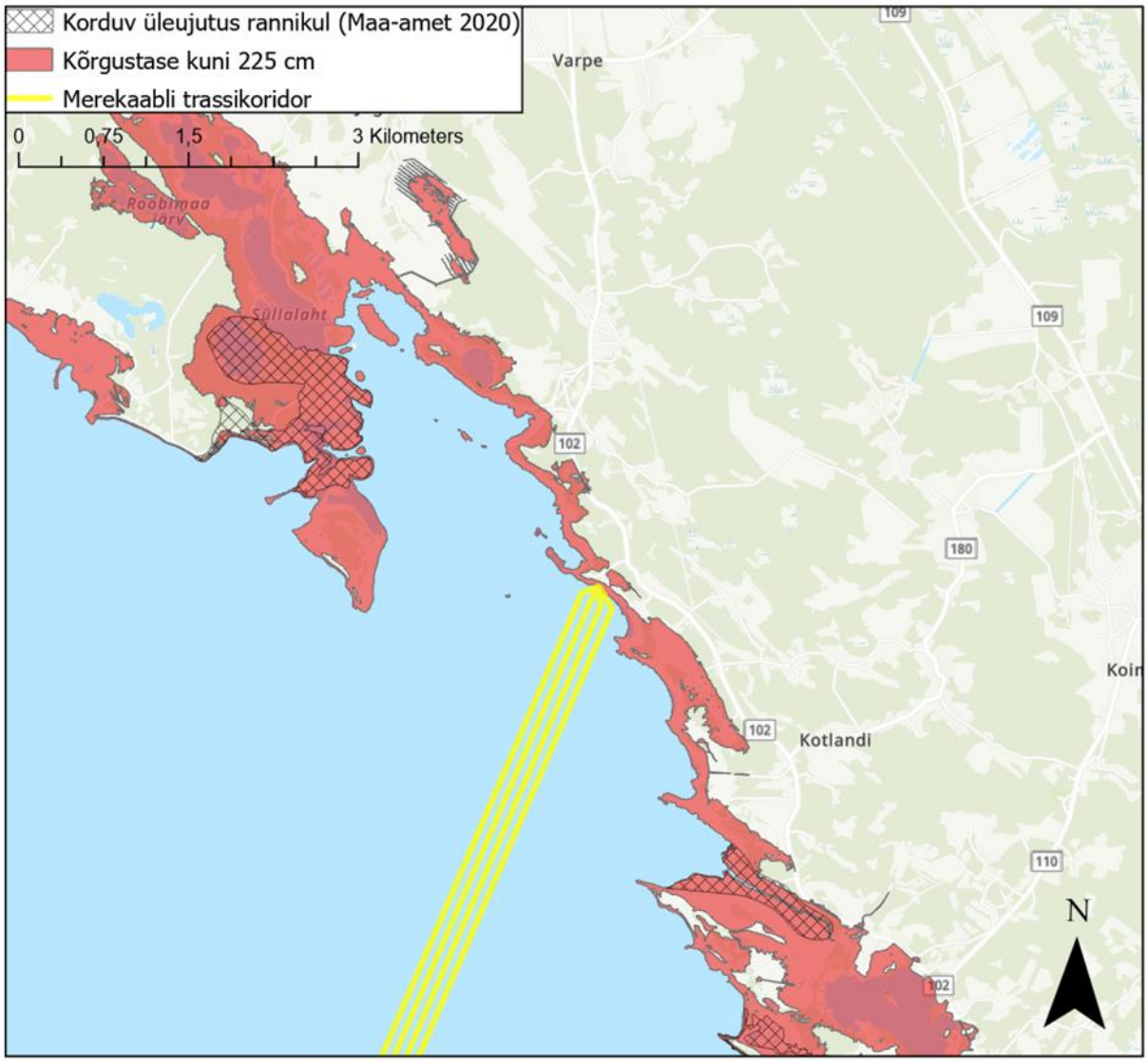


Figure 36. Recurrent flood area at the landing point of the cable route on the coast with a height level of 225 cm (notional dangerous sea level by 2100)

Floods are associated with a greater risk of erosion and soil transfer, especially in coastal areas, which means that the infrastructure there must be built with such situations in mind. In the context of the planned activities, this means that the landing site of submarine cables must be built in accordance with the increased risk of rising sea levels caused by erosion and storms. In addition, coastal areas are more exposed to winds, so in the context of future climate change, more intense and stronger wind gusts, stronger average winds and storms will have to be taken into account (although in the case of average winds, future scenarios foresee a high degree of uncertainty).[139]

When laying submarine cables, waves and wave heights must also be taken into account. Significant wave height and wave height data with a probability of occurrence once every 100 years are based on data from the Copernicus wave height analysis 2001-2017[140]. The significant wave height in the immediate vicinity of the planned activity and on the coast of Saaremaa will be between 2.8 and 4.0 metres, and the wave height occurring once in 100 years will be between 5.2 and 8.7 metres (Figure

[139] Development Plan for Adaptation to Climate Change until 2030; https://kliimaministeerium.ee/rohereform-kliima/kliimapoliitika/kliimamuutustega-kohanemine (accessed 28.02.2025)
[140] Copernicus Climate Change Service (2020): Ocean surface wave indicators for the European coast from 1977 to 2100 derived from climate projections. Copernicus Climate Change Service (C3S) Climate Data Store (CDS). DOI: 10.24381/cds.1a072dd6 (accessed 28.02.2025)

37). The frequency of significant wave heights and extreme wave heights in the area of the planned activity may increase in connection with the rise in sea level due to climate change.

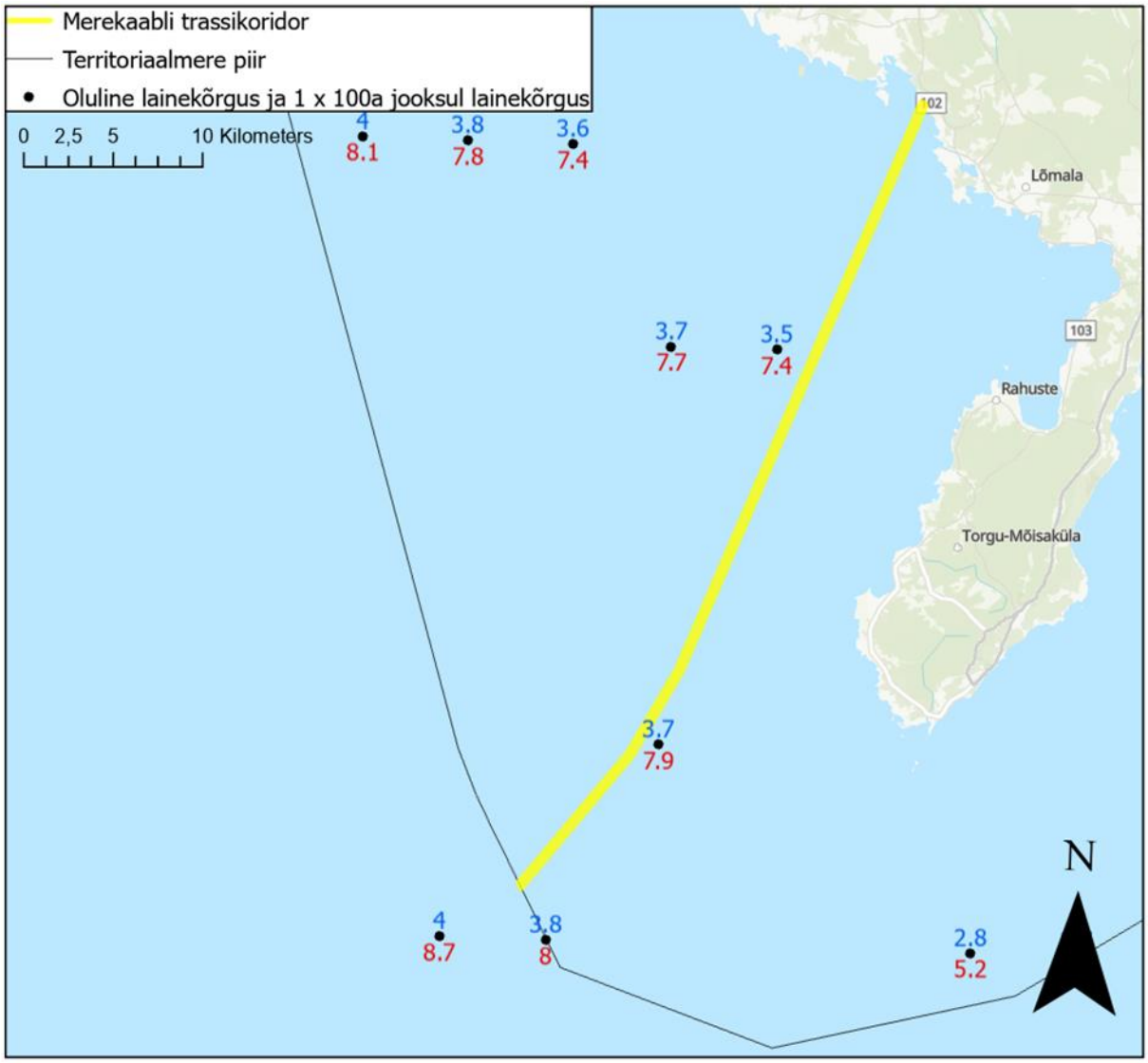


Figure 37. Significant wave height in metres (in blue) and wave height with a probability of occurrence once every 100 years in metres (in red) around and in close proximity to the proposed submarine cable

The risk of floods is assessed during the preparation of the EIA report, including an analysis of whether the landing point of the route corridor is in the risk area of flood areas and whether or what measures are necessary for the design of the electricity connection in the coastal area in the context of future climate change (see chapter 4.24.1). According to the forecast for 2024–2030, the area of the planned activity in the coastal area is not located in a risk area related to the risk of flooding[141]where there would be floods with significant adverse effects on people's property and health.

[141] MaRu flood area map application. Risk areas of flood areas (2024-2030). The layer was compiled in 2024 at the request of the Ministry of Climate.

4.24. Climate and climate impact

4.24.1. Current and future climate

To characterise the climate and climate change of the area of the planned activity, the data of the weather standards of the weather observation stations closest to the area of the planned activity (based on the data of the Estonian Environment Agency) have been used as reference stations. The weather observation stations in the vicinity of the area of the planned activity give an idea of the climate there as they are geographically located in the area.

The weather observation stations whose long-term time series have been used to describe the climate in the context of the area where the submarine cable came ashore are Vilsandi, Virtsu and Sõrve. These stations have been used because there is a long-term history of measurements (since 1961) and a comparison of climate norms.

To monitor climate change, 30-year climate standards are used to calculate and show long-term temperature and precipitation trends, which is also in line with the practice of the World Meteorological Organization (WMO). Climate change in recent decades can be estimated on the basis of such collected data. The increase in the amount of precipitation at all reference stations has steadily increased until the average annual norm of 1981-2010. However, the latest 30-year climate standard shows a slight decrease compared to the standards for all stations in 1981-2010. In terms of precipitation, the norms of the area of the planned activity are lower than in Estonia Average amount of precipitation (Figure 38).

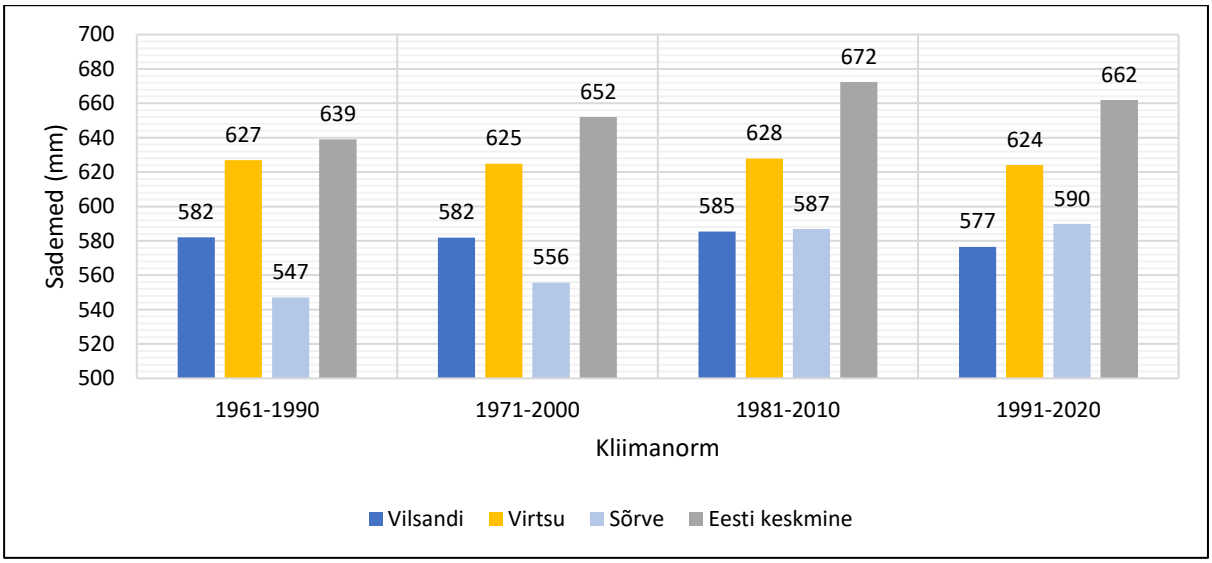


Figure 38. Climate norms for precipitation at Vilsandi, Virtsu and Sõrve weather observation stations from the norm from 1961–1990 to the climate norm for 1991–2020 compared to the average precipitation norms in Estonia

In addition to the increase in average precipitation, which has been observed in the context of both the current climate and climate change in the future, there is a greater risk and possibility of extreme precipitation in the spring-autumn period in the form of giant hail and freezing rain in the autumn-spring period in the context of Northern and North-Eastern Europe. In the case of freezing rain, a higher incidence (up to 50%) is predicted in the Estonian region as a result of climate change[142]. The

[142] Kämäräinen, M., Hyvärinen, O., Vajda, A., Nikulin, G., Meijgaard, E.V., Teichmann, C., Jacob, D., Gregow, H. and Jylhä, K., 2018. Estimates of Present-Day and Future Climatologies of Freezing Rain in Europe based on CORDEX Regional Climate Models. *Journal of Geophysiul Research: Atmospheres*, *123*(23), pp.13-291

latest example of giant hail in the area of the planned activity dates back to 7 June 2023, when a giant hail with a diameter of 7–8 cm fell in Sõrve[143].

The planned area is located in Western Estonia in the area of islands, the climate of which is greatly influenced by the sea. Although Estonia is located in the transition zone between the maritime and continental climates according to the Köppen classification[144], the western part of Estonia (including the area of the planned submarine cable) belongs to the maritime zone. Estonia is mainly affected by cyclonic activity in the Atlantic Ocean, the North Atlantic jet stream and cyclones and anticyclones moving from west to east. In characterising the temperatures of the area of the planned activity (and the climate dependent on it), similarly to the amount of precipitation, the data of the weather observation stations of Virtsu, Vilsandi and Sõrve have been used.

IPCC[145] The global temperature increase associated with anthropogenic climate change has been observed since the mid-19th century, with each of the last three decades being warmer than the previous one[146]. The trend of temperature increase is also shown by measurements of weather stations located in and around the planning area, where climate norms show an increase in average annual temperatures over the years (Figure 39), where the latest climate norm is 1.3°C warmer at the Vilsandi, Virtsu and Sõrve stations compared to the 1961–1990 norm. The stations on the islands and Western Estonia also show a higher average temperature than the Estonian average.

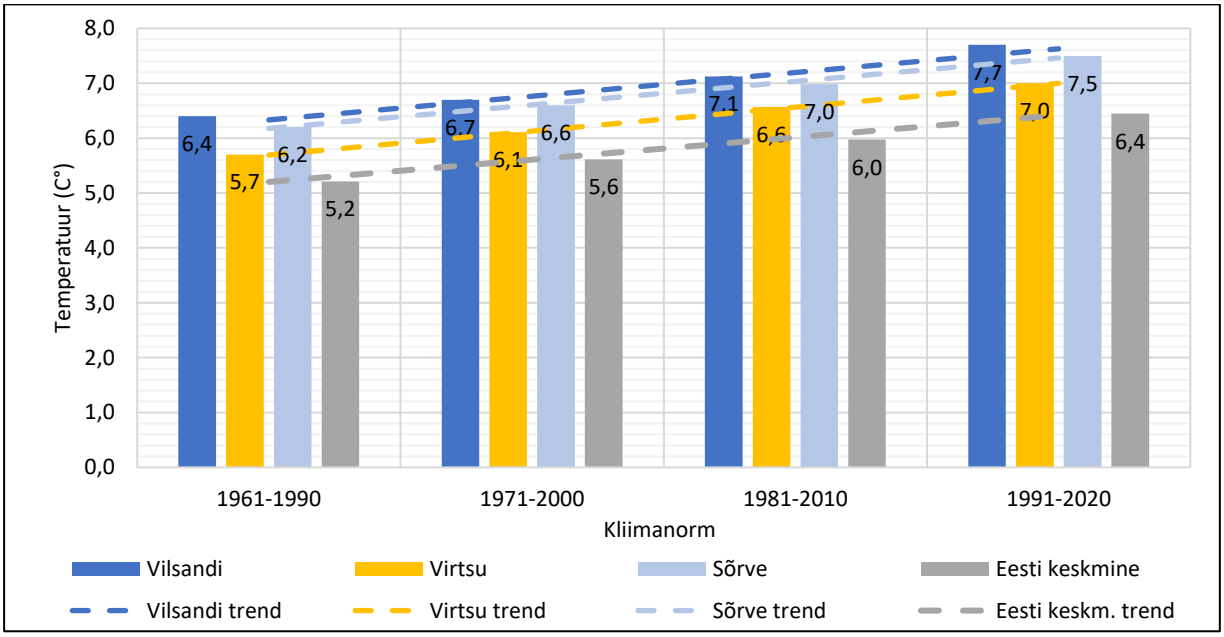


Figure 39. The temperatures of the weather stations of Vilsandi, Virtsu, Sõrve and the average climate norms in Estonia from the 1961-1990 climate norm to the 1991-2020 climate norm. Source: Environment Agency

[143] Record-breaking giant hail on the Sõrve peninsula |Environment Agency | WEATHER (ilmateenistus.ee)
[144] Beck, H.E., Zimmermann, N.E., McViur, T.R., Vergopolan, N., Berg, A. and Wood, E.F. (2018) 'Present and future Köppen-Geiger climate classifiution maps at 1-km resolution', Scientific data, 5(1), pp.1-12.
[145] The IPCC – the *Intergovernmental Panel on Climate Change* is a body established by the United Nations and the WMO. Established in 1988 next to the United Nations. 1992 Kyoto Protocol
[146] IPCC (2021) "Summary for Policymakers", In: Climate Change 2021: The Physiul Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change Masson-Delmotte, V., P. Zhai, A. Pirani, S.L. Connors, C. Péan, S. Berger, N. Uud, Y. Chen, L. Goldfarb, M.I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J.B.R. Matthews, T.K. Maycock, T. Waterfield, O. Yelekçi, R. Yu, and B. Zhou (eds.)]. Umbridge University Press, Umbridge, United Kingdom and New York, NY, USA, pp. 3–32, doi:10.1017/9781009157896.001

In the future, due to climate change, the temperature in Estonia is predicted to rise by 5.2°C by 2100[147], which in the context of this planned activity may mean an even greater increase in temperature in Western Estonia and on the islands in the future compared to the Estonian average.

The wind conditions in the area of the proposed activity are described by the wind rose at 57.82° north latitude and 21.67° east latitude based on data from the Copernicus ERA5 analysis period 2019-2024[148]. Southwesterly winds are predominant, the average wind speed for the period is nearly 7.3 m/s (Figure 40). The maximum average hourly speed during the given period will be around 20 m/s. Based on the data of the nearest meteorological station Sõrve 2004–2024, the strongest wind gusts on the coast in the nearby area have reached up to 28 m/s[149].

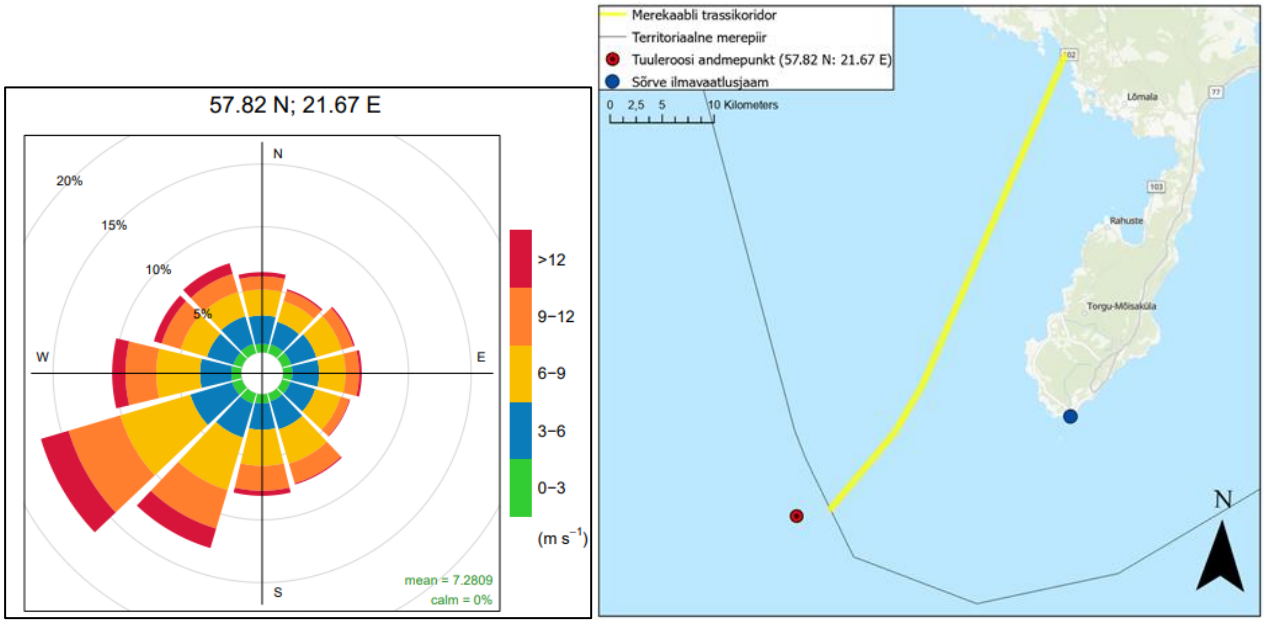


Figure 40. Wind rose with wind directions and strengths at the location of the planned activity (57.82° N; 21.67° E) at an altitude of 10 metres above sea level and the data point of the Sõrve weather observation station and the wind rose in relation to the submarine cable route corridor; R Studio program has been used to visualize the data of the wind rose ERA5 analysis

As a result of climate change, it is very likely that more intense and long-lasting heat waves will occur in Estonia in the future. In addition, the winter and spring periods warm up the most, which brings with them milder winters, but does not rule out extreme cold periods[150]. The[151] basic study of the maritime spatial plan and descriptions of the open part of the Gulf of Riga and the west coast of Saaremaa have been used to describe the ice conditions[152]. The opening part of the Gulf of Riga is characterised by dynamic ice conditions (0.02–0.045 m/s) and a shorter ice cover duration (less than

[147] University of Tartu, 2023. Can be found here: https://ut.ee/et/sisu/kliimamuutused-ja-eesti-mida-peab-teadma-ja-mida-ette-votma

[148] Hersbach, H., Bell, B., Berrisford, P., Biavati, G., Horányi, A., Muñoz Sabater, J., Nicolas, J., Peubey, C., Radu, R., Rozum, I., Schepers, D., Simmons, A., Soci, C., Dee, D., Thépaut, J-N. (2023): ERA5 hourly data on single levels from 1940 to present. *Copernicus Climate Change Service* (C3S) Climate Data Store (CDS), DOI: 10.24381/cds.adbb2d47 (accessed 21.02.2025)

[149] Historical weather data. Weather Service. Environment agency. Can be found here: https://www.ilmateenistus.ee/kliima/ajaloolised-ilmaandmed/ (accessed 03.03.2025)

[150] Environment portal: https://keskkonnaportaal.ee/sites/default/files/Teemad/ilm_kliima/2016-04-07-KAUR_Lopparuanne.pdf (accessed 28.02.2025)

[151] For ice conditions, see also chapter 4.3.5.

[152] Initial study of maritime spatial planning: analysis of ice conditions and preparation of maps. 2016. TalTech. Client: Ministry of Finance. Available: https://www.agri.ee/sites/default/files/documents/2023-06/uuring-2016-j%C3%A4%C3%A4olude-anal%C3%BC%C3%BCs.pdf (accessed 01.03.2025)

60 days on average). In harsh winters, the entire bay can be covered with ice for 3 months and scabs can occur throughout the opening part of the Gulf of Riga. In this area, the speed of ice drift can reach up to 0.23 m/s. The west coast of Saaremaa and Hiiumaa has the mildest ice conditions, where the ice cover occurs only in harsh winters for up to 30 days. Only in closed bays can the ice cover last for 3 months. Drifting ice (average speed up to 0.03 m/s) occurring in the western part of Saarema during harsh winters may pose a threat to marine facilities.

The description of the future climate is based on the "Development Plan for Adaptation to Climate Change until 2030"[153] and "Future Climate Scenarios for Estonia until 2100".[154] More specifically, they are based on a climate projection based on the global climate scenario RCP8.5. Although the RCP8.5 projection is designed to represent a *"business as usual*" scenario in which greenhouse gas emissions remain similar to those of 2014, the RCP8.5 scenario is likely to overestimate the amount of greenhouse gases in the atmosphere by the 2070s and 2100s. Thus, the actual changes compared to the base level of the 1971–2000 period will probably be somewhat smaller. However, it must be taken into account that the longer the lifespan of the planned activity and the further the climate projection data can be used, the use of the most extreme scenario RCP8.5 is justified to show very extreme projections. If adaptation to extreme weather phenomena as a result of climate change and to the general changing climate is ensured, resistance to the most extreme phenomena predicted at the moment is also ensured. According to this projection, the Estonian climate will change in 2041–2070 as follows (compared to the control period 1971–2000):

- (average) increase in wind speed in winter and spring by 3-18%;
- the air temperature (average, from a height of 2 m) rises to 2.6°C;
- precipitation (average) increases by 14%;
- precipitation (over 30 mm per day, summer) 137%;
- The number of snow-covered days decreases significantly (in January-February, the duration of snow cover is <10 days).

Although average changes have been highlighted, it must be taken into account that in the future, an increase in extremes is estimated to be likely in connection with climate change, which may be reflected in longer-term periods of heat and drought as well as as short-term periods of intense precipitation as a result of torrential rains. The latest example comes from the afternoon of 03.06.2024, where almost the entire June precipitation norm in Pärnu fell in an hour and a half, causing local flooding in Pärnu.[155] In addition, precipitation in the form of hail accompanying summer storms and thunderstorms has become more frequent, endangering infrastructure and human lives. This also applies to the area of the planned activity – such extreme torrential rains can also cause local flooding on the coast, thereby affecting the infrastructure.

The EIA report is prepared by analysing the risk of flooding caused by torrential rain in the context of the planned electricity connection and, if necessary, general recommendations are made for minimising flood risks, which must be taken into account in the design of facilities (e.g. substations) so that they are resilient to extreme weather conditions.

4.24.2. Impact on the climate

The climate impact of the planned activity is related to the *Life Cycle Assessment* (LCA) emissions of the cable to be installed and the release of CO2eq from seabed sediments related to the laying of

[153] Ministry of Climate: https://kliimaministeerium.ee/rohereform-kliima/kliimapoliitika/kliimamuutustega-kohanemine (accessed 28.02.2025)
[154] Environment portal: https://keskkonnaportaal.ee/sites/default/files/Teemad/ilm_kliima/2016-04-07-KAUR_Lopparuanne.pdf (accessed 28.02.2025)
[155] ERR, 2024. https://www.err.ee/1609361759/parnus-sadas-esmaspaeval-maha-peaaegu-terve-kuu-vihma-norm

the cable as seabed sediments change. In addition, the possible climate impact related to dumping is taken into account when laying the cables.

Lifetime emissions of the cable to be installed

The Cable Life Cycle Emissions Analysis (LCA) takes into account a number of steps, which include the extraction and production of raw materials, emissions from the manufacturing process, transportation, installation, use, maintenance, and finally dismantling and disposal of the equipment[156]. It starts with the extraction and production of raw materials, during which it is analysed which materials are used and how they affect the environment. The energy requirements and emissions of the production process, including the generation of exhaust gases, are then assessed. The transportation stage includes the transportation of the finished product, which also generates emissions. The installation process, including the installation of a cable or device, brings with it an additional burden. The use phase looks at the operating period of the device and the maintenance requirements that may lead to additional environmental impacts. Finally, the dismantling of the device and waste management, including recycling, will be discussed to assess how this step affects the environment. Each stage provides valuable information to understand the environmental impacts of a product's entire life cycle.

The assessment of the lifetime emissions of the cable required for the implementation of the planned activity is based on the analysis of the lifetime emissions of the cables located in the North Sea[157], which is based on the 450 kV DC voltage cable assessed there, as the most similar to the planned 330 kV cable. On this basis, emissions are 215 kg of CO_{2eq} /MW/km. The lifetime emissions of the proposed submarine cables shall be calculated in accordance with similar studies in relation to a specific volume (length and number and width of cable routes) and cable laying methodologies for different alternatives, and differences in emissions between different solutions shall also be separately highlighted.

Emissions related to sediment and seabed change related to cable laying

Burying cables disrupts seabed sediments, potentially releasing organic carbon that was previously stored there. When this carbon is oxidized, it can lead to CO2eq emissions, reducing the ability of the marine environment to act as a carbon sink. The estimate of the approximate CO_{2eq} emissions from sediment by this proposed activity is based on a global study that examines the impact of cables and human activities on seabed sediments up to a depth of 2 km[158]. Based on this, the CO2eq emissions from the sediment due to the placement of the cables will be in the range of 3.4 tonnes to 13.55 tonnes CO2eq per kilometre.

Emissions associated with cable laying and seabed change will be calculated according to similar studies for specific volumes (length and number and width of cable routes) and for different alternatives for cable laying methodologies, and the results will be presented separately.

Potential dumping-related emissions

The assessment of the climate impact of possible dumping is based on studies in Sweden on the basis of the Baltic Sea[159] and in the USA[160], where the life cycle emissions (LCA) of dumping activities

[156] Birkeland, C., 2011. *Assessing the life cycle environmental impacts of offshore wind power generation and power transmission in the North Sea* (Master's thesis, Institutt for energi-og prosessteknikk)
[157] Birkeland, C., 2011. *Assessing the life cycle environmental impacts of offshore wind power generation and power transmission in the North Sea* (Master's thesis, Institutt for energi-og prosessteknikk)
[158] Clare, M.A., Lichtschlag, A., Paradis, S. and Barlow, N.L.M., 2023. Assessing the impact of the global subsea telecommunications network on sedimentary organic carbon stocks. *Nature Communications*, *14*(1), p.2080.
[159] Svensson, N., Norén, A., Modin, O., Fedje, K.K., Rauch, S., Strömvall, A.M. and Andersson-Sköld, Y., 2022. Integrated cost and environmental impact assessment of management options for dredged sediment. *Waste Management*, *138*, pp.30-40.
[160] Bates, M.E., Fox-Lent, C., Seymour, L., Wender, B.A. and Linkov, I., 2015. Life cycle assessment for dredged sediment placement strategies. *Science of the Total Environment*, *511*, pp.309-318.

have been assessed. LCA covers all stages from extraction (dredging activities), dumping, transport, processing to final disposal in dumping sites. Both articles compare different placement strategies — dumping zones at sea and on land and the emissions of these alternatives in terms of energy consumption. Although the underlying studies do not indicate an option where the dumping area is located partly in water and partly on land, in this case it is advisable to use median values in the analysis between dumping into the sea and the land-based option, which gives an approximate estimate of the amount of emissions.

Total climate impact

The total climate impact associated with the installation of the submarine cable will be assessed in combination with the lifetime emissions of the cable itself, emissions related to seabed change and emissions related to possible dumping.

The aim of the planned activities is to ensure a stable and permanent electricity connection between Latvia and Estonia, which would also enable the supply of electricity produced with renewable energy to Estonia. In this way, the construction of the cable will also contribute to Estonia's national greenhouse gas reduction goals while ensuring energy security.

4.25. Impact on human health, well-being and property

Pursuant to subsection 20 (2) of the EIA[161] , the impact of the planned activities on a person's health, well-being and property is assessed in the course of the EIA. This includes an assessment of the impact during construction and use.

The impact during construction is caused by the construction activities accompanying the construction of cables in the coastal area and the accompanying noise, air pollution, transport during construction and other disturbances. The impact during construction is temporary, but the effect will cease at the end of construction activities. In the course of the EIA, an assessment is made of the nearest noise-sensitive buildings (residential buildings) and recreation areas at the point where the submarine cables come ashore, including a comparison of compliance with the normative levels of noise and air pollution. If possible, i.e. if information is available on the extent of construction work on the coast, the impact on land use will also be assessed.

During the period of use, the planned activity may affect land use (human property) on the coast to the extent of the cable protection zone. The protection zone of a building is the area under the construction work and the surrounding area, within the extent of which the owner of the immovable is obliged to tolerate a foreign building and within the limits of which the use and operation of the immovable is restricted in order to ensure safety and the functionality of the building.[162] Activities in the protection zone of a building are regulated by § 70 of the Building Code, § 77 of the Building Code in the protection zone of an electrical installation and[163] § 77 in the protection zone of a communication installation. The impact on land use during use is constant throughout the lifetime of the cables (the design life of the submarine cable is 40–60 years). In the course of the EIA, the impact (importance) on the use of the immovable in the cable protection zone is assessed on the basis of the restrictions provided by law.[164]

The planned activity does not entail a risk of a major accident during the construction and use period, which could cause an impact on the population or people's health, well-being and property.

[161] Regulation No. 34 of the Minister of the Environment of 01.09.2017 "Specified Requirements for the Content of the Environmental Impact Assessment Report"; RT: https://www.riigiteataja.ee/akt/106092017001
[162] Building Code § 70 (1); RT: https://www.riigiteataja.ee/akt/115042025002?leiaKehtiv
[163] Planned fiber optic cable
[164] The EIA's tasks do not include the valuation of the monetary value of real estate.

4.26. Cross-border environmental impact assessment

A cross-border environmental impact assessment has been initiated for the installation of the EE-LV 4 submarine cable in a public water body (Lisa 1). The presumed affected country is the Republic of Latvia. The decision-maker is of the opinion that due to the location and nature of the project (the route corridor in the Estonian sea area ends at the Estonian-Latvian sea border) and nature, the planned activity may presumably have a cross-border impact. Therefore, the environmental impact assessment must identify potential transboundary effects during the laying and operation of the submarine cable.

The transboundary environmental impact assessment is carried out in accordance with the procedure laid down in international agreements, the Convention on Environmental Impact Assessment in a Transboundary Context (Espoo Convention) and the Environmental Impact Assessment Act[165] . The procedure and involvement of the cross-border environmental impact assessment is led by the Ministry of Climate Change.

On 13.02.2025, the Ministry of Climate Change informed[166] *The Environment State Bureau of the Republic of Latvia of the* decision to initiate an environmental impact assessment (EIA) and of the possible transboundary environmental impact impact assessment (EIA) by letter no. 6-3/25/16-2. The Ministry of Climate Change forwarded to the TTJA by *letter no. 2.10/786/2025-N on 14.04.2025* the positions received from the Energy and Environment Agency[167] of the Republic of Latvia , which must be taken into account in the conduct and processing of the EIA.

The authorities of the Republic of Latvia mentioned below highlighted the aspects to be addressed and addressed during the cross-border EIA of the project, or provided more detailed comments on the cross-border impact:

- The Ministry of Foreign Affairs expressed the opinion that the project may have a cross-border impact in various aspects and supports Latvia's need to participate in the cross-border consultation process of the EIA project.
- The Ministry of Climate and Energy does not see the need to participate in the cross-border consultation of the EIA of the project. The Ministry would like to receive information about the EIA results of the project.
- The Ministry of Transport concludes that the process of laying submarine cables may affect ship traffic through the Irbe Strait and near Saaremaa in the Baltic Sea to/from Latvian ports. Therefore, the Ministry of Transport requests that a study be required within the framework of the EIA project on the impact on ship traffic in connection with the installation of submarine cables in the Baltic Sea.
- The Ministry of Agriculture states that the project may also affect the interests of Latvian fishermen, as they exploit the same fish stocks, and considers that it would be beneficial for the Republic of Latvia to participate in the cross-border EIA procedure. In addition, the Ministry of Agriculture notes that the decision no. 1-7/24-422 of the TTJA of 23.12.2024 on the initiation of the EIA procedure contains sufficiently detailed information on the studies planned within the framework of the EIA project that are related to fish stocks.
- The Ministry of Health does not see the need to participate in the project's EIA cross-border consultation on human health. The Ministry of Health has no proposals on the scope of the EIA project.

[165] KeHJS § 30. RT: https://www.riigiteataja.ee/akt/110102024009?leiaKehtiv
[166] Document register of the Ministry of Climate Change: https://adr.envir.ee/et/document.html?id=1ea569ca-6139-4260-8b5f-86d263102c22
[167] Document register of the Ministry of Climate Change: https://adr.envir.ee/et/document.html?id=635663bc-9e6a-4578-b528-087c6ab616e0

- The Nature Conservation Board concludes that the planned submarine cable will pass through the protected marine areas of the Curonian Gorge (EE0040434) and the Irbe Strait (LV0900300) Natura 2000 network, which are also important areas for birds. They are important wintering and resting places during bird overflights, as well as the so-called bottleneck of migration. The most important waterfowl species in need of protection are the red-throated grebe (*Gavia stellata*), the black-throated grebe (*Gavia arctica*), the black wagtail (*Melanitta nigra*), the long-tailed duck (*Clangula hyemalis*), the lesser black-headed gull (*Larus minutus*) and the chryson (*Cepphus grylle*).

  Considering that the exact location of the fourth electricity connection between Estonia and Latvia and other technical data on its location on the Latvian side are missing, it can be concluded that the cable corridors planned from Estonia in a straight line in the direction of Dunda would cover approximately 14–18 km in the protected area of the Irbe Strait, and the crossing in the direction of Ventspils would be approximately 35 km. In the case of Ventspils, the route corridor would pass through *the marine reservoirs* (*reefs*; 1170), a habitat type of European Union importance, which is temporarily planned as a marine protected area as a nature reserve as a result of the studies of the project LIFE19 NAT/LV/000973 REEF "Study of Marine Protected Areas and Determination of the Required Conservation Status in the Latvian Exclusive Economic Zone". There are also preliminary plans to establish a seasonal prohibited area for the protection of birds in the Irbe Strait Protected Area. If the project is implemented in several years, it is possible that at that time the scientific proposals for the coverage and exclusion zones of marine protected areas will be approved by normative acts.

  The Nature Conservation Board announces that at the moment, the procedure for the protection and use of the protected marine territory *of the Irbe Strait* has been determined by the MK Regulation No. 807 of 19.10.2011 "Rules for the individual protection and use of *the protected marine territory Irbe Strait*", which allows the installation of cables. In addition, the Nature Conservation Board notes that according to the long-term spatial development planning document "Maritime Spatial Plan 2030" at the national level (approved by the Cabinet of Ministers' Order No. 232 of 21 May 2019), a corridor of a prospective power cable (K4) from / to Kolka is planned.

  Although the Nature Conservation Board finds that it is not necessary to participate in the cross-border EIA procedure as an affected party, the Nature Conservation Board would like to receive the EIA report and get acquainted with the project's impact study *on the protected areas of the Curonian Throat* and *the Irbe Strait*, including an analysis of how the planned cable corridor will cumulatively affect the migration of fish, marine mammals, bats and birds and the species under special protection found in Natura 2000 areas.

- The State Environmental Service concludes that the project may affect the maritime territories located in the exclusive economic zone of the Republic of Latvia. The State Environmental Service also sees the need to assess the project in the context of the national planning document "Maritime Plan 2030" and to pay special attention to the impacts on fish and seabirds (including the study of their nesting and feeding sites), other marine fauna and flora (including the effects arising from suspended solids caused by excavation works), and the emergence and spread of possible heavy metal pollution on the seabed. The State Environmental Service asks to consider an alternative for laying cables on the seabed without excavations. Given that two of the currently planned route options (to Dundagas) may no longer be considered in Latvia, it is recommended to consider the need for further exploration of these alternatives.

- The Kurzeme Planning *Region* supports Latvia's need to participate in the project's cross-border EIA consultation process.

- The *Talsi District Municipality* notes that there are two alternative submarine cable corridors connected to Dundaga in the Talsi District, which, in the event of the construction of a 330 kV line, will pass through the Natura 2000 areas of the Slītere National Park (LV0200300) in

the Kolka Municipality in the Talsi District or *the territory of the Ances Marshes and Forests* (LV0523400) Nature Reserve in the Ance Municipality in the Ventspils District. The Talsi District Government considers participation in the EIA to be necessary and useful, and also emphasises the importance of special protection areas (Natura natural areas) in the construction of the power grid line without reducing their biodiversity.

- The Latvian transmission system operator AS "Augstsprieguma tīkls" emphasizes that the EE-LV 4 connection is a joint development project of the Latvian and Estonian transmission system operators AS "Augstsprieguma tīkls" and Elering AS. Joint technical studies were carried out for the EE-LV 4 interconnection project in 2022-2023 and active cooperation in the development of this project will continue. AS "Augstsprieguma tīkls" announces the initiated EIA procedure for the project to strengthen the Ventspils-Broceni-Varduva (LT) internal network on the territory of Latvia, which is one of the prerequisites for the construction of the EE-LV 4 connection. AS "Augstsprieguma tīkls" also announces that in March 2024, based on internal technical studies, AS "Augstsprieguma tīkls" and Elering AS agreed to continue the development of a scenario for the connection of EE-LV 4 from Saaremaa in Estonia to Ventspils, Latvia, excluding the possibility of landing Dunda in Latvia from potential future scenarios.

  According to AS "Augstsprieguma tīkls", the strengthening of the onshore network in Estonia will not affect the territory of Latvia, but the construction of a submarine cable in the territorial waters of Estonia and Latvia and the exact landing options will be agreed upon by the operators of both countries during the development of the project. The preliminary studies have been planned in cooperation with Elering AS on the possibilities of connecting the offshore cable to the existing onshore electricity transmission network on the Latvian side. The joint EIA EE-LV 4 for the offshore connection of AS "Augstsprieguma tīkls" and Elering AS is planned to be launched after 2027, before which consultations will be carried out with the competent environmental authorities of Latvia and Estonia.

5. OVERVIEW OF THE ASSESSMENT METHODOLOGY AND NECESSARY STUDIES

5.1. Assessment methodology

The impact assessment is based on the requirements of the relevant legislation in force in Estonia and the European Union. The main legal act guiding the procedure is the Environmental Impact Assessment and Environmental Management System Act (KeHJS). The EIA report is prepared in accordance with the requirements provided for in § 20 of the EIA Act.

The EIA is carried out on the basis of the relevant guidance materials published on the website of the Ministry of Climate[168]. Environmental impact assessment also takes into account EIA knowledge and generally accepted assessment methodology.

When preparing the EIA report, changes in relation to the existing situation that will occur when the planned activity is implemented are assessed. To this end, the EIA predicts consequences (e.g. the spread of suspended solids) that may cause changes in environmental elements (e.g. sediment, water quality, etc.). It is important to look at the changes taking place in the environmental elements in the context of the receivers (e.g. fish).

The evaluation methodology is based on qualitative and quantitative evaluation, which include:

- reviewing relevant literature and other relevant documents;
- reviewing previous studies, analyses and reports on the region;
- Conducting studies and expert assessments within the framework of the EIA to determine the significance of the impact (see chapter 5.3);
- consultations with authorities with relevant information;
- consultations with the general public and third parties.

During the EIA:

- describes the planned activities and compares possible alternative solutions;
- the potential significant environmental impacts accompanying the planned activity are assessed (the preliminary assessment of the potential significance of the impact is carried out in the scope of the EIA program, the significance of the impact is specified during the preparation of the EIA report), the extent of the impacts is defined;
- potential cumulative effects are assessed;
- Recommendations are made to avoid and mitigate potential negative effects.

During the EIA, the planned activities that are expected to have a significant negative impact are identified. In determining the significance of the impacts, the norms established in legislation are primarily followed. Pursuant to § 22 of the Environmental Impact Act, an environmental impact is *significant* if it may:

- are expected to exceed the environmental tolerance of the affected area,
- cause irreversible changes in the environment, or
- endanger a person's health, well-being and property or cultural heritage.

The direct impact is manifested in the direct consequences of the action at the same time and place as the action. Both operational and emergency impacts are considered, and both unintended negative and positive impacts are addressed.

[168] Website of the Ministry of Climate Change https://kliimaministeerium.ee/keskkonnamoju-hindamine#kmh-juhendmaterjalid (accessed 19.02.2025)

Indirect influence is formed through cause-and-effect relationships between environmental elements. It may manifest itself away from the immediate place of business and the effect may develop only over a longer period of time.

There are a number of factors that affect the direct, indirect and cumulative effects of the specific activities proposed, as well as the interactivity of the effects. Accordingly, practical and suitable methodology(s) or combinations thereof will be selected in the course of the work, taking into account the nature of the impact, the availability and quality of available data, and the availability of time and other resources.

5.2. Sources of impact, extent of the area of influence and environmental elements affected

5.2.1. Sources of influence

When constructing and operating the EE-LV 4 submarine cables, the following potential sources of impact must be taken into account:

- the formation and spread of suspended solids during the laying of submarine cables;
- underwater noise and vessel traffic caused by construction works;
- ambient air noise related to the construction and installation of power lines;
- installation works at the point of disembarkation of submarine cables;
- disturbances to biota;
- ice conditions in the area where the cable comes ashore;
- climate impact (extreme weather events).

5.2.2. Scope of impact and cumulative impact

The area of influence is considered more broadly than the route corridor of the submarine cable line (e.g. impact on birds, fish, seals, objects of cultural value). The size of the area of effect depends, among other things, on the propagation of suspended solids and is determined as a result of modelling. The amount and spread of suspended solids also depends on the installation technology used (open trench, jet dredging, ploughing). The potential impacts at the point of disembarkation of submarine cables are presumably local and are considered on the basis of the extent of the environmental elements affected (e.g. coastal meadows, protected species, nearest residential buildings).

The extent of the impact area can vary significantly between different sources of impact and is therefore assessed separately for each environmental element to be affected. The area of impact shall be addressed at least to the extent necessary to identify a significant negative environmental impact. The extent of the impact area, including from the point of view of significant environmental impact, is described in the EIA report.

The environmental impact assessment of the planned activity must be based on the maximum probable volume, and the possible cumulative impact must be taken into account when planning the EIA of submarine cables and the studies on which it is based.

Proceedings for a superficies license have been initiated for the area of the planned EE-LV 4 submarine cable route corridor to the sea, or applications for building permits for several offshore wind farms are being processed: ELWIND, Saare Wind Energy OÜ, Sunly Wind OÜ, OÜ Utilitas Wind, etc. A superficies license procedure has been initiated for the construction of the power cable of Saare Wind Energy OÜ at the same point of landing as the planned route corridor. The route corridor of the EE-LV 4 submarine cable runs parallel to the development area of the ELWIND offshore wind

farm planned by the EIC (distance approx. 100 m); In the future, the connection cable of the ELWIND offshore wind farm to Saaremaa may intersect with the EE-LV 4 submarine cables.[169]

Therefore, when carrying out the EIA of the EE-LV 4 submarine cable, the combined impact/cumulative impact of all these wind farms and related facilities on the surrounding environment must be taken into account.

5.2.3. Environmental elements affected

Based on the location and nature of the planned activity (chapter 2) and in the chapter 4 The EIA report addresses the potential impact on the following environmental elements to be affected:

- Natura 2000 network areas and protected natural objects (protected areas, limited-conservation areas, protected species);
- the quality of sea water and the status of coastal waters;
- seabed biota and habitats;
- fisheries;
- Seals;
- birdlife;
- commercial fishing;
- shipping and maritime safety;
- underwater cultural heritage and objects of cultural value;
- local residents (disturbances caused by construction work in the area where the cables are disembarked);
- climate change and climate change adaptation.

[169] Information as of March 2025

5.3. Necessary research and expert judgement

Within the framework of the EIA, at least the following studies/expert assessments must be carried out in the table below (Table 9) in these areas.

The experts to be involved must have either a master's degree or an equivalent qualification level in the relevant field (in the field being assessed) and previous work experience related to the field being assessed, or have participated in the work of an expert group on environmental impact assessment or a similar process at least once in the last five years as an expert in the field under assessment.

The same person may also assess the impact in several areas during the EIA, if he or she has sufficient competence to do so.

Table 9. Necessary studies and composition of the expert group for the preparation of the EIA report

Area	Study/ Expert-Assessment	Content/methodology	An expert to be involved
Unexploded explosive devices and other dangerous objects	UXO (*Unexploded ordnance*) expert review and study	Within the framework of the EIA, as a result of the available data and the underwater archaeological survey, it will be determined whether there may be explosive devices or other dangerous objects at the location of the route corridor, based on which it may be necessary to move the route. Before the start of construction, magnetometry and gradiometry surveys of unexploded explosive devices and other dangerous objects will be carried out, the aim of which is to detect unexploded explosive devices located on the seabed (also under sediments) in the submarine cable area and their disposal. The study will be carried out in cooperation with the Ministry of Defence. In the event of findings, the Navy must be notified, who will defuse the dangerous objects.	Competent company/expert
Cultural monuments and objects of cultural value	Underwater archaeological survey and expert assessment	An underwater archaeological survey consists of two stages: 1) high-resolution sonar survey, as a result of which man-made objects must be identified from a distance of one metre; 2) video or photographic documentation for the purpose of identifying, recording and assessing the condition of objects of possible cultural value using photogrammetry or other technique or method with equivalent results. In the case of wooden wrecks, a dendrochronological survey is added if the age of the wreck cannot be confirmed by other methods. The results of the study will be the	Underwater archaeologist

Area	Study/ Expert-Assessment	Content/methodology	An expert to be involved
		basis for organising long-term monitoring after the installation of submarine cables. Upon finding underwater cultural heritage objects, an expert assessment of the potential impact of the planned activity must be given.	
Seabed geology	Study	Study of the geological situation of the seabed (i.e. mineral composition of sediments, sedimentary layers, etc.) and study of the properties (structure and texture) of sediments to determine the load-bearing capacity of sediments, and study of the geotechnical situation (*MBES* study, *SSS study* , *MAG study*). To perform an analysis of seabed sediments to assess the level of nutrients and toxicity (heavy metals, TBT, PAH). Sampling sites should be selected in cooperation with a water quality expert, including by identifying potentially contaminated areas. Dredging soil analyses must be carried out in accordance with the relevant HELCOM dredging and dumping guidelines. When planning studies and preparing a study report, it should be taken into account that this study is an input for the impact assessors of other areas (water quality, marine life, etc.).	Marine Geologist
Water quality	Study and peer review	Fieldwork necessary for modelling the propagation of suspended solids to measure waves, currents and turbidity (suspended solids). Modelling the spread of suspended solids in the case of different installation technologies of submarine cables and, if necessary (as revealed in the geological survey) on different soils. Modelling and analysis of oil slick spread; impact on water quality, including the status of coastal water bodies in the Gulf of Kihelkonna and the Gulf of Riga, based on the results of the modelling of suspended solids distribution and the analysis of sediment samples. Description of the ice conditions in the area of influence. When planning studies and compiling a research report, it should be taken into account that the study is an input for the impact assessors of other fields (marine life, etc.).	Water Quality Expert

Area	Study/ Expert-Assessment	Content/methodology	An expert to be involved
Seabed biota and habitats	Study and peer review	Fieldwork to specify the fauna and flora of the seabed and the habitats of the seabed (species composition, value and location of biota, distribution and condition of habitats). Impact assessment based on the results of fieldwork and simulation of suspended solids propagation. To analyse the extent of the disturbance/loss of habitats caused by the works and whether the implementation of the works may affect the achievement of the objectives of the Estonian Marine Strategy.	Seabed biota and habitat expert
Underwater noise	Study and peer review	To determine the level of natural and artificial (submarine cable installation works) underwater ambient noise in the area of influence of the submarine cable. When planning studies and preparing a research report, it should be taken into account that the study is an input for the impact assessors of other fields (marine life).	Noise expert
Thermal radiation and magnetic field	Expert Score	Provide input on the extent and strength of thermal radiation and magnetic field during the period of use. When planning the studies and preparing the research report, it should be taken into account that the study is an input for the impact assessors of other fields (the impact of thermal radiation and magnetic field from cables on fish and seabed biota).	An expert in the relevant field (electrical engineer, etc.)
Fish	Study and peer review	To determine the composition of the fish population, possible spawning areas and migration routes in the area of influence of the EE-LV 4 route corridor. Assessment of the impact of the planned activity on the fish population based on the results of the study, including the impact of underwater noise and suspended solids in the construction phase, the impact of the electromagnetic field in the use phase. The assessment should take into account, among other things, the results of geology, water quality research (including modelling of the spread of suspended solids) and seabed biota and habitat surveys.	Fish expert
Fisheries	Study and peer review	To explain the impact of the planned activity on the status of fish stocks (based on the results of the above-mentioned fish population survey) and on commercial fishing in the area.	Fisheries expert, socio-economic impact expert

Area	Study/ Expert-Assessment	Content/methodology	An expert to be involved
Seals	Expert Score	Possible impact of the construction of submarine cables on seals, taking into account the results of related studies and expert assessments (e.g. suspended solids spread, fish population).	Seal expert
Birds	Expert Score	Possible impact of the construction of submarine cables on birds, taking into account the results of related studies and expert assessments (e.g. suspended solids distribution, fish, seabed biota and habitats).	Bird expert
Maritime transport and infrastructure	Expert Score	The impact of the construction of submarine cables on shipping traffic and maritime safety, as well as security-related aspects.	Marine Transportation Expert
Human health, well-being and property	Expert Score	Assessment of the impact during construction (laying of cables on the coast – noise arising from construction activities, transport during construction and other disturbances) on the nearest noise-sensitive buildings (residential buildings) and recreation areas at the point of disembarkation of submarine cables. Compliance with noise and air pollution standards. Impact on the use of cadastral units in the protection zone of the cable.	Health Impact Expert (Noise/Air Pollution Expert), Land Use Expert
Protected natural objects	Expert Score	Impact assessment on protected natural objects in the area of impact of the planned activity.	Natural Environment Expert
Natura bird areas and natural areas	Expert Score	Appropriate assessment of Natura in accordance with the guidelines and based on the results of related studies, expert assessments and preliminary assessment of Natura.	Natura assessment expert; bird expert; experts on conservation habitat types and species
Climate change	Expert Score	Possible impacts related to climate change (rise in sea level, increase in flood area, coastal erosion) in the area of the disembarkation of the EE-LV4 submarine cable route corridor.	Climate Impact Expert

6. OVERVIEW OF THE EIA PROCEDURE

6.1. Parties to the EIA proceedings

Pursuant to § 13(9) of the Environmental Impact Assessment Act, the EIA program includes a list of the relevant authorities together with the justification for involvement in the proceedings. The relevant authorities and persons likely to be affected by the proposed activity or who may have a reasonable interest in doing so are listed in the table below (Table 10). The list of participants in the proceedings may be supplemented during the EIA proceedings.

Table 10. Authorities and persons affected by the preparation of the EIA and interested parties, together with the justification for involvement in the procedure

Interested institution/person	Justification for inclusion
Organiser of the proceedings	
Consumer Protection and Technical Regulatory Authority (TTJA)	*As the organiser of the proceedings, is familiar with the process and involves the affected and interested parties*
Relevant authorities	
Defense	National Defence Competent Authority; passing through mine-prone areas in connection with the planned activity
Ministry of Climate Change	the competent authority for Baltic Sea protection and international EIA cooperation; Cross-border environmental impact procedure
Ministry of Economic Affairs and Communications	Spatial planning, incl. connections with the EE-LV IV REP and maritime spatial planning
Ministry of Regional Affairs and Agriculture	Competent authority managing fisheries
Ministry of the Interior	Competent authority for internal security and border management
Environmental Board	Authority responsible for monitoring the use of the environment, nature conservation and compliance with legislation established for the protection of the environment
Land and Spatial Board	Protection of land improvement systems, state lands
National Heritage Board	Competent authority responsible for the protection of cultural heritage
Police and Border Guard Board	Competent authority responsible for security and border management
Rescue Board	Authority responsible for organising rescue operations
Health Board	Institution responsible for the protection of the health of the population and a clean living environment
Transport Administration	Authority responsible for safe and secure waterborne traffic and safety and security requirements for ships and ports
Saaremaa Rural Municipality Government	Local government of the location of the planned activity
Defence Forces	Competent authority for national defence

Interested institution/person	Justification for inclusion
Residents and businesses in the area of the proposed activity, the general public, environmental organisations, etc	
Estonian Chamber of Environmental NGOs (EKO)	An organisation that unites environmental NGOs. Ensuring that environmental values are taken into account in the realisation of planned activities.
Estonian Fishermen's Association	Fishing in the area
Saarte Kalandus MTÜ	Development of the strategy for the Saaremaa fisheries region and contributing to the implementation of the goals set in the strategy
Saaremaa Coastal Folk Society NGO	Protecting the interests of the coastal people of Saaremaa, maintaining and promoting socio-economic well-being, and reducing environmental disturbances
Saare Wind Energy OÜ	Cooperation in connection with the submarine cables of the planned Saare Wind Energy offshore wind farm
Environmental Investment Centre (EIC)	Developer concerned: EE-LV 4 submarine cable route alternative 1 runs parallel to the development area of the EIC's ELWIND offshore wind farm (distance *ca* 100 m); The connection cable of the ELWIND offshore wind farm to Saaremaa may intersect with EE-LV 4 submarine cables in the future
Border neighbour of the alternative to the submarine cable's South-West Saaremaa landing site	Interested party: The planned landing of submarine cable route alternatives 1 and 2 on an immovable directly affects the interests of its owner
The general public, interested/affected persons, e.g. residents and businesses in the area	Is interested in the living and business environment of the region
Cross-border environmental impact assessment	
Latvian *Energy and Environment Agency*	KeHJS § 30; Potential impact on the marine environment of a neighbouring country

6.2. Estimated timeline for conducting the EIA

Table 11 provides an overview of the expected schedule for the EIA. The schedule has been prepared on the basis of the procedural deadlines set out in the KeHJS.

Table 11. Estimated timeline for conducting the EIA

Activity	Time/Period	Performer(s)
Initiation of the application for a superficies license and the EIA	23.12.2024	TTJA
Conclusion of a contract with the EIA program compiler	07.02.2015	Elering AS, Skepast&Puhkim OÜ
Notification of the Republic of Latvia of the initiation of a cross-border EIA	13.02.2025	Ministry of Climate Change
Forwarding the position of the Republic of Latvia to the TTJA/developer	17.04.2025/ 21.04.2025	Ministry of Climate Change, TTJA
EIA program stage		

Activity	Time/Period	Performer(s)
Preparation of the EIA program in cooperation with the developer, feedback and supplementation	February–April 2025	Skepast&Puhkim OÜ, Elering AS
Submission of the EIA program to the decision-maker (TTJA) for disclosure and asking for opinions	May 2025	Elering AS
Notification of the disclosure of the EIA program	May 2025	TTJA
Sending the EIA program to the competent authority of the Republic of Latvia and requesting opinions in Latvia, presenting the position of the Republic of Latvia	May-July 2025 (expected 2 months)	Ministry of Climate Change
Public display of the EIA program in Estonia and submission of views	June 2025 (min 21 days)	TTJA, relevant authorities
Forwarding and reviewing opinions and views received	June–July 2025	TTJA, Skepast&Puhkim OÜ, Elering AS
Public discussion of the EIA program (incl. presentation of the opinions and positions received and an overview of how they have been taken into account)	July 2025	TTJA, Elering AS, Skepast&Puhkim OÜ
Responding to letters received upon disclosure	August 2025	Elering AS, Skepast&Puhkim OÜ
Supplementation of the EIA program according to the results of disclosure	August 2025	Skepast&Puhkim OÜ
Submission of the EIA program to the decision-maker (TTJA) for making a decision on declaring it compliant	August 2025	Elering AS
Recognition of the EIA program as compliant[170]	Within 30 days (September 2025)	TTJA
Notification of the decision to declare the parties compliant	Within 14 days	TTJA
Conducting a procurement to find people to carry out surveys and EIA reports	*Expected 2025-2026*	Elering AS
Conducting surveys	*Expected 2026-2027*	Surveyors, EIA report preparation consultant
EIA report stage		
Preparation of an EIA report based on the results of studies and expert opinions	*Expected 2026-2027*	EIA Report Consultant, Elering AS
Submission of the EIA report to the decision-maker (TTJA) for the organisation of disclosure*	*within 2 years of making the decision declaring the EIA to comply with the requirements of the program (subsection 18 (8) of the*	Elering AS

[170] TTJA: As the members of the expert group of the EIA report are not known at the moment, it is only possible to declare the EIA program conditionally compliant (see the Ministry of Climate Change's guidelines on appointing the members of the expert group in the EIA program: https://kliimaministeerium.ee/elurikkus-keskkonnakaitse/moju-hindamine-keskkonnale). This means that this EIA program is declared compliant with the requirements with an ancillary condition, according to which the decision enters into force after the TTJA has given its consent to the amended EIA program, which also mentions the names of the members of the expert group (i.e. the secondary condition is fulfilled).

Activity	Time/Period	Performer(s)
	Environmental Impact Assessment Act)	
Notification of the publication of the EIA report	*Expected 2026-2027*	TTJA
Sending an EIA report to the Latvian competent authority and requesting opinions in Latvia		Ministry of Climate Change
Public display of the EIA report and asking for opinions		TTJA, relevant authorities
Forwarding and reviewing opinions and views received		TTJA, EIA report preparation consultant, Elering AS
Public discussion of the EIA report (incl. presentation of the opinions and positions received and overview of how they have been taken into account)		TTJA, EIA report preparation consultant, Elering AS
Responding to letters received upon disclosure		EIA Report Consultant, Elering AS
Supplementing the EIA report according to the results of disclosure		EIA report preparation consultant
Submission of the EIA report to the decision-maker (TTJA) for making a decision on declaring it compliant		Elering AS
Declaring the EIA report compliant		TTJA
Notification of the decision to declare the parties compliant		TTJA

** When conducting EIA studies and preparing the EIA report, it must be taken into account that according to subsection 18 (8) of the Environmental Impact Assessment Act, the developer must submit the EIA report to the decision-maker for publication within 2 years from the date of making the decision to declare the EIA program compliant. As the planning and conducting of various marine and biota surveys and the preparation of expert assessments and the EIA report on the basis of them is a time-consuming process (including the order in which the studies are carried out is important), it may be necessary to extend the deadline for submission of the EIA report for publication.*

6.3. Overview of the EIA program disclosure and the views of the relevant authorities

The chapter will be substantiated after the publication of the EIA program and the receipt of opinions.

7. SOURCE MATERIALS

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The links in this chapter are as of March 2025. References to the materials used can also be found in the chapters as footnotes. The list is not final, it will be updated in the course of conducting the SEA and preparing the report.