Application
for the Initial Environmental Impact Assessment of the Intended Action
"The Construction of the 330 kV Electricity Transmission Line Ventspils (LV) – Brocēni (LV) – Varduva/Telšiai (LT) on the Territory of Latvia"

The date and place of application signature

September 2, 2024, Riga

The initiator of the intended action: AS Augstsprieguma tīkls

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Information about the intended action

The intended action is the construction of the new 330 kV electricity transmission line in the territory of Latvia from Ventspils to the Latvian-Lithuanian border (Figure 1).

The intended action is the necessary reinforcement of the Latvian electricity transmission network for the planned Latvian-Estonian fourth interconnection and the connection of the ELWIND offshore wind farm to the electricity transmission network in Latvia (see Figure 1). The planned capacity of the ELWIND project in Latvia is 1 GW. To connect such capacity to the electricity transmission network and further transfer it to the main consumers, it is necessary to build the fourth Estonian – Latvian electrical interconnection and reinforce the existing internal Latvian electricity transmission network.

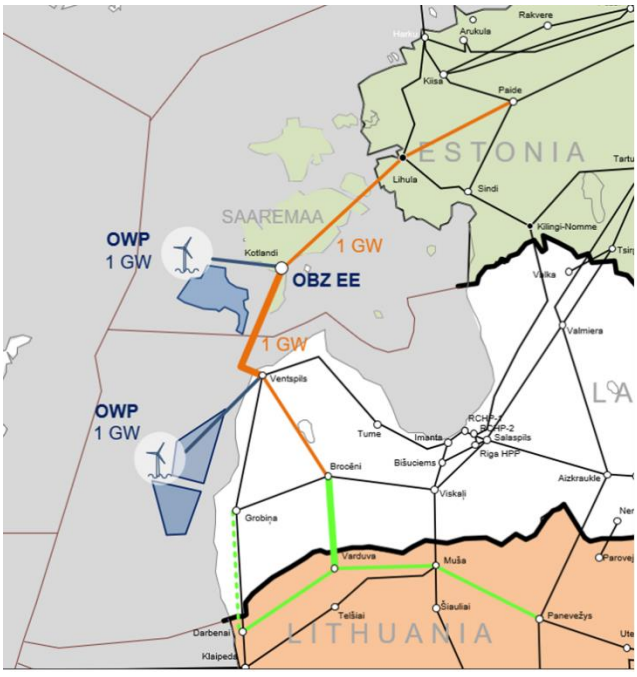

Figure 1. The provisional location of the intended activity

The intended action consists of two stages:

1. The construction of the 330 kV electricity transmission line Ventspils-Brocēni by connecting the existing 330 kV substations and building a new 330 kV substation near the village Ziras.
2. The construction of the 330 kV interconnection Brocēni (Latvia) – Varduva/Telšiai (Lithuania) in the territory of Latvia up to the village Baltaiskrogs. The construction of the electricity transmission line in Latvia is planned to accomplish as much as possible within the existing 110 kV electricity transmission line route, and if this is not possible, to find the most environmentally friendly route from a technical and economic point of view. During the new 330 kV electricity transmission line construction in the route of the existing 110 kV line, the existing 110 kV electricity transmission line also will be reconstructed by building a combined 110/330 kV electricity transmission line. If the electricity transmission line will be constructed in a new route, only the 330 kV line will be built.
   The interconnection endpoint in the territory of Lithuania has not yet been determined and the Lithuanian side will choose between the existing 110 kV substations "Varduva" or "Telšiai". Whereas the Environmental Impact Assessment (EIA) will be carried out on the territory of Latvia, the nearest substation "Varduva" is chosen in the designations and names of this document.

The description of the physical characteristics of the intended action, including information on the scope, preparation of the site before the start of the intended activity, demolition works and their solutions (if the intended action includes such), types of technologies to be used, necessary infrastructure objects

The purpose and justification of the intended action

Common Energy Policy of European Union is based on the climate change reduction, the greenhouse gas effect reduction, the green energy development, the reinforcement of electricity network interconnections, the electricity market liberalization and the increase of security of supply in overall power system. Latvia, as the European Union member state, has established regional cooperation with European countries also in the power sector. It includes cooperation with the countries of the Baltic Sea region, especially with Estonia and Lithuania, creating important facilities for power supply.

The need for the developed and accessible electricity transmission network are defined by regional scale development plans of electricity transmission systems, as well as by national plans of Latvia and Lithuania for the development of the 110/330 kV electricity transmission networks. During the plan development, the international obligations of Latvia were taken into account, including the obligations contained in the European climate and energy package, which was adopted by the European Parliament on December 17, 2008. In the context of the obligations set out in the package in the field of greenhouse gas reduction and objectives for the promotion of renewable energy resources (hereinafter - RES), new requirements are nominated for electricity transmission networks:

- To provide connections for wind and solar power plants, as well as connections for other renewable energy resources;

- To create an integrated European electricity market;
- To eliminate bottlenecks of electricity transmission networks.

The above mentioned processes are relevant also in Latvia. Latvia has experienced a significant increase of renewable energy development in recent years due to Latvian and European support programs and mechanisms for RES. Businesses are actively promoting their RES projects, mainly solar and wind power plants. The increase of power production also boosts competition in the electricity market, which in turn reduces the electricity price for customers in Latvia.

The development of RES projects is impossible without electricity transmission network. AS Augstsprieguma tīkls (hereinafter - AST), which is the Latvian electricity transmission system operator (hereinafter - TSO) and is responsible for the electricity transmission network, has faced a large demand from RES producers for connections to the electricity transmission network in recent years. The requested extent of connections to the 110 kV and 330 kV electricity transmission network is already five times greater than the electricity consumption of Latvia now. To ensure the security and reliability of the power system, TSO, which is responsible for the mentioned, should take series of measures to implement these objectives. One of the solutions to connect a larger amount of RES to the transmission network is, according to the long-term plans of the transmission system, to reconstruct the existing electricity transmission network by increasing its electricity transmission capacity or to build new lines. AST, which is responsible for the Latvian electricity transmission network development, is also investigating the possibilities of implementing such measures in cooperation with the TSO of neighbouring countries. In 2024, AST together with the Lithuanian TSO Litgrid completed the technical study on the possibilities of modernizing the electricity transmission network of the two countries carrying out complex modelling of network and market, considering the development trends of RES and consumption of both countries.

On a regional scale, the reconstruction and modernization of the Latvian-Lithuanian interconnection lines will play a significant role in increasing the transmission capacity in the Baltics north-south direction. Aforementioned electricity transmission network analysis of Latvia and Lithuania indicated that the issues of ensuring the security and reliability of the power system become crucial due to the significant RES augment in the Baltic region, as well as the synchronization of the Baltic States with Continental Europe and desynchronization from the Unified Energy System of Russia. Therefore, it is necessary to strengthen the internal Baltic electricity transmission network and create interconnections to ensure power flow in the northern-southern direction. It will serve for the successful and sustainable synchronization of the power systems of the Baltic States with the power systems of Continental Europe.

Considering that the planned 330 kV line is the important element of the electricity transmission system on a regional scale, the reconstruction and construction of this line is essential for the connection of new system users and may affect the operation of the electricity market and, as a result, the electricity prices of in Latvia, providing additional network system capacity for RES developers.

The expected route of intended action is shown in Figures 2, 3 and 4.

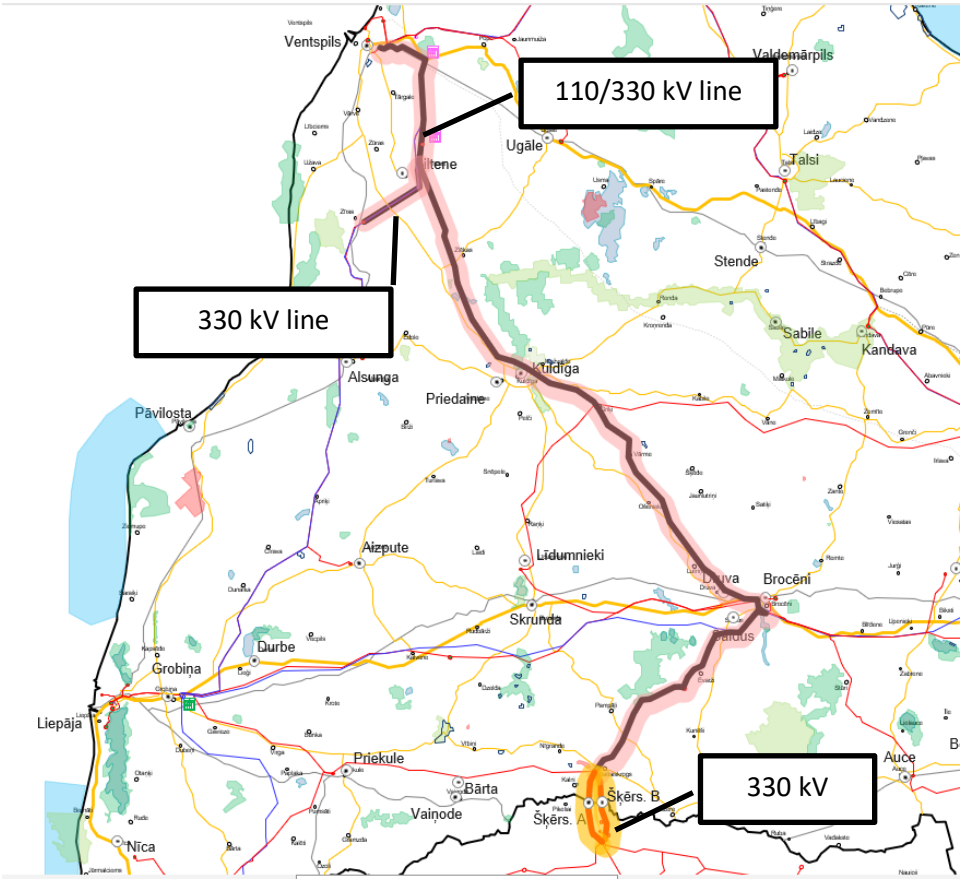

Figure 2. The possible routes of the electricity transmission line Ventspils – Ziras – Brocēni – Varduva

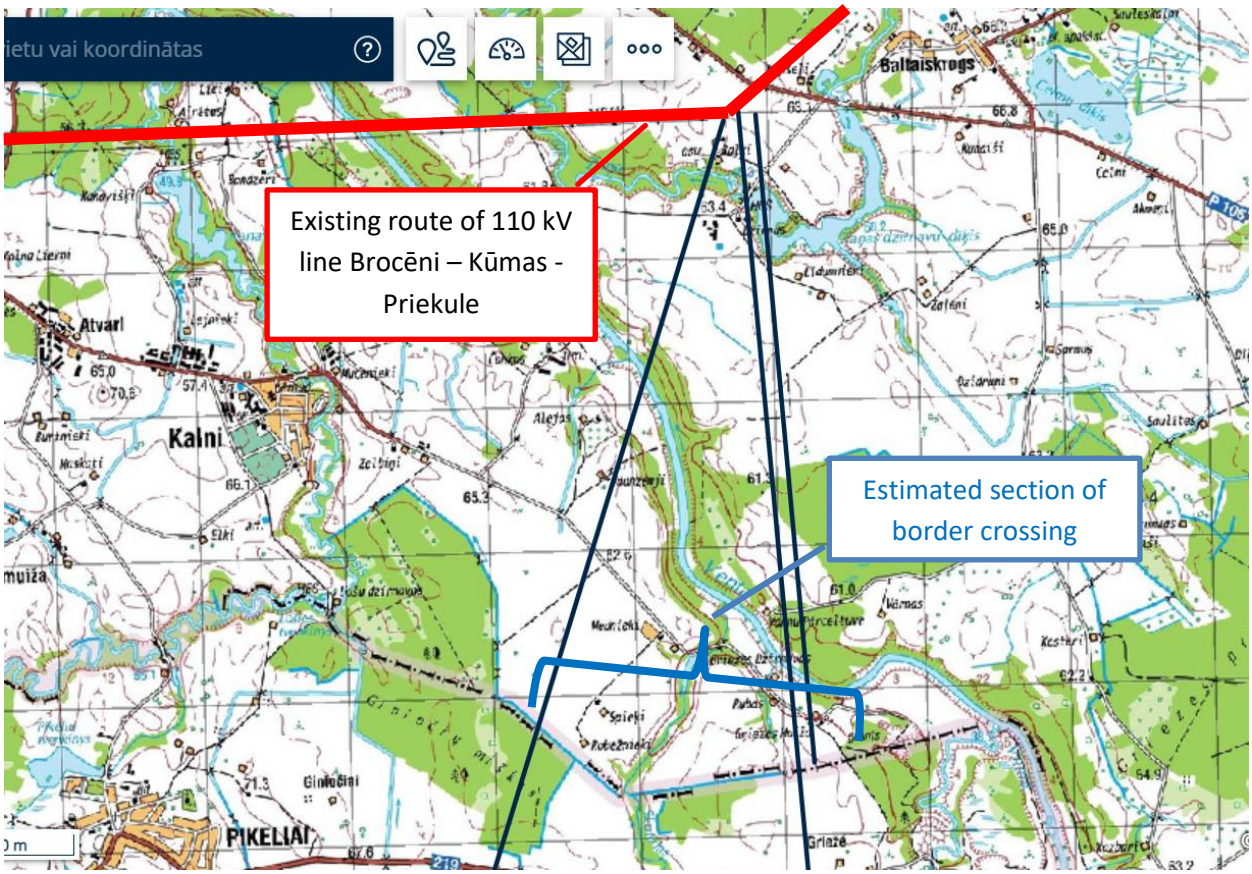

Figure 3. Topographic map of area Balstaiskrogs - state border

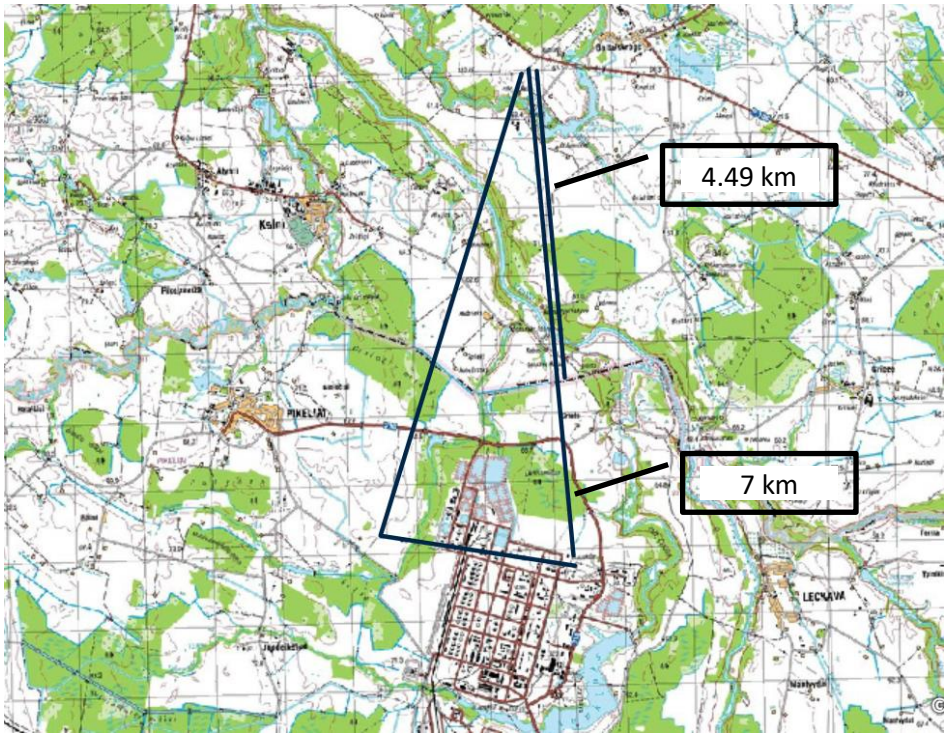

Figure 4. Topographic map of area Balstaiskrogs (LV) – Varduva (LT)

The project has international significance at the level of Latvia, Lithuania and Europe, so the project is currently included in the strategically important Latvian and European transmission network development documents:

1. The project is included in the Latvian electricity transmission system development plan. [1]
2. The project is described in the Annual statement of Transmission system operator of Latvia. [2]
3. The project is included in the Pan-European Ten Year Network Development Plan (TYNDP) developed by the association "European Network of Transmission System Operators" (ENTSO-E).

For such purposes the Connecting Europe Facility (CEF) program for energy has been established by Regulation of the European Parliament and of the Council, providing financial support. One of the supported objectives of this program is the development of electricity supply infrastructure projects. AST also plans to attract EU funding from CEF structural funds for the intended action "Ventspils-Brocēni-Varduva" infrastructure construction in the territory of Latvia. Whereas to increase RES, there is established another support Recovery and Resilience Facility with the follow-up RePowerEU, which is also intended to support measures to increase the RES amount. AST plans to attract funding from the European Union from the RePowerEU support program for research activities and environmental impact assessment activities for the intended action "Ventspils-Brocēni-Varduva" in the territory of Latvia.

Goals and objectives of the project:

- The main objective of the project is to increase the capacity of the electricity transmission network in Kurzeme region, which is related to the implementation of the "National Energy and Climate Plan" developed by the Ministry of Climate and Energy, "Sustainable Development Strategy of Latvia until 2030" and the European Union energy package " Fit for 55" in all countries of European Union.
- The objective of the project is to increase power flows between the trading areas of the Baltic States after the synchronization with continental Europe in 2025, ensuring the security and reliability of the electricity transmission network.
- The objective of the project is to facilitate and promote the development of RES (onshore, offshore wind and solar power plants) in the Kurzeme region of Latvia. Latvian TSO plans in that area to develop and connect the fourth electrical interconnection between Latvia and Estonia in the future, as well as to connect the Estonian-Latvian offshore wind farm project ELWIND.
- The objective of the project is to ensure the capacity of the electricity transmission network for power flows in Latvia between RES generation spots on the West coast of Latvia and the main consumption nodes in Latvia's largest consumption centres – Riga, Jelgava, Liepaja and Ventspils.

[1] https://www.ast.lv/en/content/power-transmission-system-development-plan
[2] https://www.ast.lv/en/content/tso-annual-statement

- The task of the project is to reinforce Latvia's internal electricity transmission network, to reinforce the existing interconnections and to create new ones with the neighbouring power systems, to promote electricity consumption increase in the region, as well as to ensure the security and reliability of the system.
- The main task of the project is the construction of the new 330 kV line within the route of existing 110 kV overhead lines "Ventspils – Kuldīga – Brocēni" and "Brocēni – Kūmas – Priekule" in the section up to the village Baltaiskrogs by reconstruction the existing 110 kV line to a combined 110/330 kV overhead line in the route of the 110 kV overhead line, and building a new 330 kV overhead line in the territory of Latvia from the village Baltaiskrogs to the border with Lithuania, where a new 330 kV overhead line will be built up to the substation "Varduva".
- The task of the project is to reconstruct the 330 kV substation "Brocēni 330" in order to create two new 330 kV connections, to build a new 330 kV substation "Ziras" and expand the existing 330 kV substation "Ventspils" by building connection for 330 kV line.

The main stages of project implementation

- The reconstruction of the existing 110 kV line Ventspils-Alsunga into 110/330 kV or 110 kV and 2×330 kV line to the village Ziras with a length up to 30 km. The solution for the overhead lines depends on further decisions on the scenarios for the electricity transmission network development.
- The reconstruction of the existing 110 kV electricity transmission line Ventspils-Kuldīga in Latvia with a length of up to 150 km to a combined 110/330 kV overhead electricity transmission line. The expected design could change from existing 110 kV line to 110/330 kV in the section from 110/330kV substation Ventspils to direction Ventspils-Alsunga, and to 110/330/330 kV overhead line on common pylons in the section Ventspils-Kuldīga. The solution depends on further decisions on the electricity transmission network development scenarios. From the split of 110 kV lines Ventspils-Alsunga and Ventspils-Kuldīga, the reconstructed line will go along the routes of existing 110 kV lines Ventspils-Kuldīga and Kuldīga-Brocēni. It is planned to install new pylons, which will be common to 110 kV and 330 kV lines (common to 110 kV and 2×330 kV in some sections), as well as to apply new wires, insulation and fittings. The exact solutions will be determined during the design of the line. The existing 110 kV line pylons, wires, insulators and fittings will be dismantled during the erection of new pylons and wiring. The new pylons will be mounted in the places of existing ones as far as possible, however it is possible shift of pylon location along the existing line axis.
- The reconstruction of the existing 110 kV electricity transmission lines Brocēni–Kūmas and Kūmas–Priekule in the section up to the village Baltaiskrogs with a common distance of about 32 km to a combined 110/330 kV overhead electricity transmission line. The existing 110 kV line pylons, wires, insulators and fittings will be dismantled during the erection of new pylons and wiring. The new pylons will be mounted in the places of existing ones as far as possible, however it is possible shift of pylon location along the axis of the existing line.

- The construction of a new 330 kV electricity transmission line from the village Baltaiskrogs up to the Latvian-Lithuanian border within the section determined by the following points:

  A: Robežnieki (Lat: 56.422324, Lon 22.160168; LKS: 386516, 254603),

  B: Griezes Muiža (Lat 56.420520, Lon 22.175360; LKS: 387447, 254377).

  The exact Latvian-Lithuanian border crossing location will be determined during the EIA process.

  The section Baltaiskrogs (LV) - Varduva (LT) of the new 330 kV electricity transmission line is about 5 km long within Latvia and its route will be a new one (Figure 3). The exact solutions will be determined during the design of the line. It is planned to install new pylons, as well as to apply new wires, insulation and fittings.

- Expansion of the existing 330 kV substation "Brocēni 330" (cadastral No. 84055050003, address Lielcieceres iela 58, Brocēni, Saldus novads) by building two new 330 kV sockets for the connection of lines Ventspils-Brocēni and Brocēni-Varduva.
- Expansion of the existing 330 kV substation Ventspils (cadastral No. 27000210111, address Robežu iela 38, Ventspils) by building one or two (depending on future decisions on the electricity transmission network development) new 330 kV sockets for the connection of line Ventspils-Brocēni (or Ventspils-Ziras).
- The construction of the new 330 kV substation "Ziras" (cadastral No. 98900010346 and No. 98900010474) in double-busbar design for the connections of the 330 kV electricity transmission line Ventspils-Ziras (there could be two connections), Ziras-Grobiņa and Ziras-Brocēni, as well as for the necessary feasible connections of the offshore wind farm ELWIND for joining to the Latvian electricity transmission network. The nominal carrying capacity of the planned 330 kV line and equipment conductors must be at least 2000 A.

The project route variant is known from the Ventspils substation to the Brocēni and Zira substations, as well as from Brocēni to the village Baltaiskrogs, as the reconstructed lines will be located on the existing routes of 110 kV lines. For the construction of the new 330 kV line, there is planned mainly the use of existing 110 kV line routes. The line route does not touch densely populated and built-up areas, however, there are some intersections and approaching with other engineering structures – highways, distribution network, as well as possible crossings of waterbodies.

It is necessary to furthermore study a new line route for the 330 kV overhead electricity transmission line from the existing 110 kV line "Kūmas-Priekule" near the village Baltaiskrogs to the Latvian-Lithuanian border towards Varduva.

According to the development plans of AS Augstsprieguma tīkls, the construction of the Ventspils-Brocēni-Varduva electricity transmission line will be launched after carrying out the environmental impact assessment and decision making in Latvia. Tentatively, the line designing will start in 2027 or 2028. The reconstruction of the existing Ventspils – Brocēni – Varduva 110 kV electricity transmission lines into 110/330 kV overhead lines is planned from 2028 to 2033. It will be built simultaneously with Estonian-Latvian fourth interconnection and cross-

border development project ELWIND, for which the Investment and Development Agency of Latvia (LIAA) plans to launch the EIA process for the sea territory and infrastructure connections studies.

Information on the possible locations of the intended action and their characteristics, taking into account the environmental condition and sensitivity of the location and its potentially affected territory

Figures 1, 2, 3 and 4 of the Application show the location of the 330 kV electricity transmission lines Ventspils – Ziras – Brocēni and Brocēni (LV) – Varduva (LT) in the territory of Latvia up to the Latvian-Lithuanian border as well as in the territory of Lithuania up to the planned substation Varduva. In Latvia, the intended action will affect three counties and five cities (Ventspils county, Kuldīgas county, Saldus county, Ventspils, Piltene, Kuldīga, Brocēni, Saldus).

It is planned to reconstruct the existing single-circuit 110 kV overhead lines into combined double-circuit 110/330 kV overhead lines by increasing the electricity transmission capacity of 110 kV overhead lines from 450 A to 1200 A in the sections from substation "Ventspils" up to substation "Brocēni 330" (line section Ventspils – Alsunga – Kuldīga – Brocēni) and from substation "Brocēni 330" up to the village Baltaiskrogs (Saldus county, Zaņas parish) along the 110 kV lines Brocēni - Kūmas and Kūmas - Priekule in Latvia, while constructing 330 kV overhead lines with electricity transmission capacity up to 2000 A. The overhead lines to be reconstructed are planned to be located along the axis of the existing 110 kV lines. The width of protective zones will increase in urban and rural areas, as well as in forest areas. Beyond them, the width of the protective zone will increase insignificantly, because in the territories mentioned in point 2.[1] of the Protection Zone Law, they are defined similarly to 110 kV and 330 kV voltages (30 meters from the outer wires to the outside of the line). [3] The height of pylons of the existing power lines is from 23 to 30 meters in different places. The planned height of the pylons of the overhead lines to be reconstructed is up to circa 42 meters. It is planned to build a new ca. 5 km long 330 kV overhead line along a new route in the section from the village Baltaiskrogs (Saldus county, Zaņas parish) up to the Lithuanian border.

Currently, it is planned to use free-standing galvanized metal pylons without ties according to AST experience from previous projects. Pylons will be erected directly on reinforced concrete foundations. The exact structure of the pylons will be determined during the design of the line.

To ensure the electricity transmission capacity up to 1200 A of each 110 kV overhead line, two wires (type AC-300/39) in each phase could be used.

To ensure the electricity transmission capacity up to 2000 A of each 330 kV overhead line, three wires (type ACSR 402-AL1/52-ST1A) in each phase could be used. Precast reinforced concrete structures are intended for the foundations of the pylons. In places where it is not possible to utilize prefabricated reinforced concrete structures (swamps, places with weak soil properties, etc.), pile foundations could be used.

[3] https://likumi.lv/ta/id/42348-aizsargjoslu-likums

The reconstruction of the existing substation "Ventspils" is planned for the connection of the new 330 kV overhead electricity transmission line by extending the existing 330 kV scheme with a socket for the connection of the electricity transmission line Ventspils-Ziras-Brocēni.

A new 330 kV substation Ziras is planned to be built in Ziras parish, Ventspils district for the connection of the potential new Estonia-Latvia fourth interconnection and offshore wind farm ELWIND and reinforcing the electricity transmission network.

As part of the reconstruction of the existing substation, the construction of two new connection sockets is planned in 330 kV substation "Brocēni" for the connection of the two 330 kV overhead electricity transmission lines (Ventspils - Brocēni and Brocēni - Varduva) so that the nominal electricity transmission capacity of the relevant equipment and conductors will be not less than 2000 A.

The description of the existing operation, including information on its volumes, technological solutions, main raw materials and their storage, use of natural resources, emissions, wastewater and waste generation if the intended action is a change in the existing actions

The construction of the 330 kV electricity transmission lines "Ventspils–Brocēni–Varduva" in the territory of Latvia is mainly planned to be carried out as the overhead lines along the routes of existing 110 kV overhead lines by reconstructing them. This solution was chosen to reduce additional encumbrances, number and area encumbered by electricity transmission line protection zones, thus reducing construction costs (no need to build a new route, to deforest lands, etc.), the compensation costs to landowners and possible risks related to the new line construction due to public opinion on the new engineering communications construction. Using existing electricity transmission line routes reduces the impact on the environment compared to creating a route in a new area. The new 330 kV overhead line in a new route is planned to be built only from the village Baltaiskrogs (Saldus county, Zaņas parish) up to the Latvian-Lithuanian border in a length of circa 5 km. The electricity transmission line will cross the border within the section that is indicatively determined by the extreme points:

A: Robežnieki (Lat: 56.422324, Lon 22.160168; LKS: 386516, 254603),

B: Griezes Muiža (Lat 56.420520, Lon 22.175360; LKS: 387447, 254377).

The exact route will be determined during the EIA process and the line designing by choosing the alternative that will have the least impact on the environment and optimally respect the interests of the municipality and residents. During operation of the electricity transmission line, it is not intended to use natural resources, generate wastewater and emissions. The mentioned impacts may occur in small amounts temporarily during the construction works. Domestic, construction and hazardous waste created during the implementation of the project will be managed in accordance with the requirements of legislation – sorted and handed over to a certified waste manager.

The information on the significant environmental aspects from which the environmental impact of the intended action results, and their characteristics, including:

The extraction and use of natural resources (the type and volume, for example, the planned water consumption in cubic meters per day, month, year) and their transformation, including the area assessment of the land to be transformed:

It does not apply to the intended action as it is not intended to extract and use natural resources, there is no need for water supply and transformation of land areas.

Main raw materials and quantity per year or planned construction materials (for the construction of a road, railway line and airport) and their quantity for the construction of the object (incl. all dangerous chemical substances and mixtures, as well as other raw materials, the consumption of which exceeds 100 kg per year)

Not applicable to intended action.

Output and its quantity (per year)

Not applicable to intended action.

Water supply solution, water extraction source (existing or planned), the usable water extraction source provision with water resources (surface or underground water)

Not applicable to intended action.

The planned amount of wastewater (cubic meters per day, month, year), wastewater management solution

Not applicable to intended action.

Heat supply solution, the planned fuel, its quantity and the capacity for the combustion plant

Not applicable to intended action.

Emission of pollutants into air, water (pollutants in wastewater, their concentration before and after treatment, point of discharge of wastewater) and soil (pollutants and their concentration), odours

The emission of pollutants into the air may occur temporarily during the construction of the power line. When carrying out construction works, the use of equipment, transport and equipment that meets the requirements of regulatory acts will be controlled.

Technological process waste (including hazardous waste), by-products and intended waste management

The waste created during the reconstruction of electricity transmission lines will be sorted and handed over to waste managers who have permits for waste management according to regulatory acts. No significant waste creation is expected during operation.

Physical effects (e.g. electromagnetic radiation, vibration, noise)

For protection against non-ionizing radiation, the European Union has developed guidelines for limiting electromagnetic field exposure, resp. Council Recommendation of July 12, 1999,

on the limitation of exposure of the general public to electromagnetic fields (1999/519/EC). [4] The Cabinet of Ministers Regulations No. 637 "Rules for assessing and limiting exposure to the electromagnetic field on the population" are in force since November 1, 2018, in Latvia. [5]According to the mentioned documents, the target values of the electromagnetic field for a frequency of 50 Hz correspond to an electric field intensity of 5000 V/m and a magnetic flux density of 100 μT. Different studies carried out in the European Union show that the indicators of electricity transmission lines fields are lower. [6]

During the construction of the power line, there may be increased noise caused by the movement and operation of heavy machinery. It is expected that the reconstruction works will be carried out only on working days in the period from 7:00 a.m. to 7:00 p.m. and by observing the established restrictions.

During the reconstruction of the power line, equipment will be used that complies with the Cabinet of Ministers Regulation No. 163 "Rules on noise emission from equipment used outdoors" requirements.

Under normal operating conditions, the noise emission caused by electricity transmission lines does not exceed the Cabinet of Ministers Regulations No. 16 "Noise assessment and management procedure" limit values, therefore it is not necessary to implement noise mitigation measures.

According to the physical nature of the sound waves propagation, as the sound wave created by a linear source (high voltage line) moves away from the source, the sound intensity decreases and for every distance doubling between the source and the observed point there is a 3 dB attenuation.

During the operation of the electricity transmission line, under certain conditions voltages above 110 kV are characterized by the so-called corona discharge, which is caused by the presence of microscopic particles in the immediate vicinity of the electricity transmission line wires (for example, fog water drops), which creates a specific little noise. Corona discharge and associated losses can be reduced by reducing the electric field on the surface of the wires. This can be achieved in different ways, for example, by increasing the number of wires in each phase, thus increasing the total cross-sectional area of the wires. Therefore, the corona discharge and associated losses (as well as the associated high-frequency electromagnetic field) will occur less frequently and at a lower intensity than if a single wire were used. The exact setting of the wires will be determined during the design of the line.

The information on the possibilities of the intended action to adapt the technological solution for capturing carbon dioxide, if it is planned the construction of the incineration plant of power production capacity 300 MW or more

Not applicable to intended action.

[4] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:31999H0519
[5] https://likumi.lv/ta/id/302355-elektromagnetiska-lauka-iedarbibas-uz-iedzivotajiem-novertesanas-un-ierobezosanas-noteikumi
[6] https://www.vi.gov.lv/lv/elektribas-parvadu-linijas-un-transformatori-ietekme-uz-veselibu

The information whether the possible area of the intended action is located in a specially protected natural area or in a micro-reserve, including a protected natural area of European importance (Natura 2000) (hereinafter - Natura 2000 area)

The 110 kV electricity transmission line Ventspils – Kuldīga is planned to be reconstruct, overpassing the nature reserve "Ventas ieleja" ("Venta river valley") (see Figure 5).

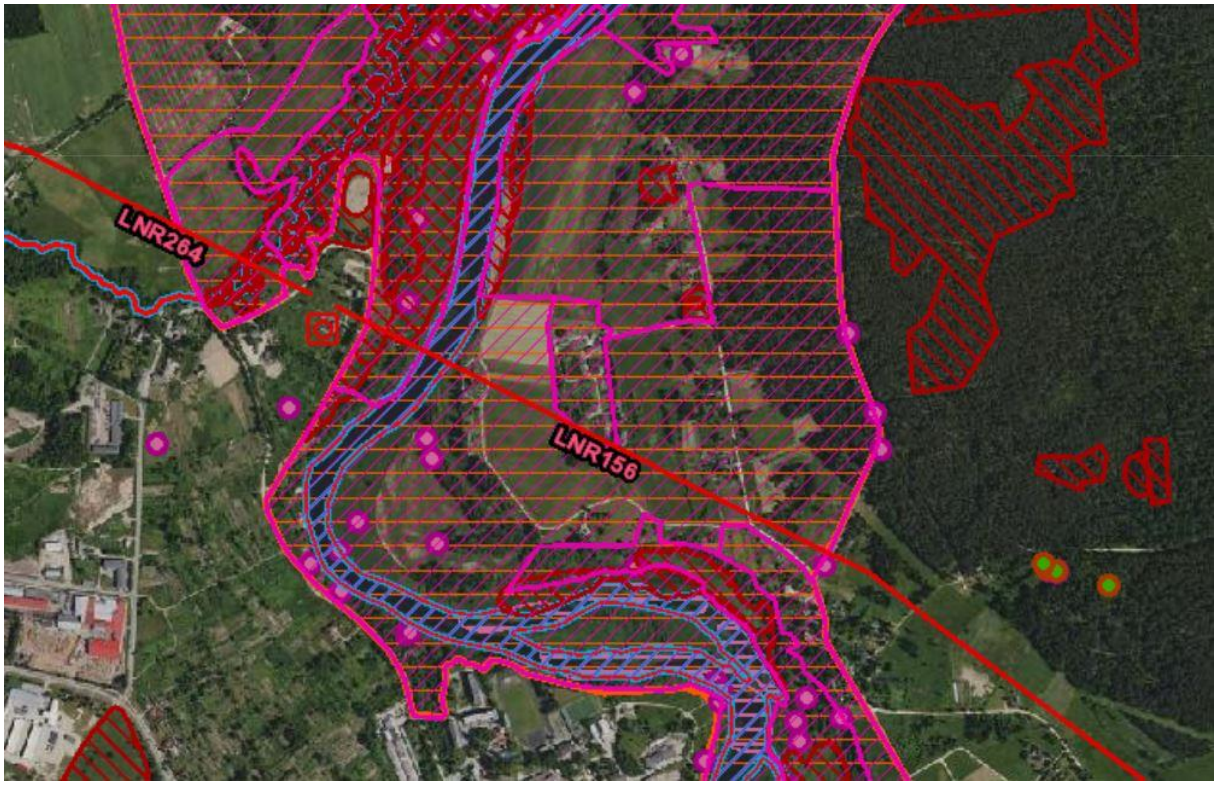

Figure 5. Ventas ieleja (Venta valley)

The nature reserve includes the valley of the Venta River and the territories adjacent to it. It is included in the NATURA 2000 network of protected areas of the European Union.

The current nature reserve status of the territory determines that the following functional zones are defined in the nature reserve territory (Cabinet of Ministers Regulations No. 140 "Nature Reserve" "Venta Valley" Individual Protection and Use Regulations" (14.02.2006): nature reserve area, nature park zone and neutral zone.

The 110 kV electricity transmission line intended to be reconstructed will overpass the nature reserve and nature park areas of the nature reserve "Ventas ieleja" (Figure 5) according to the information available in the Nature data management system "OZOLS" of the Nature Conservation Agency.

The nature reserve area was established to ensure the protection and management of specially protected forest habitats and species of importance to Latvia and the European Union.

The nature park zone is created to protect the natural and aesthetic values of the landscape structure and landscape elements of the nature park, biologically valuable areas and specially protected habitats.

As part of the reconstruction in the section from substation "Brocēni" up to the village Baltaiskrogs (Saldus county, Zaņas parish), the reconstruction will take place along the very

southern border of the nature reserve "Sātiņu dīķi" without crossing this specially protected area (Figure 6). The nature reserve is included in the network of protected areas of the European Union NATURA 2000.

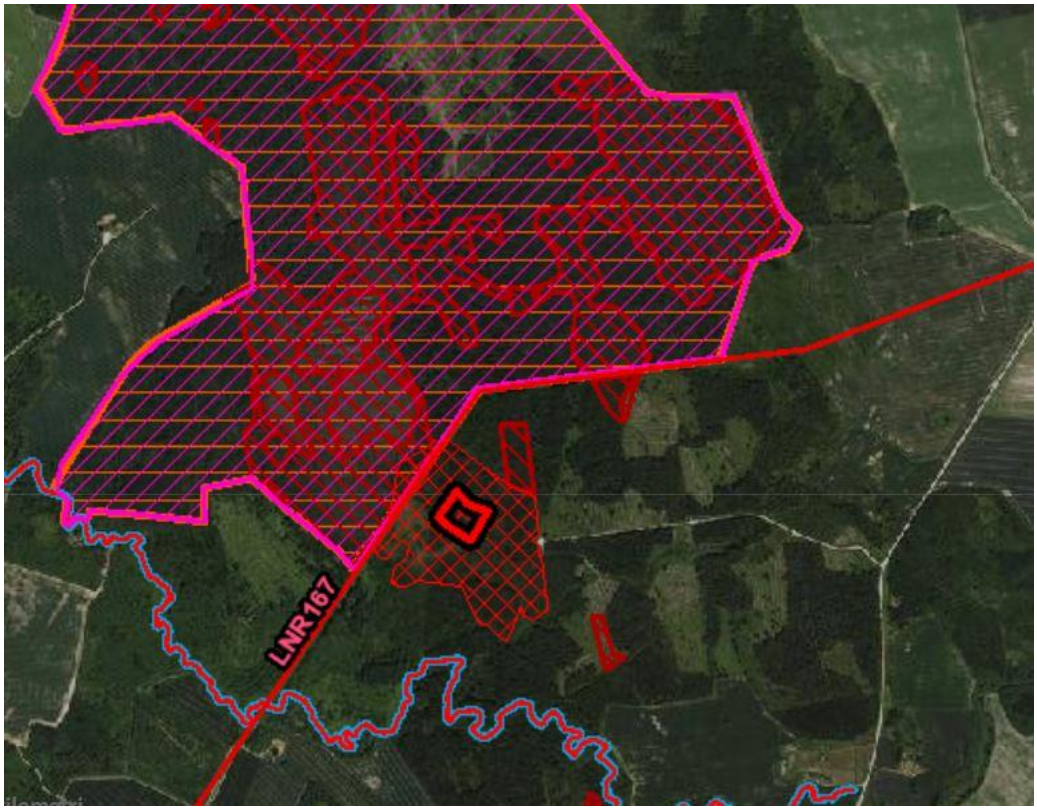

Figure 6. Sātiņu dīķi

The following specially protected areas are located in the vicinity of the electricity transmission lines to be reconstructed:

- The nature reserve "Skudru tīrelis" at a distance 3.5 km.
- The nature reserve " Grīdnieku tīrelis" at a distance 2 km.
- Several micro-reserves created for the protection of birds. During construction, a small impact (noise) on the micro-reserves is possible.
- The nature monument Padure Alley will be crossed.

Neither during the construction of electricity transmission lines, nor during their operation, there is an expected impact on these areas.

It is planned to locate the reconstructed overhead lines along the axes of the already existing 110 kV electricity transmission lines only changing the widths of the protection zones for the newly constructed 330 kV electricity transmission line. No new territories are needed, and no new infrastructure objects will be built during reconstruction of electricity transmission lines, so the impact can be considered insignificant.

The following specially protected areas are located near the newly constructed electricity transmission lines:

- The nature monument Grieze Park at a distance 100 m.
- Micro-reserve slope forest habitat at a distance 400 m.

- The botanical biologically valuable grassland at a distance 50 – 100 m.
- Probably, there will be crossing of the specially protected habitats of old or natural boreal forests (code 9010*) and spruce forests rich in evergreens (code 9050) in one of the reconstruction scenarios near the village Baltaiskrogs.

Neither during the construction of electricity transmission lines, nor during their operation, there is an expected impact on these areas.

The information on the distance (in kilometres) from the possible location of the intended action to the border of the Natura 2000 area

About 3 km from the 110 kV electricity transmission line to be rebuilt, there is a specially protected natural area – nature reserve "Baltezera purvs" and at a distance 0.5 km the nature reserve "Platenes purvs", which are included in the network of protected areas of the European Union NATURA2000. Neither during the construction of electricity transmission lines, nor during their operation, there is an expected impact on these areas.

The assessment of the environmental impact of the intended action, including the character of all possible significant impacts, as far as information is available on these impacts, caused by:

Creation of emissions, waste and by-products

The waste created during construction is expected to be managed in accordance with the procedure provided by the Law on Waste Management – the waste will be sorted and handed over to waste management companies. No waste creation is expected during the operation of the power line.

The use of natural resources (especially soil, land areas, water and biological diversity)

Not applicable to intended action.

Mutual and overall impacts with other existing or accepted planned actions affecting the same area

The following requirements must be met when implementing the intended action according to the Protection Zone Law:

- Protective zones for 330 kV electricity transmission lines:
  - Outside populated areas – 30 meters from the outer wire.
  - In cities and populated areas – 12 meters from the outer wire.
  - In forest areas – 40 m from the line axis to each side.
  - Route width in forest and other areas overgrown with trees (shrubs) – 54 m wide lane.

No significant and permanent impact on the environment is expected by implementing the intended action, in compliance with the requirements of regulatory acts and the requirements of all interested parties.

Additional information on the environmental impact of high-voltage electricity transmission lines can be found in the project environmental impact assessment reports:

- EIA report of the project "Kurzeme loks" 3rd stage Ventspils - Tume - Riga [7];
- EIA report of the project "Estonia - Latvia third interconnection of the electricity transmission network from Sindi (Kilingi - Nõmme) in Estonia to Salaspils (or Riga TEC-2) substations" [8].

Engineering and organizational measures to reduce the impact on the environment

Aspects	Mitigation measures	Notes
Impact on land ownership	The route of the existing electricity transmission lines is mainly used	Compensation will be provided for the expansion of the protection zones
Impact on transformable areas and new encumbrances	The route of the existing electricity transmission lines is mainly used. The extensions of the protection zones will be mainly in forest areas, towns and villages.	The existing electricity transmission line is built to bypass populated areas as much as possible Compensation will be provided for the expansion of the protection zones
Impact on specially protected species and habitats (including in Natura 2000 areas)	-	No lasting impact is foreseen
Impact on bird populations	There will be observed prescribed seasonal restrictions (if any) when line construction is not permitted	It may be necessary to coordinate with expert ornithologists regarding construction during the nesting period of various species
Impact on forest fragmentation	-	Not foreseen
Impact on surface waterbodies and drainage systems	No significant impact of the electricity transmission line on waterbodies is expected The conditions set by the owner of the land and buildings for the design	

[7] https://likumi.lv/ta/id/273060-par-elektrotiklu-parvades-savienojuma-kurzemes-loks-3-posma-tumeriga-imanta-rekonstrukcijai-un-jaunbuvei-paredzetas-darbibas-akceptu
[8] https://likumi.lv/ta/id/284481-par-elektrotiklu-parvades-savienojuma-igaunijaslatvijas-tresais-330-kv-starpsavienojums-parbuvei-un-jaunbuvei-paredzetas-darbibas-akceptu

	and construction of the electricity transmission line will be respected. Construction will be carried out in such a way as to prevent pollution of waterbodies.	
Impact on the landscape	-	No significant impact on the landscape is expected considering the location of the electricity transmission line, as well as the utilization of the existing route in most of the sections
Impact on the cultural and historical environment	-	Not foreseen
Effects of electromagnetic radiation	Possible measures to mitigate impact: 1) To increase the height of the pylons, and thus the distance of the wires from the ground. 2) To choose such pylons that allow the wires to be placed in the most advantageous configuration, so the fields created by the different phases compensate each other as much as possible.	The electricity transmission line will be reconstructed in such a way to minimize the impact of the electromagnetic field as much as possible
Waste management	Waste arisen from the reconstruction and maintenance of the electricity transmission line will be collected and managed in accordance with the requirements of regulatory acts.	