

Wind Farm "Augstkalni" Environmental and Social Monitoring and Management Plan *Non-Technical Summary*

Latvia, April 2025

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1. INTRODUCTION

This Non-technical Summary (NTS) provides information about the environmental and social impacts of the construction and operation of the wind farm "Augstkalni".

The "Augstkalni" Wind Park is located in Smiltene Municipality, within Drusti and Launkalne parishes, and is developed by SIA WPR 2. The wind park will cover 2,906.35 hectares, approximately 11 km south of Smiltene town. It is expected to consist of up to 16 modern wind turbines, with a total generation capacity of 102 MW. Based on average wind speeds of 7.4 m/s recorded at a height of 160 meters, the project is expected to generate between 305–320 GWh of electricity annually.

The main objective of the "Augstkalni" Wind Park is to contribute to Latvia's renewable energy production while ensuring compliance with the environmental and social standards. The project aligns with Smiltene Municipality's sustainable development goals and aims to integrate renewable energy production into Latvia's national grid, supporting Latvia's climate mitigation strategies.

The development and operation of the wind park will include modern infrastructure, such as a 110 kV substation and power lines, which will be integrated with existing roadways to minimize disruption. The project also incorporates advanced turbine technologies designed to mitigate environmental impacts, including noise, shadow flicker, and visual impacts.

The wind park is in the pre-construction phase and all required approvals and permits to start construction for both wind farms have been obtained.

During the project development phase a detailed assessment of project's potential impacts was conducted in line with national Environmental Impact Assessment (EIA) regulations. The process included both the legally required initial public consultations and formal public consultations on the EIA report, as well as a series of three workshops for interested parties.

All suggestions and comments received during the public consultation and working group meetings have been evaluated and taken into account when preparing the EIA Report.

A formal approval of the EIA Report was issued by Energy and Environment Agency (Energētikas un vides aģentūra)¹ October 2023.

The Company is seeking to enter into a financial agreement with financial institutions, which may require additional environmental and social assessments beyond the Latvian procedures already completed.

Wind park "Augstkalni" have been initially screened as a Category B project, following the European Bank for Reconstruction and Development's (EBRD) Environmental and Social Policy (2019), given its moderate, site-specific environmental and social impacts are manageable through established mitigation measures.

The following additional studies and documents were commissioned so that the Project also meets the requirements of the EBRD, International Finance Corporation's (IFC) Performance

¹ <https://www.eva.gov.lv/lv>

Standards and Environmental, Health and Safety (EHS) Guidelines for Wind Energy and Equator Principles:

- this Non-technical Summary (NTS),
- Stakeholder Engagement Plan (SEP),
- Environmental Social Monitoring And Management Plan (ESMMP).

1. PROJECT DESCRIPTION

1.1. Project overview and location

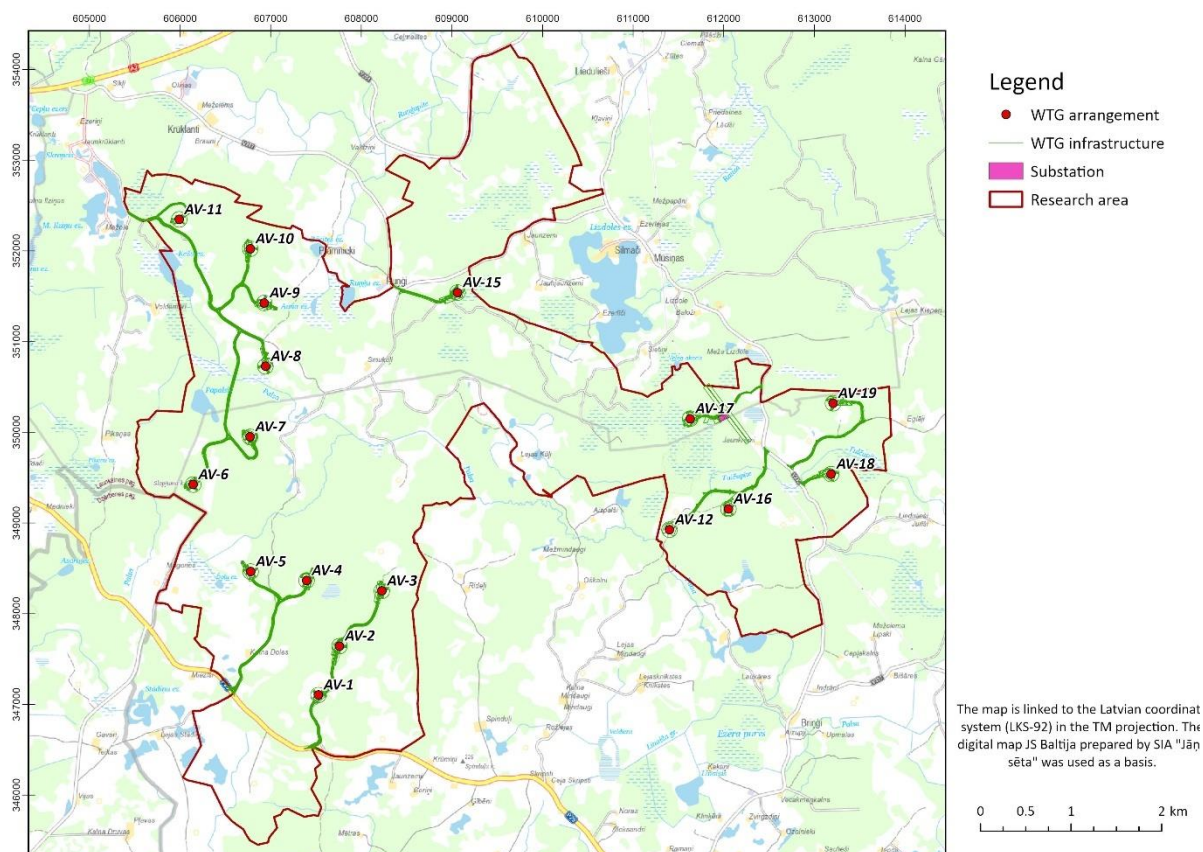


Figure 1. Potential construction sites for WPPs and related infrastructure

The planned "Augstkalni" Wind park will be located in Smiltene Municipality, including the parishes of Launkalne, Drusti, Zantes, Viesatu, Jaunsātu, Zemīte, and Irlava. The wind park will be connected to the power transmission network in Tume parish. The area is predominantly used for forestry and agriculture. It also contains potential sapropel and other mineral deposits, though extraction has not commenced in the surrounding areas. The planned development area does not include any polluted or potentially polluted sites, nor any classified high-risk objects.

The project is consistent with local land use plan and development strategy. According to national legislation, wind farms with a capacity greater than 20 kW may be located in industrial zones, technical zones, agricultural zones, and forest zones, if this is consistent with local land use plan. Additionally, wind farms with a capacity greater than 2 MW must be located at least 800 m from residential and public buildings.

Smiltene Municipality has developed a Sustainable Development Strategy until 2035, which supports the development of alternative energy sources and environmentally friendly technologies, including wind energy.

The Local Plan for the "Augstkalni" Wind Park, approved by the Smiltene Municipality Council on 31 May 2023 (Decision No. 189), defines new functional subzones within the Forest and Agricultural zones, where wind turbine installation is permitted. The plan also contains detailed Land Use and Development Regulations (TIAN), including requirements for infrastructure, transport, utility networks, construction standards, and environmental risk mitigation.

The research area considers various protective zones, including those for surface water bodies, roads, electricity transmission lines, transformers, and cultural heritage sites, which may restrict the placement of wind turbines. However, in accordance with the amendments to the Protection Zones Law on 6 October 2022, no mandatory safety protection zones are required around wind turbines themselves.

The proposed development complies with all relevant regulations, and the results of public consultations have been incorporated into project planning, along with appropriate environmental protection measures.

1.2. Project components

The planned "Augstkalni" Wind Park will consist of 16 wind turbines with a total capacity of up to 102 MW, generating 305 - 320 GWh annually. Modern Nordex N163 turbines with aerodynamically enhanced blades (STE) have been selected for their advanced technical features, including anti-icing systems.

The project will also include construction of modern infrastructure, such as a 110 kV substation and power lines aligned with existing roads to minimize land disturbance, as well as access roads for heavy machinery transportation and drainage systems.

2. PROJECT HISTORY, ADMINISTRATIVE PROCEDURES AND PERMITS

The planning process for the Augstkalni Wind Park began in the early 2020s, with preliminary site selection focused on areas with high wind potential. The project area was initially identified based on wind speed data, proximity to infrastructure, and minimal impact on local communities. After evaluating various sites within Smiltene Municipality, the final research area was selected, covering 2,906.35 hectares across several parishes, including Drusti, Launkalne, and others.

In 2023, the Smiltene Municipality Council approved the Local Plan for the "Augstkalni" Wind Park, which designated the land use subzones where the wind turbines would be installed. The local plan also included detailed land use and development regulations (TIAN), addressing infrastructure requirements, transport, and environmental risk mitigation.

A detailed EIA was carried out for the project in accordance with the Latvian national legal acts and the EU requirements. Process included consultations with stakeholders and

evaluations of various wind turbine model alternatives. The mitigation measures outlined in the EIA are specifically designed to address the concerns raised during the public consultation processes, with continued monitoring throughout the construction and operation phases. A formal approval of the EIA Report was issued by the Latvian State Environmental Monitoring Bureau in October 2023.

So far, the project approval process has also included obtaining various permits from relevant authorities in the field of forestry, cultural heritage, and aviation safety. Under Latvian civil protection regulations, the "Augstkalni" Wind Park is classified as a Category C high-risk project due to its total energy capacity exceeding 100 MW. This designation necessitates the preparation of a detailed Civil Protection Plan, addressing potential hazards such as accidents, fire, or extreme weather events.

Monitoring measures will include regular assessments of bird and bat populations, noise levels, and visual impact during the operational phase, as well as the implementation of a grievance mechanism for local communities to address concerns.

The wind park is in the pre-construction phase and all required approvals and permits to start construction for the wind park have been obtained. The construction phase is expected to last approximately 1.5 years. The "Augstkalni" wind park is expected to be operational for 35 years.

3. PROTECTED AREAS AND CULTURAL HERITAGE SITES

The "Augstkalni" Wind Park does not include specially protected natural areas, micro-reserves, or protected trees. The nearest protected areas are the Launkalne and Mežole nature reserves, both part of the Natura 2000 network. The Launkalne reserve conserves rare invertebrates and is 3 km from the park, while the Mežole reserve, 4 km away, protects boggy forests and rare species. The closest protected tree is the Launkalne-Drusti Pine, 200 m east of the Launkalne-Drusti road. However, the development of the wind park will not affect these protected areas. The proposed wind park layout is expected to have minimal impact on EU-protected habitats, with no significant effects on regional or national conservation statuses. Adjustments were made during the Environmental Impact Assessment (EIA) to avoid or minimize impacts on protected species and habitats.

The wind park area includes state-protected archaeological sites but no other cultural monuments. Notably, the Kalnaslapjumi burial site, with its reduced protection zone, is not impacted by the planned turbine locations. Other nearby sites such as the Pīkaņi Skanstis Hillfort and the Jauntēvenēni Ancient Burial Ground are not at risk either. Some Roman-era and Iron Age sites are near the proposed turbines, but the project is not expected to pose a threat to these sites. All cultural heritage discoveries during construction must be reported to the National Heritage Board (NKMP) for further evaluation.

4. SOCIO-ECONOMIC IMPACT

The construction and operation of the "Augstkalni" Wind Park are expected to have both positive and negative impacts, primarily related to socio-economic aspects. Positive impacts include investment in the economy, an increase in both direct and indirect employment opportunities, a rise in economic activity, an increase in energy supply, and a potential reduction in carbon dioxide emissions. Additionally, the project supports Latvia's national energy policy objectives. Negative impacts may include potential restrictions on economic activities, effects on property values, and the impact on tourism and recreational resources.

The total planned investment for the "Augstkalni" Wind Park is estimated at 110–130 million EUR, making it a significant investment in Latvia's energy sector. Along with the total investment, the creation of new jobs during both the construction and operational phases is a key aspect to consider.

Construction of the wind park will increase the volume of locally produced energy, potentially affecting electricity prices for consumers. New energy capacities are considered crucial for Latvia's energy security and independence. The development of wind energy also plays a key role in stabilising electricity prices.

Additionally, the development of the wind park aligns with regulatory changes that mandate compensation payments to local communities for discomfort caused by the wind turbines, based on installed capacity. A new regulation on Wind Power Plant Payments for Local Community Development, effective from 30 August 2024, requires wind energy producers to contribute annually €2,500 per MW of installed capacity for each wind turbine. Payments must be made to the local municipality each year and are split equally between the municipality and households within a 2 km radius of the turbines. Households receive a share, with each payment ranging from one to three minimum monthly salaries. The municipality's share is added to the municipal budget, while the community share is divided among eligible households. The municipality is responsible for identifying eligible households and coordinating with neighbouring areas if necessary. Payments can be used for local energy efficiency, environmental protection, road infrastructure, and cultural preservation.

Finally, the construction and operation of the wind park are not expected to affect the functioning of other infrastructure systems, such as electricity, gas, or water supply, nor will they impact other economic activities in the area. No factors have been identified that could significantly restrict other commercial activities near the planned wind park.

5. IDENTIFIED IMPACTS, MITIGATION MEASURES AND MONITORING

5.1. Impacts during construction

5.1.1. Flora and Habitats

The wind park's location, primarily used for forestry and agricultural activities, is not within any specially protected natural areas, although Natura 2000 sites are located nearby. During the EIA several protected species and habitats were identified, particularly in the forest and

wetland biotopes, as well as various vascular plants, mosses, and lichens. To minimize the potential impact on these sensitive ecosystems, the project team adjusted the locations of infrastructure, including roads and turbine sites, making changes to avoid affecting key species such as the birch longhorn beetle, fragrant soil beetle, and several rare fungi and moss species.

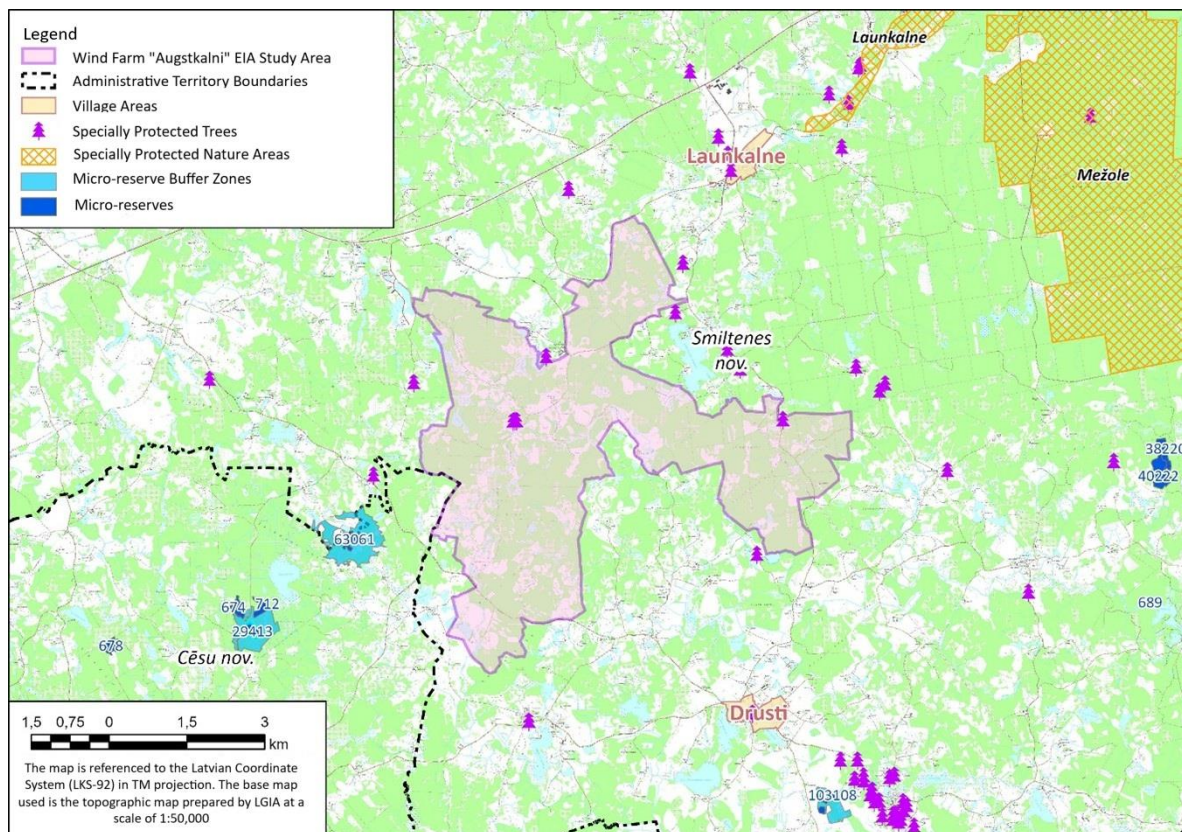


Figure 2. Specially Protected Areas within the "Augstkalni" Wind Park Study Area

5.1.2. Bird Monitoring

Bird, including owl monitoring at the "Augstkalni" Wind Park will begin one year prior to construction, as required by the State Environmental Monitoring Bureau's decision No. 5-04/10/2023. The monitoring programme, developed with guidance from the Nature Conservation Agency (DAP), will focus on bird populations, including their avoidance behaviour and reactions to turbines during the breeding periods (April-May and July-August).

Additionally, owl surveys will be conducted before construction to assess potential noise impacts, with continued monitoring during the construction phase. Nesting success will also be monitored in artificial nesting sites.

To mitigate risks during the construction phase, experts will conduct monitoring, and results will be submitted to the Nature Conservation Agency every six months for the first two years.

5.1.3. Bat monitoring

Bat monitoring at the "Augstkalni" Wind Park will begin one year before the turbines are operational and continue through the operational phase. Acoustic detectors will be installed on turbines to track bat activity, with a focus on detecting potential fatalities. Trained personnel will regularly search turbine sites for dead bats, with a minimum of three searches

per month during the warmer months. To aid these searches, a 50-meter vegetation-free zone will be maintained around turbine bases, and forest clearing will be minimized to avoid disrupting habitats. These efforts aim to reduce the impact on bat populations and ensure compliance with environmental regulations.

5.1.4. Noise

During the construction phase of the "Augstkalni" Wind Park noise emissions are expected to be temporary and intermittent, with noise generated from activities such as site preparation, construction of access roads, installation of wind turbine foundations, and delivery of materials. These activities will be carefully coordinated to minimize disruptions to nearby residential areas. Construction equipment noise will comply with the noise emission limits set by Cabinet Regulation No. 163. To reduce disturbance, the exact timing of construction activities will be aligned with the local municipality. Monitoring of complaints will be conducted to address any noise-related issues raised by residents.

5.1.5. Air Quality Management

During the construction phase of the "Augstkalni" Wind Park, several key activities will result in temporary impacts to air quality and dust emissions. However, the overall air quality in the surrounding area is expected to remain within legal limits, and the wind park is not located near sensitive residential areas, thus minimizing potential impacts. Construction will occur gradually, and the impact on local residents will be minimal. Dust control measures, such as surface wetting and road treatment with anti-dust materials, will be implemented if complaints are received. Given the scale of construction and the distance from populated areas, noise and air pollution levels are expected to have a negligible impact on the local community. Furthermore, no significant impact on protected areas or species is anticipated from the construction process.

5.1.6. Landscape

The "Augstkalne" wind park, located in the Vidzeme Highlands, impacts various landscape units with differing sensitivities. The Smiltene Forest Landscape features closed views with minimal visual impact and low sensitivity. The Lizdole Mid-Hill Forest Landscape is most affected due to its high scenic and cultural value around Lizdole Lake, a key tourism area with high sensitivity. The Blome Open Plain Landscape, dominated by agriculture, has low scenic value, and adjacent forests obscure turbine visibility, resulting in low sensitivity. The Launkalne Small-Hill Forest Landscape shows medium sensitivity due to a mix of open and closed views and visible technological elements in the landscape. Other areas, such as the Rauna and Piebalga Cultural Landscapes, retain high cultural value but are only moderately impacted as turbines are visible in limited panoramic views. The wind park introduces significant visual elements in some areas while maintaining low impact in others.

Outside of the project's direct impact zones, the Vecpiebalga Protected Landscape Area, which contains highly valuable cultural landscapes, is located. Visual modelling data indicates that only from certain high points in the area will the wind turbines be visible in the distance during clear.



Figure 3. Landscape view before the "Augstkalni" Wind Park visualization.



Figure 4 Landscape view after the "Augstkalni" Wind Park visualization.

To reduce visual impact on the landscape of the wind turbines it is recommended that the towers and rotor blades be painted in light colours to help them blend into the environment while remaining visible for pilots. A gradual transition from green to white at the base of the tower (at tree height) is advised. To minimize the impact of lighting on the landscape at night, a single-color signal lighting should be used. In areas where forest clearing is required for turbine transport and installation, artificial reforestation is recommended to reduce the visual impact of the turbines on nearby views.

5.1.7. Waste

The most significant potential impacts during the construction phase are associated with the risk of soil or groundwater contamination caused by fuel or lubricant spills from machinery used in construction activities within the designated area. In locations where the probability of contamination is higher, such as areas where the wind turbine structure will be assembled, assembly areas of approximately 1 hectare in size will be constructed using gravel and crushed stone materials. The EIA has not identified a need for specific monitoring or mitigation measures, provided that waste management during construction, operation, and decommissioning or reconstruction complies with regulatory requirements.

5.1.8. Health, Safety and Labour

The construction contractors will be required to implement national, and Lender's requirements related to the management of health and safety and labour and working conditions. Construction workers can be exposed to number of potential health and safety risks including working at height, working with electricity, heavy lifting operations.

The construction contractors will be required to develop Environmental Health and Safety Plan which will be monitored by the Company. The contractors of major works will be required to have grievance procedure in place for receiving, recording, answering, and facilitating the resolution of workers' concerns.

5.2. Impacts during Operation

5.2.1. Bird Monitoring

According to the State Environmental Monitoring Bureau's decision No. 5-04/10/2023, a detailed monitoring programme must be developed before construction begins and approved by the Nature Conservation Agency (DAP).

Bird monitoring must start one year before construction and continue for the first five years of operation, followed by assessments in the seventh and tenth years. Monitoring will focus on bird avoidance behaviour and reactions to turbines, with observations conducted during bird breeding periods in April-May and July-August. Data will be analysed to calculate avoidance and collision rates for all bird species.

Automatic bird flight detection systems will be used to identify and protect certain species, such as the Lesser Spotted Eagle and Osprey.

Given the noise impact on owls, owl surveys should be conducted before construction, with continued monitoring during construction and operation. Nesting success should also be monitored in artificial nesting sites.

Monitoring results must be submitted to the Nature Conservation Agency every six months for the first two years and annually thereafter. The data will help assess the cumulative impact of wind parks on bird populations.

5.2.2. Bat monitoring

Bat monitoring will be implemented during the first and second years of wind park operation. The monitoring methodology is developed and implemented by a bat species expert certified by the Nature conservation agency, tailored to the specific conditions of the location. The monitoring methodology includes the following:

- Acoustic monitoring using ultrasonic detectors,
- Recording bat fatalities.

To facilitate the search for deceased bats, a vegetation-free surface must be maintained within a radius of at least 50 metres around the bases of wind turbines, or regular grass mowing must be ensured during the monitoring period. For turbines installed in forested areas, it is not necessary to create the clearance by additionally cutting down the forest.

5.2.3. Shadow Flicker Mitigation

Potential shadow flickering impact on the surrounding territories was modelled within the EIA. Considering that the results of modelling indicated that the shadow flicker effect caused by the wind turbines could result in disturbances exceeding the recommended threshold values in residential areas located near the proposed site, mitigation measures are planned.

The only technical solution that can reduce the duration of shadow flicker impact is to shut down the turbines causing the flicker during periods when the specific turbine could generate shadow flicker in residential areas. The selected wind turbine model allows for automatic shutdown during designated time periods, and the operational settings can be configured using both theoretical and actual sunlight data.

5.2.4. Noise

As part of the noise assessment for the planned project area, both existing noise levels and the cumulative impact during the wind park operation were analysed. A significant source of environmental noise near the proposed site is road traffic on the following state roads:

- A2 Rīga – Sigulda – Estonian border;
- P29 Rauna (Vidzeme highway) – Drusti – Jaunpiebalga;
- V235 Lembis (Smiltene) – Drusti – Vecpiebalga;
- V251 Branti – Pieniņi – Launkalne;
- V267 Ķieģeļceplis – Lizdole.

Based on the calculation results, it was concluded that in three residential areas located near these state roads, the noise limits set out in Cabinet Regulation No. 16 of 7 January 2014 "Procedures for Noise Assessment and Management" are exceeded during the day, evening, and night periods.

When assessing the overall impact of both road traffic and wind turbine operation, it can be concluded that the most significant changes in environmental noise levels caused by the wind

farm are expected in those residential areas where road traffic has a lesser influence on existing noise levels.

According to the calculations using the Nordex N163 - 7.0 MW turbine model with aerodynamically optimised blades, the environmental noise limits set out in Cabinet Regulation No. 16 "Procedures for Noise Assessment and Management" will not be exceeded in residential and public areas located near the wind farm during its operation.

During the wind park's operational phase, complaint monitoring will be carried out to address any noise-related concerns raised by residents..

5.2.5. Electromagnetic fields

The electromagnetic fields generated during the operation of the wind farm, even under maximum operational conditions, are not considered to have a significant impact on public health in general or the health of residents living near the wind farm or along the underground cable routes. These electromagnetic fields do not cause interference with the operation of various devices, including the functioning of specific medical equipment that supports human functions, which are designed with high protection against magnetic field exposure.

5.2.6. Vibrations

The vibration levels caused by the wind farm (WF) during its operation are not subject to regulatory limits in Latvia. Prior to June 30, 2010, vibration limits were established under the Cabinet of Ministers Regulation No. 341 ("Regulations on acceptable vibration levels in residential and public buildings"), but these limits no longer apply.

When comparing the vibration levels generated by the wind turbines with the limits that were previously in place, it was found that the vibrations near the turbines exceed the limits. However, at a distance of 300 meters from the turbines, the vibration levels are significantly lower than the lowest limit previously set for operating rooms and patient wards in medical institutions during the night.

Although specific studies on the vibration levels of the wind turbine models being assessed in this EIA have not been conducted, it is important to note that vibration limits for wind turbine mechanical components are set independently of the turbine model or its power capacity. Therefore, there is no reason to believe that the vibration levels from the proposed wind farm in Smiltene Municipality will be significantly higher or pose a threat to public health. Consequently, the impact of wind turbine-induced vibrations on the public are considered negligible.

5.2.7. Waste

During operation and maintenance of the wind farms small amounts of waste will be generated. Waste will not be stored on site but delivered to authorized companies for further management.

5.2.1. Accident Hazard

The "Augstkalni" wind park is classified as a Category C high-risk project under Latvian civil protection regulations due to its total energy capacity exceeding 100 MW. This designation necessitates the preparation of a detailed Civil Protection Plan, addressing potential hazards such as accidents, fire, or extreme weather events.

5.2.2. Cumulative Impacts and Risk Mitigation

At present, there are no other wind parks located or planned in the vicinity of the proposed "Augstkalni" wind park. Vertical elements in the landscape include mobile communication towers. Their placement does not increase or reduce the impact of the proposed wind park on the landscape.

6. ENVIRONMENTAL AND SOCIAL MANAGEMENT SYSTEM

"Augstkalni" wind park project will ensure a structured approach to managing environmental and social impacts during both the construction and operational phases. The project strictly follows legal requirements and has undergone extensive stakeholder engagement processes.

A Stakeholder Engagement Plan (SEP) has been developed to ensure effective communication with stakeholders, including landowners, local authorities, environmental experts, and the general public. A Community Liaison Officer (CLO) will manage ongoing engagement and handle grievances, ensuring that stakeholders' concerns are addressed promptly.

An Environmental and Social Monitoring and Management Plan (ESMMP) is developed to address environmental and social impacts identified during the construction and operational phases. The management system will include mitigation measures outlined in the Environmental Impact Assessment (EIA) as well other best practice measures, focusing on minimizing negative effects on local wildlife, communities, and the environment. The system will also address health and safety risks related to construction activities, ensuring compliance with national regulations and international best practices.

ESMMP includes a detailed outline of the impact monitoring activities and procedures for evaluation and dissemination of results.