



Information card ventures called

***Construction of a warehouse with a social and
office part and a social and office building
with the necessary technical infrastructure
at ul. Energetyka in Wiechlice***

***plots: 280/162, 280/163, 280/165, Wiechlice district,
Szprotawa commune, Żagań powiat***

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WROCLAW, May 2022

Project card

NAME OF THE PROJECT: :

Construction of a warehouse with a social and office part and a social and office building with the necessary technical infrastructure at ul. Energetyka in Wiechlice plots no. 280/162, 280/163, 280/165, Wiechlice district, Szprotawa commune, Żagań powiat

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1 TYPE, SCALE AND LOCATION OF THE PROJECT

Acton providing information about the environment and its protection, public participation in environmental protection and environmental impact assessments (art. 62a, section 1, point 1)

The planned project is the construction of a warehouse with a social and office part and the necessary technical infrastructure, as well as a social and office building at ul. Energetyka in Wiechlice.

The project will be implemented on plots 280/162, 280/163, 280/165, Wiechlice district, Szprotawa commune, Żagań poviát. **The investment can be implemented in stages.**

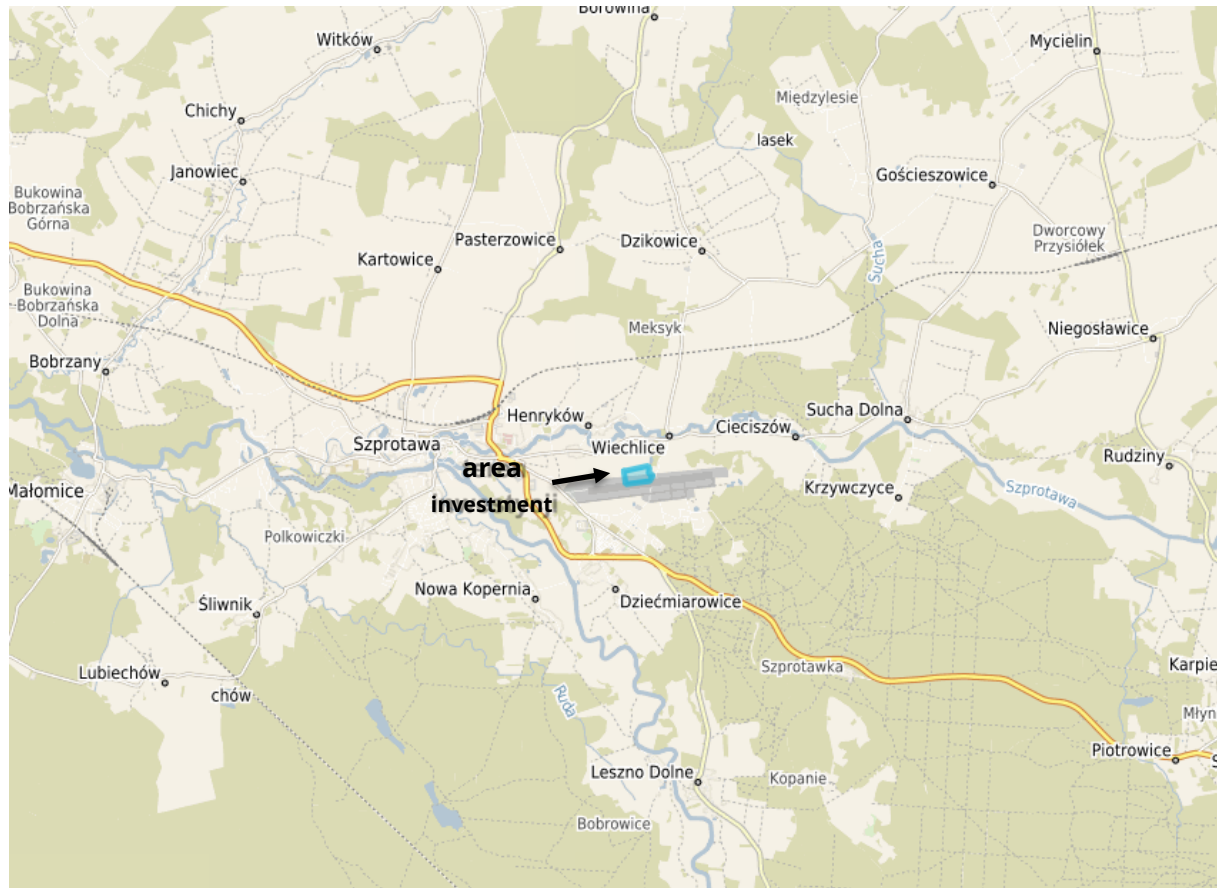


Figure 1.Investment area (blue)

[source: <https://polska.e-mapa.net/>]

The subject of the investment is the construction of:

- warehouse hall,
- social and office building,
- two warehouse buildings,
- two porters,
- fire water tank together with the pumping station building,
- internal roads, maneuvering areas, parking lots and sidewalks, small architecture,
- necessary technical infrastructure related to the construction of the plant.

Project classification

Pursuant to the Regulation of the Council of Ministers of September 10, 2019 on projects that may have a significant impact on the environment (Journal of Laws 2019.1839 of 2019/09/26), the project belongs to the category that may potentially have a significant impact on the environment:

- **in accordance with §3, section 1, point 37d:** installations for above-ground storage of flammable gases.

The investor is waiting to receive technical conditions), and in the event of technical impossibility, the use of above-ground storage tanks for LNG/LPG/CNG with a total capacity of up to **100 m³**.

- **in accordance with §3, section 1, point 54b:** *industrial development, including development of photovoltaic systems or warehouses, together with the accompanying infrastructure, with a development area of not less than 1 ha in areas other than those mentioned in point (a). and.* The development area, understood as the area of land occupied by buildings and the remaining area intended for transformation as a result of the implementation of the project, is approx. **12.2 ha**.
- **in accordance with §3, section 1, point 58b:** *garages, car parks or parking complexes, including for the purposes of planned, implemented or completed projects referred to in points 52, 54-57 and 59, together with the accompanying infrastructure, with a usable area of not less than: 0.5 ha per areas other than those mentioned in point and.*

The total area of the parking lots and the accompanying infrastructure (roads and maneuvering areas) is approx. **1.9 ha**.

- **§3, section 1, point 62:** *hard surface roads with the total length of the project exceeding 1 km, other than those listed in § 2 section 1 points 31 and 32 and bridge structures along roads with a hard surface, excluding the reconstruction of roads and bridge structures used to service power stations and located outside areas covered by forms of nature protection referred to in Art. 6 section 1 points 1-5, 8 and 9 of the Act of 16 April 2004 on nature protection.*

The total length of internal roads with hard surfaces is: **approx. 1.4 km**.

The investment area is covered by the local development plan:

- Resolution XXXVII/249/97 of the City Council in Szprotawa of December 11, 1997 (as amended) on amending the local general spatial development plan of the Szprotawa Commune.
- Resolution XXXIX/226/2001 of the Szprotawa City Council of October 11, 2001 on the adoption of an amendment to the local spatial development plan of the Szprotawa commune (A).

In accordance with the local development plan, the following purpose was established for the analyzed area: 1 P/U/R - production and service function.

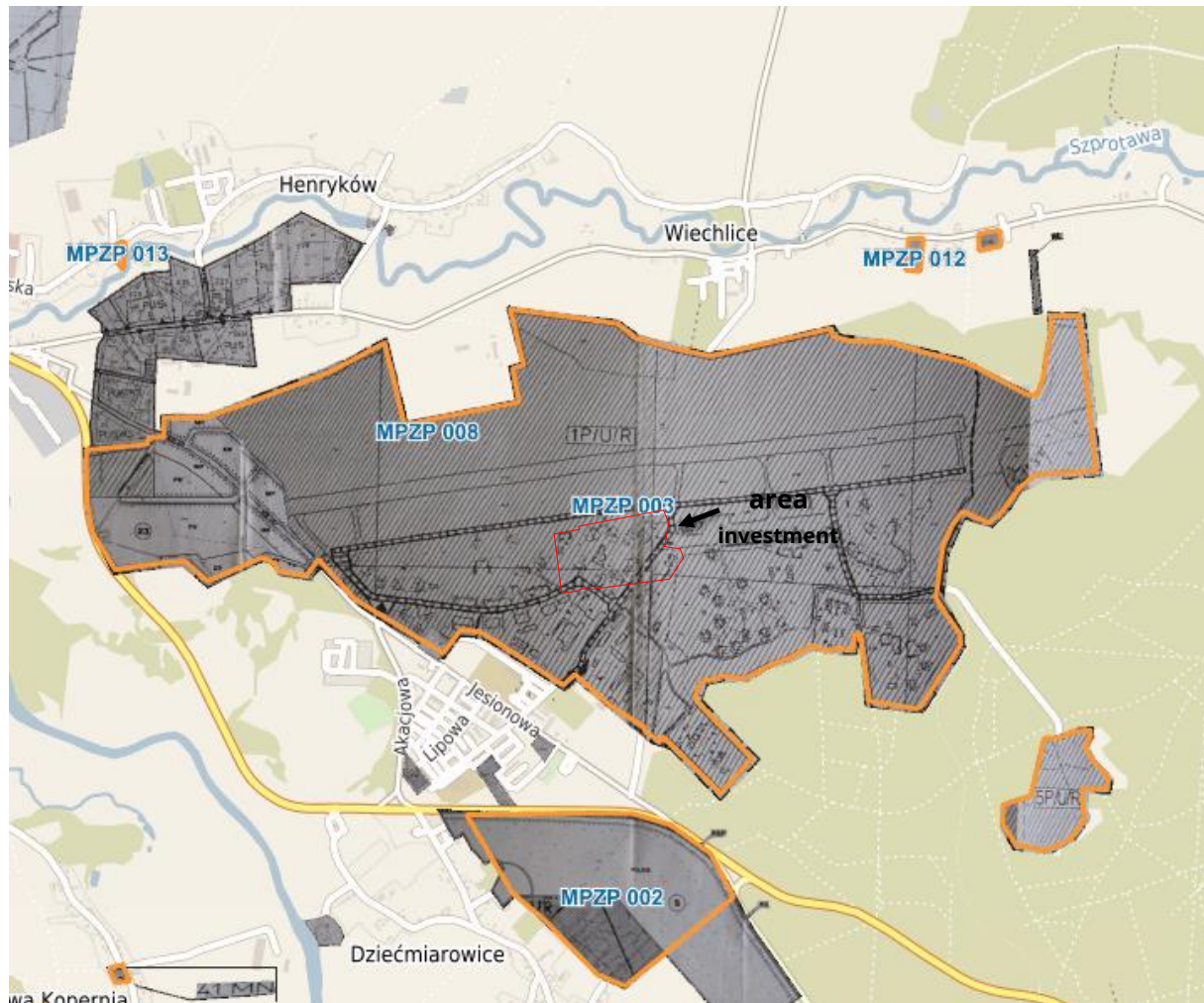


Figure 2. The investment area on a fragment of the local development plan drawing
[source: <https://szprotawa.e-mapa.net/>]

The investment areas are currently undeveloped. They are located in the area of the post-Soviet airport. The immediate surroundings of the investment area are areas designated in the local development plan for production and service development:

- to the north, east and west: areas designated in the local development plan for production and service development,
- southwards: access road, areas intended for production and service development.

The closest acoustically protected buildings are single-family residential buildings located to the north of the investment area at a distance of approx. 0.34 km.

The main building - the warehouse hall - was designed as a single-story building with loading docks on the south side. The social and office building was designed as a separate two- and one-story building and was located in the south-eastern part, near the entrance to the plant. The entrance to the office part is also located on the south side, in close proximity to parking spaces for passenger cars.

In addition, two warehouse buildings will be constructed located in the eastern part of the Plant area.

In addition to the main building and the communication system, elements for the necessary infrastructure services, i.e. a reservoir, were designed on the investment plot

fire station, pump room building, sidewalks constituting necessary pedestrian access to the building.

Transport services for the planned plant will amount to approximately 25 trucks per day. The planned number of parking spaces for passenger vehicles is approximately 120, for trucks - 8.

Work in the planned plant will take place in a three-shift system, 7 days a week. Employment will be approximately 453 people, including 150 office workers and 303 warehouse workers.

The plant will be supplied with water from the municipal water supply network.

Sanitary sewage will be discharged to the external sanitary sewage system.

Rainwater and meltwater from roof surfaces directly, and from paved surfaces (roads, parking lots and maneuvering areas), after pre-treatment in a petroleum substance separator, will be directed to the municipal stormwater sewage system through the used canal retention and retention tank. An underground, tight retention reservoir with a capacity of approx. 870 m³ will be constructed.

The plant will be powered by energy from an external power grid. Heat and hot water are supplied from the company's own gas boiler room, consisting of two boilers with a capacity of approx. 2.0 MW kW each (total power of the boiler room - approx. 4.0 MW). The investor is waiting to receive technical conditions, and in the event of technical impossibility, the use of above-ground storage tanks for LNG/LPG/CNG gas with a total capacity of up to 100 m³.

2 AREA OF THE PROPERTY AND BUILDING FACILITY AND THEIR CURRENT METHOD OF USE AND COVERING OF THE PROPERTY WITH PLANT COVER

Act on providing information about the environment and its protection, public participation in environmental protection and environmental impact assessments (art. 62a, section 1, point 2)

2.1 SURFACE PLANTS

The project will be implemented on plots no. 280/162, 280/163, 280/165, Wiechlice district, Szprotawa commune, Żagań poviát. The area of the plots covered by the project is approximately 122,364 m².

Area balance

Type of surface	[m ²]
Plot area	approx. 122,364
- development area, including:	approx. 50,854.6
• Warehouse	approx. 46,643.2
• Social and office building	approx. 1,973.8
• Warehouse	approx. 507.7
• Warehouse	approx. 1443.3
• Concierge 1	approx. 54.1
• Concierge 2	approx. 13.2
• Pumping station	approx. 95.7
• Fire protection tank	approx. 112.7
• smoking room	approx. 19.9
- hardened surfaces	approx. 18,912.5
• asphalt roads	approx. 7,995.8
• concrete block band	approx. 721.6
• concrete cube	approx. 8,452.6
• concrete slab	approx. 1,742.5
- green areas	approx. 52,596.9

The total area of land intended for transformation as a result of the implementation investment is **approx. 12.2 ha (including landscaped greenery)**, including **approx. 1.9 ha is the area of parking lots, internal roads and maneuvering areas.**

The length of the internal roads planned for construction (asphalt roads, maneuvering areas made of cobblestones) is approximately 1.4 km.

2.2 ACURRENT METHOD OF USING THE INVESTMENT AREA

The investment area is located in the area of the post-Soviet airport. The area is currently unused, undeveloped and undeveloped.

The investment areas are land devoid of tall vegetation and shrubs - the investment will not require cutting down any greenery. The project is not located in an ecologically sensitive area. There are no natural habitats requiring special treatment in the investment area, and there are no protected species of plants or fungi. There are no monuments within the investment's impact area that are subject to protection under the provisions on the protection and care of monuments, and those located further away are not exposed to the impact of the planned investment.

There are no trees in the vicinity of the investment site that would require protection during the investment implementation stage. After completing the construction and installation works, the investor can start installing new greenery. This greenery should be subjected to appropriate care.

The construction facilities will be located on the investment site (the investor has the right to dispose of the land). The construction site, where construction equipment and means of transport will be parked, will be organized on a hardened area, e.g. with concrete slabs. In the area where equipment and work machines are parked, sorbents should be available to eliminate possible oil spills.

3 TYPE OF TECHNOLOGY

Act on providing information about the environment and its protection, public participation in environmental protection and environmental impact assessments (art. 62a, section 1, point 3)

3.1 ZAREA DEVELOPMENT, COMMUNICATION SERVICE, EMPLOYMENT

The subject of the investment is the construction of:

- warehouse hall,
- social and office building,
- two warehouse buildings,
- two porters,
- fire water tank together with the pumping station building,
- internal roads, maneuvering areas, parking lots and sidewalks, small architecture,
- necessary technical infrastructure related to the construction of the plant.

The main building - the warehouse hall - was designed as a two-story building with loading docks on the south side. The social and office building was designed as a separate two- and one-story building and was located in the south-eastern part, near the entrance to the plant. The entrance to the office part is also located on the south side, in close proximity to parking spaces for passenger cars.

In addition, two warehouse buildings will be constructed located in the eastern part of the Plant area.

In addition to the main building and the communication system, elements for the necessary infrastructure services were designed on the investment plot, i.e. a fire protection tank, a pumping station building, and sidewalks constituting the necessary pedestrian access to the building.

Transport services for the planned plant will amount to approximately 25 trucks per day. The planned number of parking spaces for passenger vehicles is approximately 120, for trucks - 8.

Work in the planned plant will take place in a three-shift system, 7 days a week. Employment will be approximately 453 people, including 150 office workers and 303 warehouse workers.

The plant will be supplied with water from the municipal water supply network.

Sanitary sewage will be discharged to the external sanitary sewage system.

Rainwater and meltwater from roof surfaces directly, and from paved surfaces (roads, parking lots and maneuvering areas), after pre-treatment in a petroleum substance separator, will be directed to the municipal stormwater sewage system through the used canal retention and retention tank. An underground, tight retention reservoir with a capacity of approx. 870 m³ will be constructed.

The plant will be powered by energy from an external power grid. Heat and hot water are supplied from the company's own gas boiler room, consisting of two boilers with a capacity of approx. 2.0 MW kW each (total power of the boiler room - approx. 4.0 MW). The investor is waiting to receive technical conditions, and in the event of technical impossibility, the use of above-ground storage tanks for LNG/LPG/CNG gas with a total capacity of up to 100 m³.

3.2 KONSTRUCTION

Due to the tested groundwater level, a mixed technology of excavation construction and protection is planned in the form of sheet piling and wide-spatial excavations, wherever possible due to ground conditions. The method of securing the excavation will be included in the project, in which, depending on the identified water conditions, appropriate solutions will be selected to ensure no impact on water conditions in the vicinity of the investment (the depression funnel will not extend beyond the investment area).

The expected solutions are:

- securing the excavation with a sheet pile or diaphragm wall (steel sheet piles, larsens) deepened into impermeable soils,
- wide excavation while maintaining a safe angle of inclination,
- another adequate solution.

Ensuring the tightness of the excavation protection will prevent groundwater from flowing into the excavation and will not create a depression funnel.

If it is necessary to drain the excavation (e.g. from rainwater), the pumped water will be managed within the investment area or will be discharged into the storm sewage system after being pre-treated in a sand settling tank.

Warehouse hall - main building

The designed facility is a hall building with a warehouse function. I don't design underground floor.

The main structure of the building will be reinforced concrete, prefabricated frame or steel. The main structural elements of the building are prefabricated reinforced concrete columns, precast prestressed concrete beams and girders, and prefabricated prestressed concrete roof purlins or a steel roof truss structure. The roof covering will consist of a structural steel corrugated (trapezoidal) sheet on which layers of thermal insulation and roof membrane will be placed. The ground floor floor structure will be a monolithic concrete slab placed on the substructure. Facade walls made of sandwich panels. Foundation in the form of reinforced concrete footings and foundation strips.

Social and office building

The social and office building will be a one- and two-story building. The main structure of the building is made of brick/reinforced concrete. The ceilings will be made of reinforced concrete. Roof

it will be covered with trapezoidal sheet metal, thermal insulation and a roof membrane or reinforced concrete. The facade walls will be made of lightweight construction made of sandwich panels. Foundation in the form of reinforced concrete footings and foundation strips.

Warehouses 1 and 2

Warehouse buildings will be single-story buildings made of reinforced concrete frame or steel structure. The main structural elements of the building are reinforced concrete columns, prefabricated prestressed concrete beams and girders, and prefabricated prestressed concrete roof purlins or a steel roof structure. The roof covering will consist of a structural steel corrugated (trapezoidal) sheet on which layers of thermal insulation and roof membrane will be placed. The ground floor floor structure will be a monolithic concrete slab placed on the substructure. Facade walls made of sandwich panels. Foundation in the form of reinforced concrete footings and foundation strips.

Concierge

Gatehouse 1 is a single-story building made of brick/reinforced concrete. The roof will be made of reinforced concrete covered with thermal insulation and a roof membrane. The facade walls will be made of masonry/reinforced concrete, thermally insulated, finishing material depending on the needs, finishing material depending on the needs, sheet metal/facade coffers/sandwich panel, plaster.

Portiernia 2 is a single-story frame building light with a casing made of sandwich panels. The roof will be light, steel, covered with thermal insulation and a roof membrane.

3.3 TECHNOLOGY

It is assumed that the warehouse hall and warehouse buildings will be used for activities related to the storage of industrial products, materials, food products, etc. In addition, picking, reloading and logistics services are planned. The halls may also be used to conduct activities related to the provision of forwarding and distribution services, including the handling and shipment of goods as part of online retail sales.

Goods will be stored in the halls on Euro pallets in collective packaging or on shelves or on the floor.

The loading and unloading of goods will be handled using electric forklifts, unmanned gel forklifts or manual trucks.

It is also expected that in individual parts of the warehouse hall and warehouse buildings, light production will take place, consisting in the assembly of ready-made components into entire systems or assembling products for further assembly, e.g. assembling electronic and electrical components, toys, which will not involve with additional air emissions, noise emissions and industrial wastewater.

The buildings are expected to include social and office complexes equipped with sanitary facilities, rooms for preparing and eating meals, cloakrooms for blue-collar workers and administrative rooms. Cleaning rooms and technical rooms are planned. Additionally, a free-standing social and office building will serve as a complementary function to this facility.

No storage of substances hazardous to the environment is planned. Work in the planned plant will take place in a three-shift system, 7 days a week. Employment will amount to approximately 453 people, including 150 office workers and 303 warehouse workers.

3.4 PIECI, EXTERNAL AREA UTILITY INSTALLATIONS

Water supply

The plant will be supplied with water from the municipal water supply network.

Sanitary sewage

Sanitary sewage will be discharged into the municipal sanitary sewage system.

Industrial sewage

No industrial sewage will be produced at the plant.

Rainwater and meltwater

Rainwater and meltwater from roof surfaces directly, and from paved surfaces (roads, parking lots and maneuvering areas), after pre-treatment in a petroleum substance separator, will be directed to the municipal stormwater sewage system through the used canal retention and retention tank. An underground, tight retention reservoir with a capacity of approx. 870 m³ will be constructed.

Heating and power installation

Heat and hot water are supplied from the company's own gas boiler room, consisting of two boilers with a capacity of approx. 2.0 MW kW each (total power of the boiler room - approx. 4.0 MW). The investor is waiting to receive technical conditions, and in the event of technical impossibility, the use of above-ground storage tanks for LNG/LPG/CNG gas with a total capacity of up to 100 m³.

4 POSSIBLE VARIANTS OF THE PROJECT

Act on providing information about the environment and its protection, public participation in environmental protection and environmental impact assessments (art. 62a, section 1, point 4)

Variant "0"

If the analyzed investment involving the construction of a warehouse building in Wiechlice is not undertaken, the area will remain unchanged.

Abandoning the investment will result in temporary preservation of the current state of the environment.

The variant proposed by the Applicant A detailed description of the variant is presented in point 3 of the KIP.

Alternative variant

Another location of the project

The investor does not have any other area where the implementation of the project in question would be possible. The selection of the development plan for the investment area was preceded by an analysis aimed at selecting the optimal location from the point of view of logistics, space availability and economy. This analysis also took into account issues related to the scope of the project's impact on the environment.

Technology

Introducing variants in terms of detailed technical, construction or architectural solutions will not have a significant impact on the environment.

A rational alternative may include another method of supplying heat for heating and technological purposes.

- Variant I proposed by the applicant - heat for heating and domestic hot water purposes of the planned investment generated by gas devices with a total capacity of 4.0 MW,

- Variant II - heat for heating and domestic hot water purposes of the planned investment, generated by devices with a total power of 4.0 MW fired with light fuel oil.

As a result of the combustion of natural gas and fuel oil in heating devices, substances will be emitted into the air. Below is a comparison of the emissions that will result from the combustion of natural gas and fuel oil in devices.

Power boiler room	Emission			
	S.O ₂	YEAH ₂	WHAT	Dust contaminants
[MW]	[kg/h]	[kg/h]	[kg/h]	[kg/h]
Natural gas PN-C-04753-E				
4.0	0.0404	1.0080	0.4320	0.0909
Light fuel oil PN-C-96024				
4.0	1.2492	2.1362	0.2563	0.7690

After analyzing the above values, a more environmentally beneficial variant was selected, i.e. Variant I - heat for heating and technological purposes will be generated by devices fired with natural gas.

The environmental impact analysis of the planned project as prepared by the designers does not indicate any violation of environmental quality standards. In the light of the above information, it can be safely concluded that the analyzed project, in the presented design variant, will also be the most beneficial variant for the environment.

5 EXPECTED QUANTITIES OF USED WATER, RAW MATERIALS, MATERIALS, FUEL AND ENERGY

Act on providing information about the environment and its protection, public participation in environmental protection and environmental impact assessments (art. 62a, section 1, point 5)

The forecast consumption of utilities at the investment implementation stage was based on estimates based on the construction of similar types of halls:

- diesel fuel consumption 800 liters/day,
- water consumption 300 m³/month,
- electric energy usage 2.0 MWh/month,

Estimated consumption media at the exploitation stage :

- natural gas approx. max. 700,000 m³/year
- Electricity approx. 40,800 GWh/year
- water approx. 10.0 m³/d

Media consumption during possible liquidation will be similar to consumption during the investment.

6 SOLUTIONS THAT PROTECT THE ENVIRONMENT

Act on providing information about the environment and its protection, public participation in environmental protection and environmental impact assessments (art. 62a, section 1, point 6)

6.1 FCONSTRUCTION AZA

Ground and water environment

During construction, there is always a potential danger of soil contamination with petroleum-derived substances from construction equipment and means of transport (potential micro-leaks of gear oil, engine oil, fuel, etc.). To minimize the risk of contamination, the construction site where this equipment will be parked should be organized on a hardened area, e.g. with concrete slabs. In the area where equipment and work machines are parked, sorbents should be ensured to eliminate possible oil spills. This will minimize the potential threat to the soil and water environment. The operation of vehicles and machines involving the use of liquid petroleum substances (refilling fuel, replacing lubricants) should be carried out outside the construction site.

Repairs to equipment and machines will not be carried out on the premises of the planned project. If a failure is detected, work using the equipment will be interrupted. The damaged device will be placed on a hardened surface to prevent contaminants from entering the ground environment. The equipment will be transported to the service location.

Waste management

The generated waste will be collected selectively and stored in a separate place on a drained surface until it is transferred to specialized companies, which will be documented in waste transfer cards. External entities collecting waste will have appropriate permits and technical capabilities for further waste management.

The earth masses will be used in the investment area for landscaping purposes - therefore, in accordance with Art. 2 point 3 of the Act of December 14, 2012 *about waste* (Journal of Laws 2013.21, consolidated text: Journal of Laws 2020.797, as amended) will not constitute waste. Part of the fertile soil (humus) will be used on the site, and the excess will be used similarly to earth masses from excavations for foundation footings. **will be collected and managed by an excavation company (with appropriate waste management permits), which will be formally confirmed in the form of waste transfer cards.**

Possible waste dangerous they will stored In tight, marked containers or containers in a designated place with a hardened floor, covered and protected against access by unauthorized persons. In the event of micro-leaks of operating fluids resulting from equipment failure, the leachate will be collected in tight containers placed under the machines until the arrival of the company servicing the device.

Atmospheric air

Works related to the implementation of the project will have a short-term and direct impact on air pollution only in the investment area. When carrying out large-scale earthworks (significant volume of soil from excavations), it is advisable to use protective measures to prevent the removal of pollutants from the construction site on vehicle wheels. Wheel washers are the most effective, but their use is limited to the warmer season. Dust from roads and the construction site during the dry season will be limited by sprinkling the ground surface with water.

Acoustic environment

The noise impact during the investment implementation will be temporary and limited to the duration of construction works. The mentioned inconveniences are short-term and, in terms of acoustics, do not leave any lasting changes in the environment. Additionally, the following solutions will be used during construction works:

1. Earthworks, construction and transport works related to the implementation of the investment, causing noise nuisance, will be carried out **only during the day, from 6:00 until 22:00**. Construction works carried out using equipment emitting bothersome noise will be appropriately planned and spread over time. Applying organizational activities that help reduce noise emissions into the environment.
2. When organizing the construction site, pay attention to ensure that the construction equipment used meets the requirements regarding noise emission into the environment, resulting from the regulation of the Minister of Economy of December 21, 2005. *on essential requirements for equipment used outdoors with regard to noise emission into the environment* (OJ 2005.263.2202, as amended. d.).
3. Ensuring the good technical condition of the machines, their systematic maintenance, and equipping heavy construction machines with appropriate acoustic protection (the responsibility of the Contractor).
4. During breaks at work, it is recommended to turn off the engines of construction equipment.

At the implementation stage, technical methods will be used to reduce the risk of failures and construction disasters: technical systems supporting fire protection, systems for assessing the operational safety of neighboring facilities and the construction site, and construction monitoring systems.

6.2 FAZA OF EXPLOITATION

Ground and water environment

In order to protect the land against contamination with petroleum-derived substances resulting from possible leaks from vehicles moving around the area, the surfaces of roads and parking lots will be made tight, preventing contaminated rainwater from entering the ground.

Rainwater and meltwater from roof surfaces directly, and from paved surfaces (roads, parking lots and maneuvering areas), after pre-treatment in a petroleum substance separator, will be directed to the municipal stormwater sewage system through the used canal retention and retention tank. An underground, tight retention reservoir with a capacity of approx. 870 m³ will be constructed₃.

Sanitary sewage will be discharged to the external sanitary sewage system. Due to the planned technology, no industrial sewage will be generated.

The methods of protecting the soil and water environment include:

- keeping devices in good technical condition,
- ongoing control and supervision of work and workplaces, as well as periodic inspections of equipment,
- immediate removal of technical faults,
- conducting proper substance management:
 - storing liquid substances in sealed unit containers (containers, barrels, pallet containers, etc.),
 - storing substances and materials in places protected against weather conditions,
 - ongoing staff supervision over the proper functioning of the plant, including places of use, storage and transport of substances.

Waste management

In terms of waste management, the investor will transfer all waste generated on its premises to companies with appropriate authorizations and technical capabilities to manage or recover it. All hazardous waste will be stored in a way that minimizes the possibility of its release into the environment. The storage area is equipped with a tight floor and protected against unauthorized access.

The specific nature of a warehouse does not allow for complete elimination of waste, however, properly carried out work allows their quantity to be maintained at a specified and justified minimum level. The methods that reduce the nuisance of waste management include:

- rational management of packaging waste,
- keeping devices and machines in good technical condition,
- monitoring the amount of raw materials and materials used as well as the amount and types of waste generated,
- waste management in accordance with the following principles:
 - waste will be stored selectively;
 - waste will be stored in the area to which the operator has legal title;
- waste will be stored depending on its physical (state of matter, dimensions) and chemical properties: in the described containers and containers adapted to the properties of the waste - made of materials resistant to the effects of waste components; in tightly closed single-use polyethylene bags and in specialized single-use containers;
- hazardous waste will be stored in the described tight containers, equipped with tight closures;
- waste will be stored in designated and marked (described) places, protected against weather conditions, on a tight surface;
- waste storage places will be secured against access by unauthorized persons;
- waste will be stored solely for the purpose of collecting sufficient quantities for transport;
- waste will be sent for recovery first, and if this is impossible or unreasonable, waste will be sent for neutralization;
- waste will be transferred to specialized companies that have the required permits from the competent authority for waste management or are entered in the register - directly or through waste collectors.

Atmospheric air

In terms of atmospheric air protection, the facility uses energy generated in its own heating sources fired with natural gas PN-C-04753-E for heating.

Acoustic environment

The main source of noise bound Withfunctioning planned
The project will include car traffic and external ventilation devices of the hall. It is planned to install modern devices equipped as standard with solutions limiting their acoustic power. The halls will be designed in accordance with the provisions of Chapter IX Protection against noise and vibrations of the Regulation of the Minister of Infrastructure of April 12, 2002. *on the technical conditions that buildings and their location should meet* (Journal of Laws 2019.1065, as amended. d.). In addition, the materials used

and devices will have certificates of approval for use and will meet environmental protection requirements.

The noise protection methods include:

- conducting non-intrusive activities inside halls,
- keeping devices in good technical condition,
- regular technical inspections of installations,
- immediate removal of technical faults,
- turning off engines during stoppages related to loading and unloading goods,

- speed limit to 20 km/h,
- Car traffic around the plant will be controlled and planned.

Meeting the requirements of Art. 143 of the Environmental Protection Act

All design solutions will be elements of technology developed in accordance with the latest trends in contemporary knowledge.

Point 1. Use of substances with low hazard potential

There will be no hazardous substances in the investment area in the same quantity or greater than specified in the Regulation of the Minister of Development of January 29, 2016 *on the types and quantities of hazardous substances present in the plant, determining whether the plant is classified as a plant with an increased or high risk of a serious industrial accident* (Journal of Laws 2016.138).

Point 2. Efficient production and use of energy

Effective use of energy is ensured by: characterized by low energy modern devices consumption.

Point 3. Ensuring rational use of water and other raw materials and materials

and fuels.

The planned investment project will apply the principle of rational use of water and other raw materials as well as materials and fuels, including electricity, in order to minimize the negative impact on the environment in each of its possible impacts.

Point 4. The use of waste-free and low-waste technologies and the possibility of recovering the generated waste

Waste generated as a result of the operation of the facility will be selectively collected at the place of production and transferred to authorized entities for recovery and/or disposal. Actions will also be taken to reduce the amount of waste.

Point 5. Type, scope and volume of emissions

The computer simulations performed showed that as a result of the investment, the permissible noise levels will not be exceeded in areas subject to acoustic protection, and the impact due to gas and dust emissions will remain, like the acoustic impact, without affecting the environment in the area of the surrounding residential buildings.

Point 6. Use of comparable processes and methods that have been successfully applied on an industrial scale

The warehousing process will be carried out using tested technologies and procedures that have proven effective for many years in the logistics industry.

Point 7. (repealed)

Point 8. Scientific and technical progress

The technologies and equipment planned to be used are available on the market and commonly used in the implementation of similar projects.

6.3 WIMPACT OF THE PROJECT ON ENVIRONMENTAL GOALS FORJCWPANDJCWPD

6.3.1 Location of the investment in relation to the GZWP

The investment area is located outside the boundaries of the Main Ground Water Reservoir.

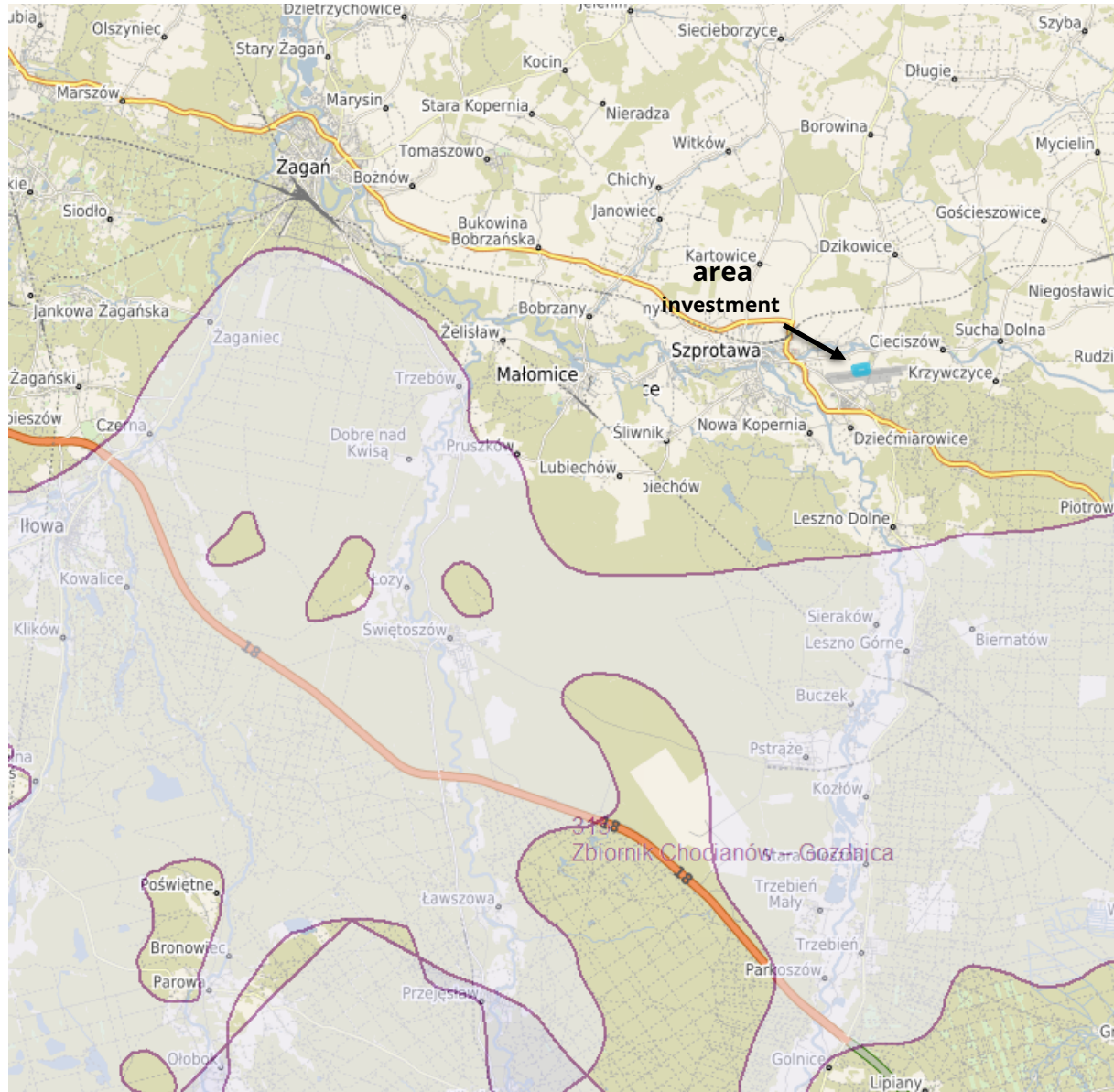


Figure 3. Location of the investment area in relation to the Main Ground Water Reservoirs

6.3.2 Location of the investment in relation to the Ground Water Bodies

The updated one applies to the area covered by the investment *Water management plan in the Odra river basin area* (of February 22, 2011, Monitor Polski no. 40, item 451, Regulation of the Council of Ministers of October 18, 2016. *regarding the Water Management Plan in the Odra River Basin Area*). According to the Uniform division

Ground Water Part, 172 parts, the investment is located within the boundaries of JCWPd No. 77.

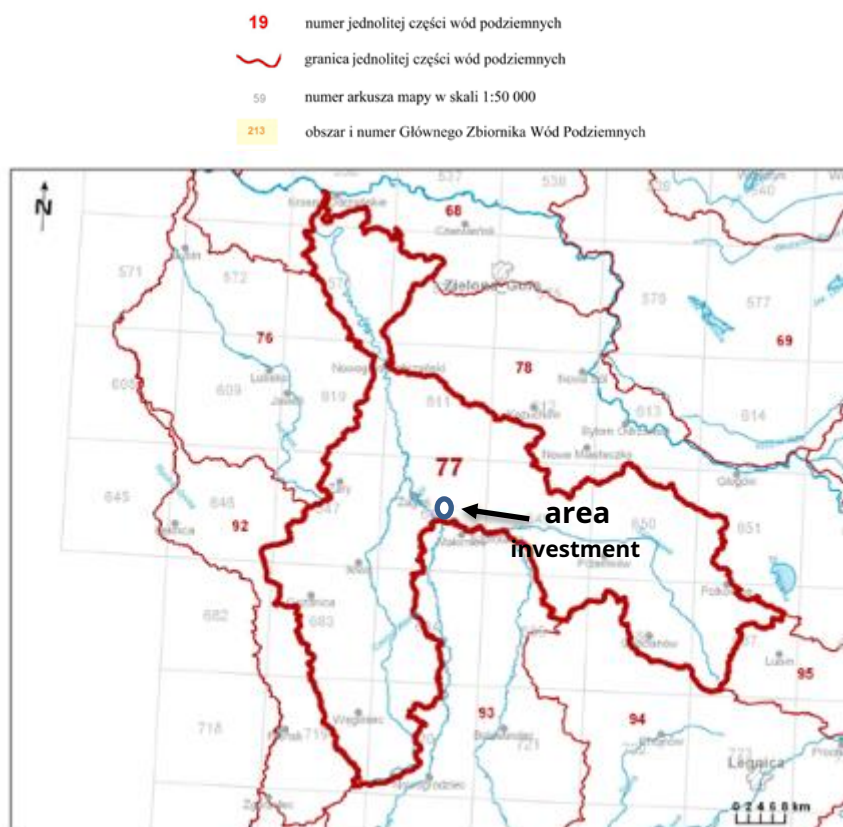


Figure 4. Location of the investment in the Unified Ground Water Part No. 77

JCWPd No. 77 in the Oder basin

JCWPd	EU_Code	Surface km ²	Basin	State	Risk	State chemical	State quantitative	State general	Region aqueous
77	PLGW600077	2654.7	Measles	Good	not threatened	Good	Good	Good	region aqueous Central Odra

6.3.3 Location of the investment in relation to Surface Water Bodies

The investment area is located in the river catchment area of the JCWPSzprotawa from **Chocianowska Woda to Bóbr RW60001916499, type JCWP (19)**: Sandy and clay lowland river, status: strongly modified water body, water condition was assessed as poor, the risk of failure to achieve environmental goals was assessed as threatened. Deadline for achieving good status: 2027. Justification for derogation: lack of technical possibilities. There is municipal and industrial pressure in the JCWP catchment area. The action program includes activities including a review of water law permits for discharging sewage into water or land by users in the JCWP catchment area due to the threat to achieving environmental goals, in accordance with Article 136(1). 3 of the Water Law Act aimed at limiting these pressures so that it is possible to achieve indicators consistent with the values for good status. However, due to the time necessary to implement the actions, as well as the period necessary for the implemented actions to bring measurable effects, good status can be achieved by 2027 (source: updated Water Management Plan in the Odra River Basin, Journal of Laws of 2016, item 1967). The location of the investment in relation to the JCWP is shown in the figure below.

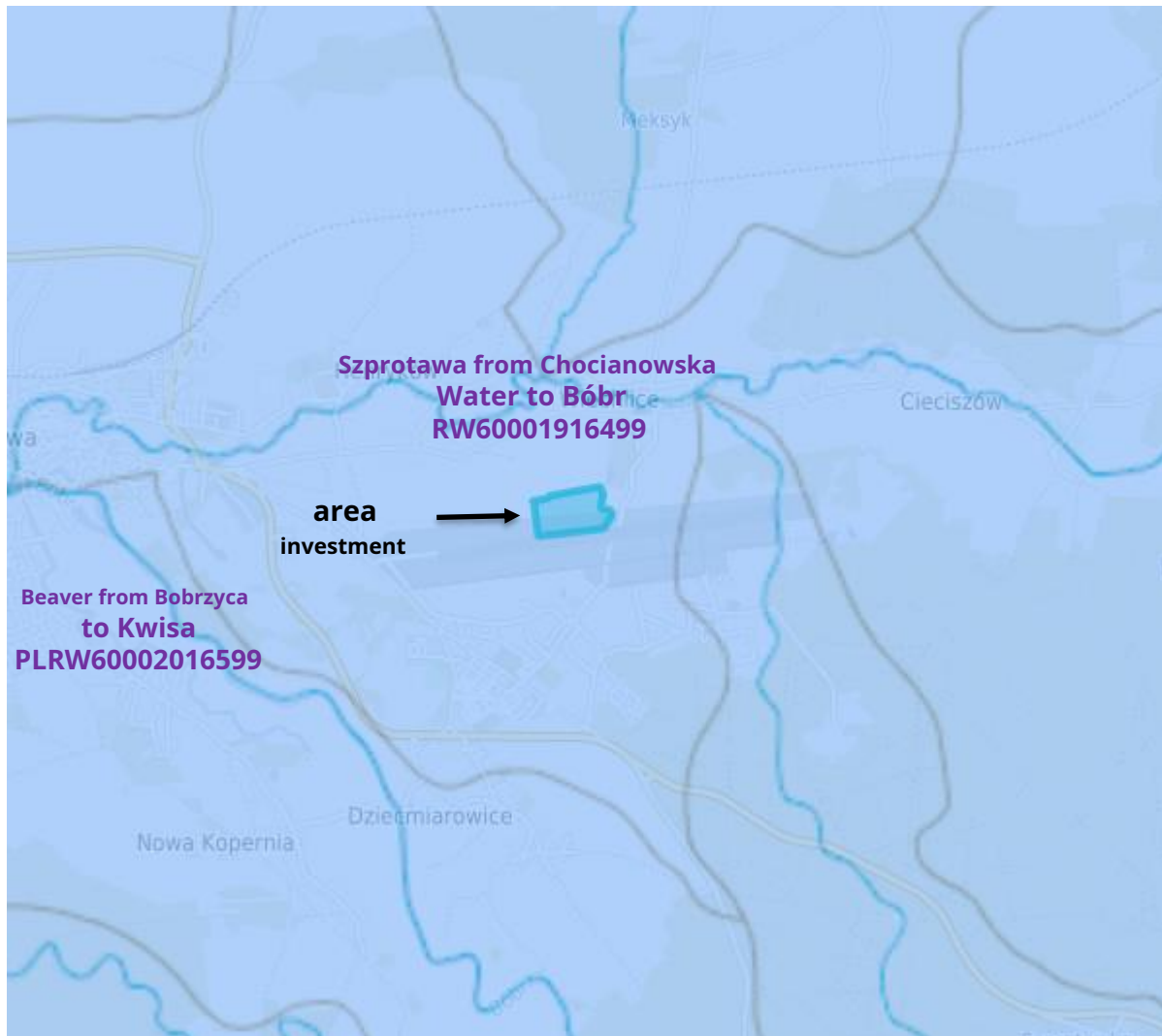


Figure 5. Location of the investment in relation to the JCWP
[source: <https://polska.e-mapa.net/>]

6.3.4 Impact of the project on the findings of the Flood Risk Management Plan

On October 18, 2017, the Regulation of the Council of Ministers was adopted on the adoption of the Flood Risk Management Plan for the Odra river basin area. According to the Water Law Act, the primary objective of flood risk management is to reduce the potential negative effects of floods on human life and health, the environment, cultural heritage and economic activity. The main goals of flood risk management are:

- 1) stopping the increase in flood risk,
- 2) reducing the existing flood risk,
- 3) improving the flood risk management system. **The investment has a neutral impact on the above-mentioned goals.**

Flood hazard maps posted on the KZGW hydroportal (<http://mapy.isok.gov.pl/imap/>) show that there is no flood risk in the investment area for:

- Q_{1%}(the probability is average - once every 100 years),
- Q_{10%}(the probability is average is once every 10 years).
- Q_{0.2%}(the probability is average is once every 500 years).

6.3.5 Environmental goal for JCWPd

Pursuant to Art. 59 of the Act *Water law* of July 20, 2017 (Journal of Laws 2020.310, as amended) the environmental objective for groundwater bodies is:

- preventing or limiting the introduction of pollutants into them,
- preventing deterioration and improving their condition,
- protecting and taking remedial action, as well as ensuring a balance between abstraction and recharge of these waters in order to achieve good status.

According to **Water management plan in the Odra river basin area** for the Ground Water Body 77, an environmental goal was defined - good chemical status and good quantitative status.

The implementation of the investment is not inconsistent with the above objective. The project will not have a negative impact on the water and ground environment. The implementation of the investment will not change the status of groundwater.

6.3.6 Environmental goals for JCWP

Pursuant to Art. 56 of the Act *Water law* of July 20, 2017 (Journal of Laws 2020.310, as amended), the environmental objective for surface water bodies not designated as artificial or significantly modified is to protect and improve their ecological and chemical status, so as to achieve at least good ecological status and good chemical status surface waters, as well as preventing the deterioration of their ecological and chemical status.

Pursuant to Art. 57 the environmental objective for artificial and heavily modified water bodies is to protect these waters and improve their ecological potential and chemical status, so as to achieve at least good ecological potential and good chemical status of surface waters, as well as to prevent the deterioration of their ecological potential and chemical status.

According to **Water management plan in the river basin area** Odra River for the WWP from Chocianowska Woda to Bóbr RW60001916499, the following environmental goals were defined:

- good ecological potential,
- good chemical condition.

The implementation of the investment does not pose any risks regarding the implementation of the above-mentioned. goals. The project will not have a negative impact on the water and ground environment. The implementation of the investment will not change the water level. Sanitary sewage will be discharged to the external sewage network.

Rainwater and meltwater from roof surfaces directly, and from paved surfaces (roads, parking lots and maneuvering areas), after pre-treatment in a petroleum substance separator, will be directed to the municipal stormwater sewage system through the used canal retention and retention tank. An underground, tight retention reservoir with a capacity of approx. 870 m³ will be constructed.

The planned project is not a hydrotechnical project. The project does not change the physical characteristics of surface water bodies or change the level of groundwater. The planned works do not interfere with the stream bed and its elements, do not change the hydromorphology of the streams or the physicochemical elements of the streams, and therefore do not affect the biological elements of the streams. The investment does not change the ecological continuity of the streams. The intention, due to the scope of work and small scale, as well as the lack of direct interference in the stream bed, will not affect the quality of water indicators in the assessment of the chemical status of surface water bodies (SWP). The project does not impair the status/potential of water bodies or prevent the achievement of good water status/potential.

The investment does not generate direct impacts on the quantitative and qualitative status of Ground Water Bodies (Underground Water Bodies).

The impact of the planned project will be limited to the immediate surroundings. The investment planned for implementation will be of a local nature due to its low impact on the environment.

Therefore, the project is not inconsistent with the environmental objectives for both groundwater bodies and surface water bodies mentioned above.

6.3.7 Water Framework Directive

According to the definition in the Water Framework Directive (Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy), "good groundwater status" means the status achieved by a body of groundwater if both its quantitative and chemical condition is described as at least "good".

WFD environmental targets for **surface waters** specified in Art. 4:

- a) implementing the necessary measures to prevent the deterioration of the status of all bodies of surface water (subject to the reservations set out in the WFD),
- (b) protection, improvement and restoration of all surface water bodies (subject to point c) with a view to achieving good surface water status at the latest 15 years after the entry into force of this Directive (subject to the reservations set out in the WFD),
- c) protection and improvement of all artificially and significantly modified water bodies in order to achieve good ecological potential and good chemical status of surface waters no later than 15 years after the entry into force of the WFD,
- (d) implementing the necessary measures in accordance with Article 16 section 1 and 8 in order to progressively reduce pollution by priority substances and to cease or progressively eliminate emissions, discharges and losses of hazardous priority substances.

WFD environmental targets for **groundwaters** specified in Art. 4:

- a) preventing or limiting the flow of pollutants into groundwater
- b) preventing deterioration of the status of all groundwater bodies (with the reservations specified in the WFD),
- (c) protection, improvement and restoration of all bodies of groundwater,
- d) ensuring balance between abstraction and recharge of groundwater,
- (e) implementing the actions necessary to reverse the significant and continuing increasing trend in the concentration of any human-made pollutant.

The implementation of the investment supports the achievement of the above objectives by capturing sanitary and industrial sewage (after pre-treatment and meeting the required parameter values specified by the network operator and the conditions specified in the Regulation of the Minister of Construction of July 14, 2006 *on the manner of fulfilling the obligations of industrial wastewater suppliers and the conditions for introducing wastewater into sewage facilities*, i.e. Journal of Laws 2016. pos. 1757) and discharge to the external sanitary sewage system. **The project will not have a negative impact on the water and ground environment.**

Rainwater and meltwater from roof surfaces directly, and from paved surfaces (roads, parking lots and maneuvering areas), after pre-treatment in a petroleum substance separator, will be directed to the municipal stormwater sewage system through the used canal retention and retention tank. An underground, tight retention reservoir with a capacity of approx. 870 m³ will be constructed.

Due to the type and scale of the project (no factors affecting the water level), there is no impact of the project on biological, hydromorphological, physicochemical, quantitative and chemical indicators as well as indicators of protected areas appropriate to achieve the identified water protection objective), the investment does not involve modifying the physical characteristics of surface water bodies or changing the level of groundwater bodies. Therefore, the investment in accordance with Art. 4 section 7 will not violate the provisions of Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy (OJ L of 22 December 2000, as amended; Framework Water Directive).

6.3.8 Impact on the findings of the National Municipal Wastewater Treatment Plan

The basic instrument for implementing the provisions of Directive 91/271/EEC regarding municipal wastewater treatment is the National Municipal Wastewater Treatment Program. The aim of the National Municipal Wastewater Treatment Program is to limit discharges of insufficiently treated sewage and, consequently, to protect the aquatic environment against their adverse effects. The goal will be achieved by implementing the investments included in the Program. KPOŚK is a strategic document that assesses the needs and defines actions to equip agglomerations with a population of more than 2,000 people with sewage systems and municipal sewage treatment plants. The Szprotawa commune is an agglomeration included in the KPOŚK under number PLLU009 (5th update of the KPOŚK approved by the Council of Ministers on July 31, 2017). The Equivalent Number of Residents (PRM) is 16,464 (Resolution No. V/56/15 of the Lubuskie Voivodeship Assembly of March 19, 2015). The planned investment is consistent with the assumptions of the National Water and Sewage Treatment Plant - all sanitary sewage will be discharged through the sewage network to the Sewage Treatment Plant.

7 TYPES **AND PREDICTED** **QUANTITIES** **ENTERED** **DOWN**

ENVIRONMENT OF SUBSTANCES OR ENERGY USING ENVIRONMENTAL PROTECTING SOLUTIONS

Act on the provision of information on the environment and its protection, public participation in environmental protection and environmental impact assessments (Article 62a, section 1, point 7)

7.1 AIR GASES AND DUST MISSION

7.1.1 Construction phase

Due to the volume of emissions (typical for this scale of the project), the impact of the investment phase on the aerosanitary condition should be considered small. Locally, the impact may be visible in the form of an increase in air dustiness (some demolition and construction works) and, above all - also locally - in the form of an increase in the concentration of substances emitted by the engines of trucks servicing the construction site. The scale of this impact and its scope will be very small. This is due to the fact that the intensity of heavy vehicle traffic generated by the construction will be limited to a few or a maximum of a dozen cars per hour. Meanwhile, air quality tests near roads with heavy traffic (of the order of several thousand cars per hour in the case of multi-lane roads) prove that air quality standards are not exceeded even at a distance of several meters from the edge of the road. Such exceedances are only recorded near large intersections in cities.

Earthworks will expose the land surface. Wind erosion may occur in exposed areas during strong gusts of wind (typical especially in autumn and the end of winter) and there may be a local increase in air dust. The amount of dust emissions from the construction site is unknown. Literature data indicate the level of TSP emissions (dust, sum of total fractions) of approximately 2.7 Mg/ha during a month of work. This value, based on only one set of data (for specific soil, climatic conditions, etc.) is indicative only.

Assembly works will be carried out "dry" (screwing connections), without the use of welding. The elements delivered to the construction site will be ready - there is no need to paint them on the construction site.

Reducing emissions is helped by:

- wetting the ground surface (e.g. unpaved surfaces on which vehicles drive) and wetting loose material stored on piles (sand); in Polish climatic conditions, this wetting takes place due to precipitation, but during the rainless season it is worth additionally moistening the sources of pollen; Artificial barriers can also be used to reduce emissions, such as: fences surrounding the construction site; the range of effective protective effect of such fences is small, which does not mean that this preventive measure should be abandoned;
- avoiding conditions conducive to dust when pouring loose material (e.g. loading trucks using a belt conveyor - the height from which the material falls into the load box should be minimized);
- quick development of surfaces that have been exposed and therefore exposed to wind emissions;
- To prevent contamination of the street surfaces where cars leave the construction site, technical measures can be taken to clean the wheels (only wheel washing is effective), and, above all, wet sweeping of the section of the street where cars leave the construction site.

¹AP-42, Chapter 13.2.3 Heavy Construction Operations

Effectiveness of dust control measures according to the report "*Overview of Fugitive Dust Emissions*" (MH Daly, J. Franco, 2000; unpublished material) is presented in table 1.

Table 1. Effectiveness of measures to reduce road dust in the construction area

emission reduction technique	effectiveness
wet road sweeping	up to 96%
rinsing the road with water	up to 69%
Dry sweeping the road	up to 30%
washing vehicle wheels when leaving the construction site	up to 26%

Calculation of emissions from earthworks and construction works

The amount of emissions from construction processes was determined using the index method, based on the US-EPA (American Environmental Protection Agency) database. The database known as AP-42 is updated and available *online*. For various construction works, including earthworks, the basic dust emission index is given in section 13.2.3.

Dust emission from earthworks and construction works - total

Wsk (dust) = 2.69 Mg/ha/month

After conversion, assuming 25 working days of 16 hours each (400 h/month) Indicator

(dust) = 6.73 kg/ha/h

For the calculations, the area covered by the works was assumed to be 1.5 ha, hence E

(dust) = 6.73×1.5 = 10.095 kg/h

It should be borne in mind that the investment will be implemented in stages and will be spread over time. There will be no situation where the entire area where the project will be implemented will be covered by earthworks at the same time.

Calculations of emissions from working machines

The working machines, here mainly excavators, are powered by diesel engines. It is difficult to find rich information on emission rates in European databases (fragmentary information appears).

Therefore, the US-EPA study (EPA420-P-04-009, April 2004) was used: *Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling – Compression-Ignition*.

It was assumed that the work would be performed using two excavators, e.g. Atlas 1404M (typical), with an engine power of 74 kW (101 HP). Typical crawler bulldozers (e.g. CAT D5M LGP – 110 HP) and backhoe loaders, e.g. JCB 3CX – 90 HP) have similar power.

Table 2. Calculations of emissions from the working machine (engine operation)

substance	NOx	WHAT	PM	HC	above aro	above ali
g/h/KM indicator	5.5772	0.7475	0.2521	0.3085	0.0648	0.2437
emissions kg/h	0.563	0.075	0.025	0.031	0.007	0.025

The impact of the project on the aerosanitary condition during the implementation phase is temporary (it will cease after the investment is completed) and has a limited scope.

Therefore, it remains to be concluded that the impact on the air quality during the investment process will be comparable to the impact of other works of a similar nature carried out in different places. This impact can rarely be linked to the results of air quality tests conducted as part of the monitoring network. However, locally (range of meters and tens of meters), there may be a temporary increase in air dustiness (some construction works), and in the vicinity of construction machines and means of transport, a deterioration in the odor quality of the air may be noticeable (which is currently not assessed). However, the impact of emissions from means of transport on the air quality along the streets (public roads) on which cars will travel

servicing the construction, will not be significant because this additional traffic will not significantly change the road traffic balance in the city, at least in relation to the main routes.

The construction phase will have no impact on the climate.

7.1.2 Operation phase

Within the investment area, the following installations can be distinguished as a source of air emissions:

- energetic combustion of gas for heating and hot water production,
- trucks and passenger cars driving around the plant. No power generators will be located on the premises of the Plant.

7.1.2.1 Characteristics of organized emission sources

Sources of energetic fuel combustion

In connection with the designed construction, it is planned to install a gas boiler room (2 boilers each with a capacity of 2.0 MW) for heating and domestic hot water, emitter E1, E2, diameter dn700, height h = 14.50 m.

Emission calculations

Fuel: Natural gas PN-C-04753-E (former designation: GZ-50), with characteristics in accordance with the PN-C-04753:2002 standard. The emission volume was determined from the KOBIZE indicators for small boilers (2021). The energy flow in the fuel was determined based on gas consumption and calorific value provided by KOBIZE (36.54 MJ/m³ N)

Tableand 3.Emission indicators of substances from energy gas burned

Substance	Emission factor [g/GJ]
Total dust	0.50
PM10 dust	0.50
PM2.5 dust	0.50
Carbon monoxide (CO)	thirty
Nitrogen oxides (NOx/NO2)	50
Sulfur oxides (SOx/SO2)	0.4

Table 4.Emission of substances from gas combustion energy sources

source	Power	wear	time work	PM10 dust, PM2.5	Oxide coal (WHAT)	Oxides nitrogen (NOx/NO2)	Oxides sulfur (SOx/SO2)
	MW	m ³ /h	h/year	kg/h			
E1, E2	2.0 (heating season)	20.96	2190	0.00383	0.22979	0.38298	0.00306
	0.6 (season off heating)	10.48	6570	0.00010	0.00615	0.01025	0.00008

The source of diesel fuel combustion will be the engine of the fire pump used in the sprinkler system. A unit powered by a diesel engine with a capacity of 250 HP was selected. Emissions from emergency sources (diesel engines) during maintenance work carried out once a month for approximately 1 hour were determined as follows:

The engine model and class are not known, so emission factors from the US-EPA (EPA420-P-04-009, April 2004) entitled *Exhaust and Crankcase Emission Factors for Non-road Engine Modeling - Compression-Ignition*.

During periodic inspections, the pump engine runs at idle speed, temporarily increased. Therefore, it is justified to assume that during the inspection the average load of the engines is approximately 50% of the maximum power. The calculated gas and dust emissions are presented in the table below.

Table 5. Emissions from fire pumps during service work

substance	NOx	YEAH ₂	WHAT	TSP	WWA _{ro}	WWA _{li}
emission rate g/h/KM	5.5772	0.20×NOx	0.7475	0.2521	0.0648	0.2437
total emissions, kg/h	1.3943	0.2789	0.1869	0.063	0.0162	0.0609
emissions during service work (50%), kg/h	0.6972	0.1395	0.0935	0.0315	0.0081	0.0305

Here, it was assumed that the share of nitrogen dioxide in the NOx pool is 20%, which means that emissions are determined to be in excess, because the source of emissions are diesel engines, in which this share ranges from 2.2% to 9.9% according to the US-EPA database. Diesel fuel contains such small amounts of sulfur that SO emissions are negligible from a low power source was omitted. For simplicity (overestimating the impact), it was assumed that $E(TSP) = E(PM_{10}) = E(PM_{2.5})$. Emitter parameters:

p1,p2:
 Height: 5.5 m
 Diameter: dn 125

The location of the emitters is shown in the figure below.

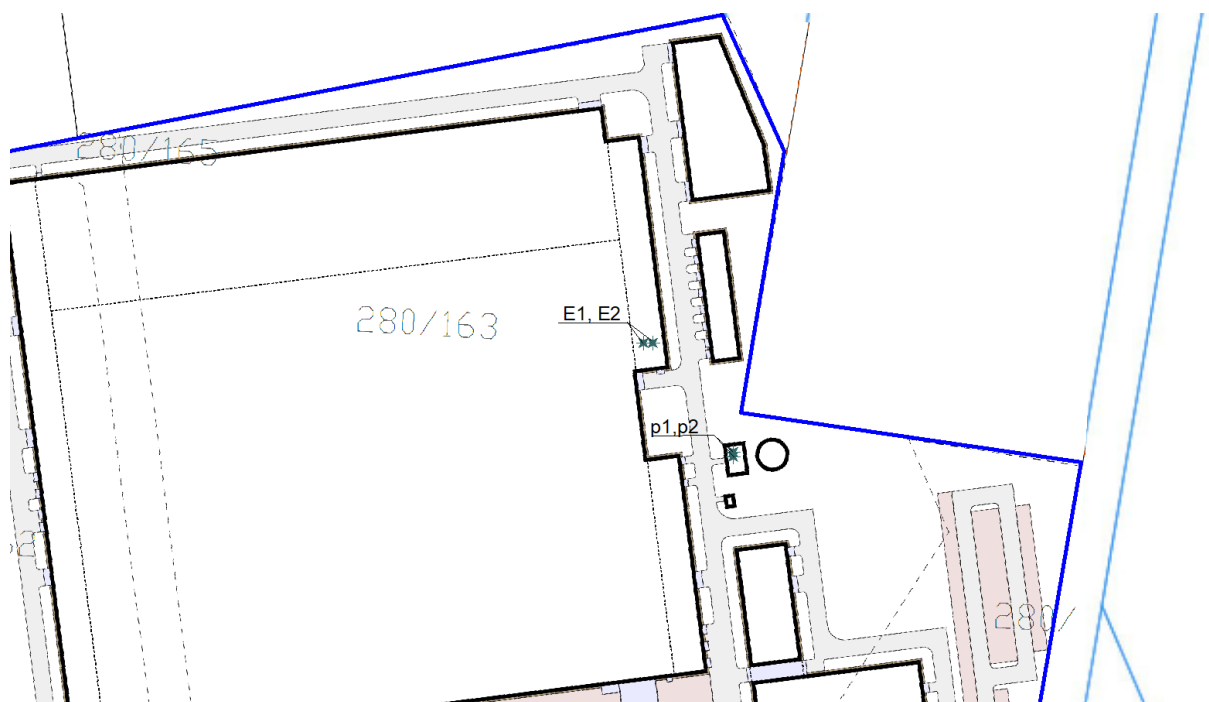


Figure 6. Location of sources of organized emission of substances into the air

Cars

There will be traffic of passenger cars and trucks around the plant. It was assumed that during the day the following vehicles would enter and leave the investment area:

- 15 capacity passenger cars/hour,
- 3 units trucks/hour,

while at night:

- 5 units passenger cars/hour,
- 1 capacity truck/hour.

Emissions were calculated in the OPERAT FB program, "Cars" module, assuming:

- 50% heavy vehicles + 50% light vehicles (delivery vehicles) - for trucks

- 100% capacity passenger cars - for a parking lot for passenger cars

- average loading level: 50%

- forecast year: 2022

- speed $v = 20$ km/h

- average air temperature: 10°C

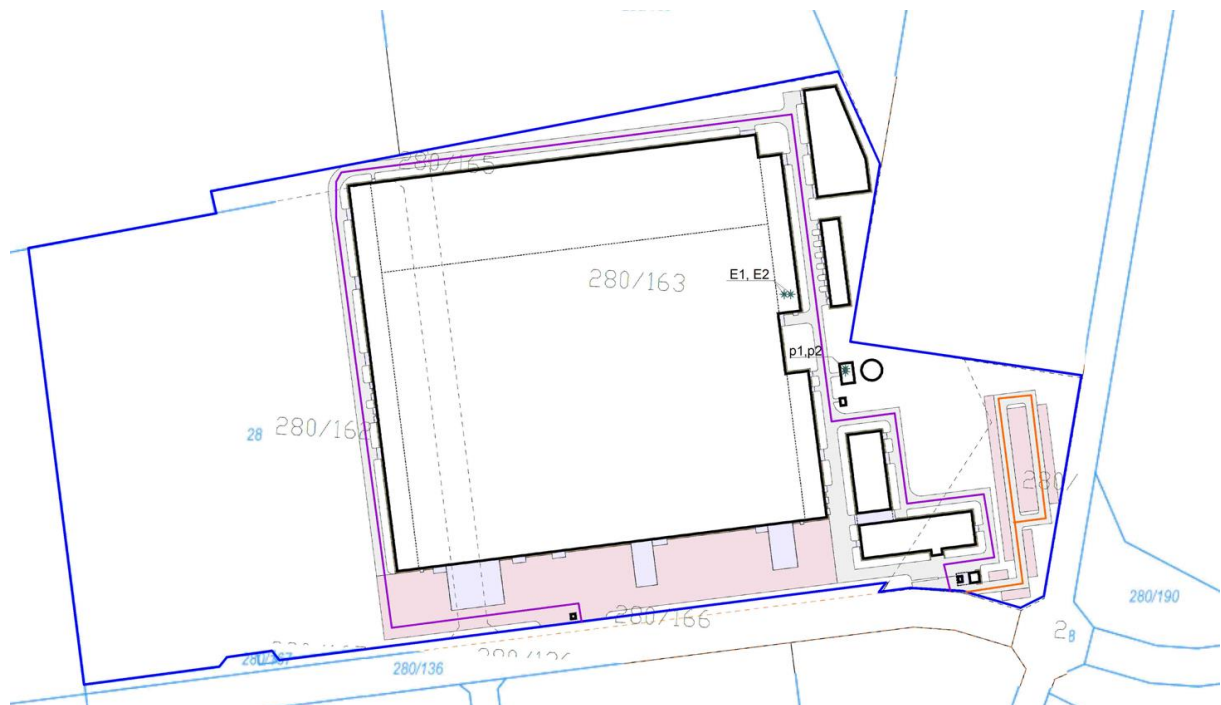


Figure 7. Location of sources of linear emissions of substances into the air (purple color - cars trucks, orange - passenger cars)

7.1.2.2 Immission of pollutants

Norms

Standards regarding permissible concentrations of certain substances in the air are specified in the Regulation of the Minister of the Environment of August 24, 2012. *on the levels of certain substances in the air* and in the Regulation of the Minister of the Environment of January 26, 2010 *on reference values for certain substances in the air*. They are summarized in the table below.

Table 6. Permissible and reference concentrations of analyzed substances in the air

No.	Substance	CAS No	Limit or reference concentration		Frequency ¹⁾
			1 hour	annual	1 hour
			[µg/m ³]	[µg/m ³]	[%]
1	PM10 suspended dust	—	280	40	0.200
2	PM2.5 suspended dust	—	—	20 ²⁾	0.200
3	Carbon monoxide	630-08-0	30000	—	0.200
4	Benzene	71-43-2	^{thirty}	5	0.200
5	Aliphatic hydrocarbons	—	3000	1000	0.200
6	Aromatic hydrocarbons	—	1000	43	0.200
7	Nitrogen dioxide	10102-44-0	200	40	0.200
8	Sulphur dioxide	7446-09-5	350	20	0.274

¹⁾permissible frequency of exceeding the 1-hour concentration of a substance per year

²⁾from January 1, 2020.

Methodology in the light of applicable regulations

Guidelines for performing calculations of substance dispersion are set out in Annex No. 3 to the Regulation of the Minister of the Environment *on reference values for certain substances in the air*. According to these guidelines, in Poland, spread calculations are made based on a variation of the Pasquille model. Using this model, maximum concentrations of substances in the air averaged for 1 hour are calculated to check whether the condition specified in formula (1) is met. If this condition is met for a given substance, the calculations for this substance end at this point.

$$\sum S_{mm} \leq 0.1 \cdot D_1 \quad (1)$$

Where:

$\sum S_{mm}$ – the sum of the highest (among all analyzed wind speeds and states of atmospheric equilibrium) maximum concentrations of a given substance in the air, µg/m³,

D_1 – reference value of a substance in the air or an acceptable level of a substance in air averaged for 1 hour, µg/m³.

For substances for which the above-mentioned condition is not met, calculations are carried out in the entire receptor grid using the statistics of atmospheric equilibrium states and wind directions and speeds, and it is checked whether the condition described in formula (2) is met at each point of the grid.

$$S_{xy} \leq D_1 \quad (2)$$

Where:

S_{xy} – concentration of substances in the air at the grid node at ground level, µg/m³, D_1 – reference value of a substance in the air or an acceptable level of a substance in air averaged for 1 hour, µg/m³.

If the above condition is not met, the number of hours in the year in which $S > D$ is checked. This number cannot be higher than 18 h/year (in relation to sulfur dioxide

– 24 hours/year).

Exceeding the permissible level is not taken into account if it occurs on the premises of the plant (in the area to which the operator of the installation has legal title).

Then, the distribution of concentrations of substances in the air, averaged for the year, is calculated throughout the entire computational grid and it is checked whether the condition specified in formula (3) is met at each point on the ground surface (at least outside the plant premises).

$$S_{and} \leq D_{and} + R \quad (3)$$

Where:

S_{and} – concentration of substances in the air averaged for the year, µg/m³,

D_{and} – reference value of a substance in the air or an acceptable level of a substance in the air averaged for the year, µg/m³, R – background, µg/m³,

Further calculations are not required if there are no residential or office buildings higher than one-story nearby the emitters, as well as buildings of nurseries, kindergartens, schools, hospitals or sanatoriums (indicated in detail in the methodology). However, if at a distance from a single emitter or one of the emitters in a complex, less than 10 times its height, there are buildings higher than one-story with the given functions, it should be checked whether these buildings are not at risk of exceeding the reference values of substances in the air or permissible levels. substances in the air. For this purpose, only the maximum concentrations of substances in the air at the relevant altitudes need to be calculated. The following cases are distinguished:

- when the geometric height of the lowest emitter in the complex is not less than the height of the last floor of the building Z, concentration calculations are performed for height Z,
- when the geometric height of the lowest emitter in the complex is lower than the height of the last floor of building Z, concentration calculations are performed for heights changing every 1 m, starting from the geometric height of the lowest emitter to the height:
 - Z if $H_{max} < Z$,
 - H_{max} , if $H_{max} > Z$.

However, H_{max} means the highest effective emitter height in the ensemble calculated for all meteorological situations.

All concentration values calculated for buildings located near emitters must not exceed the D value₁. The frequency of exceeding the reference value or permissible level of a substance in the air should be calculated if the S concentration values_{Sxyz} of a given substance, calculated for buildings located near emitters, exceed the D value₁.

Reference values for substances in air or limit values for substances in air are considered to be met if the frequency of exceedances of the D value₁ by the concentration averaged over 1 hour is no more than 0.274% of the time (i.e. 24 h) in the year in the case of sulfur dioxide, and 0.2% of the time (i.e. 18 h) in the year for other substances.

Current air condition, "background"

In accordance with the principles set out in the Regulation of the Minister of the Environment *on reference values for certain substances in the air* background for pollutants for which permissible levels in the air have been defined (here: NO₂, S.O₂, suspended particulate matter PM₁₀ and P.M_{2.5} and benzene) is the current state of air quality determined by the competent environmental protection inspectorate as an average concentration for the year. For other substances, background is taken into account at the rate of 10% of the reference value averaged for the year. In the case of the analyzed investment, the values provided by the Chief Inspectorate of Environmental Protection, Department of Environmental Monitoring, Regional Department of Environmental Monitoring in Zielona Góra, letter no. DMS-ZG.731.1.51.2022.MKB of March 11, 2022 were used to determine the background pollution in the project area. The adopted background values are listed in the table below.

Table 7. Substance background

No.	Substance	CAS No	Sand
			[µg/m ³]
1	PM10 suspended dust	—	15
2	PM2.5 suspended dust	—	10
3	Carbon monoxide	630-08-0	-
4	Benzene	71-43-2	0.4
5	Aliphatic hydrocarbons	—	-
6	Aromatic hydrocarbons	—	-
7	Nitrogen dioxide	10102-44-0	9
8	Sulphur dioxide	7446-09-5	4

Meteorological and terrain conditions

For Wiechlice, meteorological data from the IMiGW meteorological station in Zielona Góra, published in the Meteorological Data Catalog, were adopted.

The roughness of the terrain was assumed for the calculations, as for a city, from 10 to 100 thousand inhabitants, low buildings $With_0 = 0.5$ m.

Pollution spread analysis

CALCULATIONS OF THE IMPACT OF EMISSIONS ON THE STATE OF AIR

Calculations were made on the basis of the above data according to the reference methodology, using the OPERAT FB program.

The following data was adopted:

- aerodynamic surface roughness coefficient $With_0 = 0.5$ m
- statistics of meteorological conditions determined by IMWM for Zielona Góra.

The calculation results were presented in the form of printouts and isoline maps from the OPERAT FB program.

Determining the scope of calculations

Bet: Construction of a warehouse with a social and office part and the necessary technical infrastructure at ul. Energetyka in Wiechlice
Plots: 280/162, 280/163, 280/165, Wiechlice district, Szprotawa commune, Żagań district

Number of emitters subject to classification: 6

Full range	Scope shortened
nitrogen dioxide NO ₂ PM-10 dust	Carbon monoxide aromatic hydrocarbons, aliphatic hydrocarbons, sulfur dioxide benzene

Criterion for calculating dust fall

Dust emissions from 4 emitters were

analyzed. $0.0667/n^* \cdot h_{3.15} = 159$

Sum of average annual dust emissions = $0.6 < 159$ [mg/

s] Total annual emissions = $0.0188 < 10,000$ [Mg]

There is no need to calculate dust fall.

Calculation of the distance at which spa protection areas must be taken into account ($30x_{mm}$)

Maximum distance of occurrence of maximum concentrations $\max(x_{mm}) = 57.1$ [m]

Emitter: gas boiler room

An area with a radius of 1713 m from the emitter should be analyzed for the occurrence of stricter reference values.

Full scope calculations are required for substances listed in the "full scope" column and, in addition, for PM_{2.5} in the range of average annual concentrations.

List of maximum PM-10 dust concentration values in the receptor network

Parameter	Value	X m	Y m	crit. state	crit. speed	crit. head of
Maximum concentration µg/m ³	61.0	960	820	6	1	SSW
Annual average concentration µg/m ³	0.018	960	820	6	1	SSW
Frequency exceeded. conc. 280 µg/m ³	0	-	-	-	-	-

List of maximum concentration values at the plant boundary

Parameter	Value	X m	Y m	crit. state	crit. speed	crit. head of
Maximum concentration µg/m ³	81.4	955.7	808.1	6	1	SSW
Annual average concentration µg/m ³	0.023	1024.3	672.7	6	1	NNW
Frequency exceeded. conc. 280 µg/m ³	0	-	-	-	-	-

List of maximum PM 2.5 concentration values in the network receptors

Parameter	Value	X m	Y m	crit. state	crit. speed	crit. head of
Maximum concentration µg/m ³	61.0	960	820	6	1	SSW
Annual average concentration µg/m ³	0.018	960	820	6	1	SSW
Frequency of exceedances - not applicable, none D1	0	-	-	-	-	-

List of maximum concentration values at the plant boundary

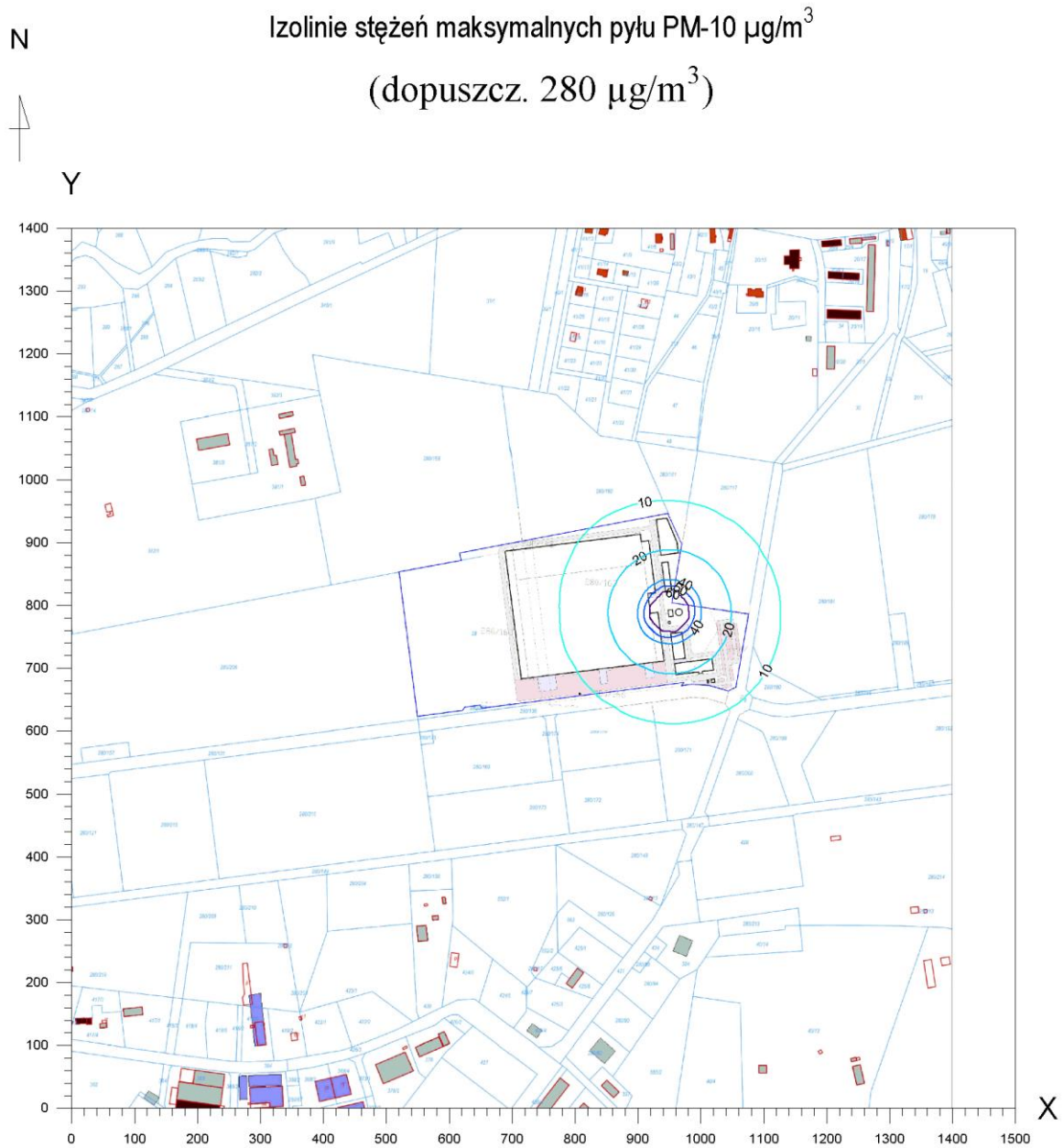
Parameter	Value	X m	Y m	crit. state	crit. speed	crit. head of
Maximum concentration µg/m ³	81.4	955.7	808.1	6	1	SSW
Annual average concentration µg/m ³	0.023	1024.3	672.7	6	1	NNW
Frequency of exceedances - not applicable, none D1	0	-	-	-	-	-

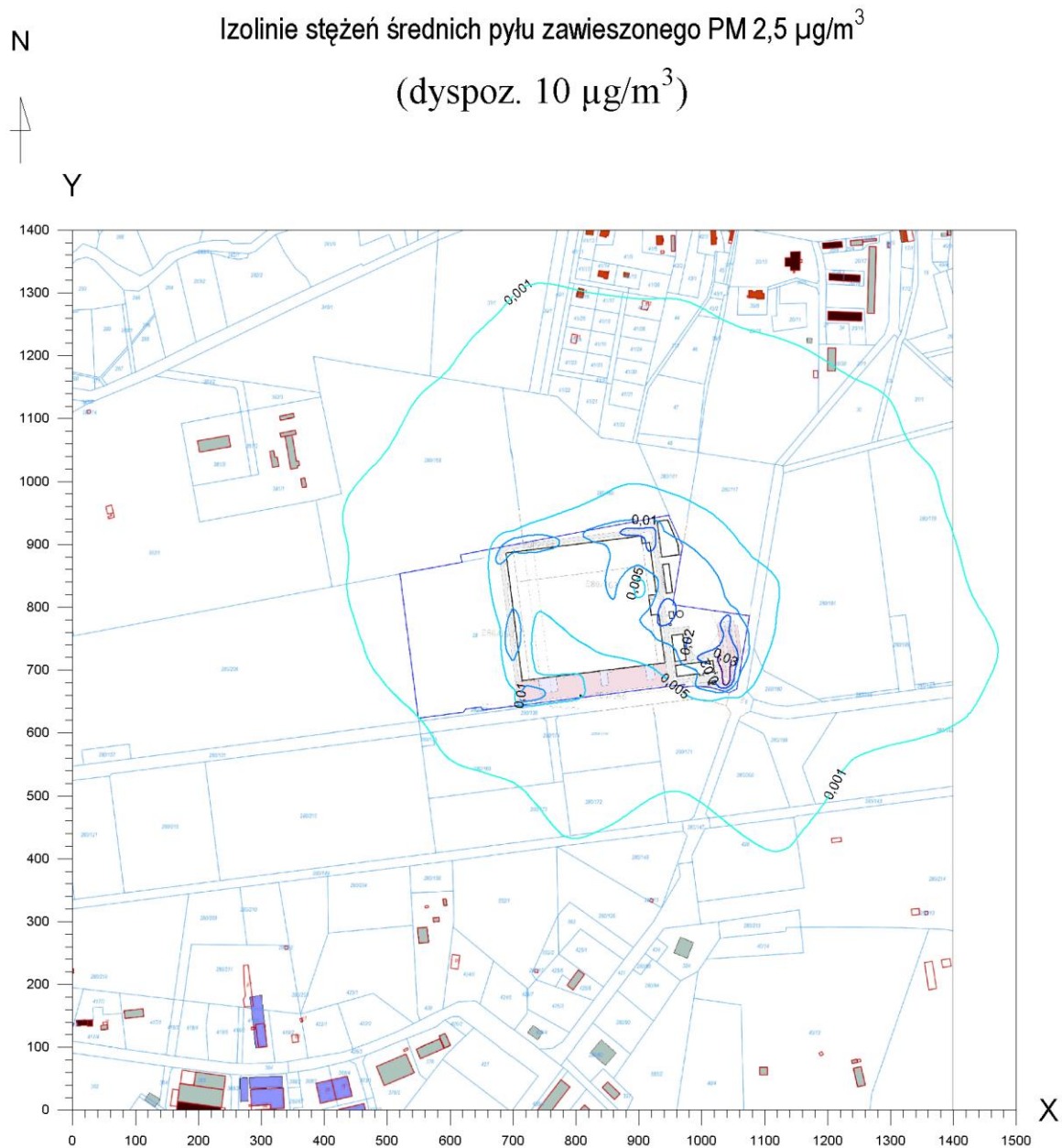
List of maximum values of nitrogen dioxide NO₂ concentrations in the receptor network

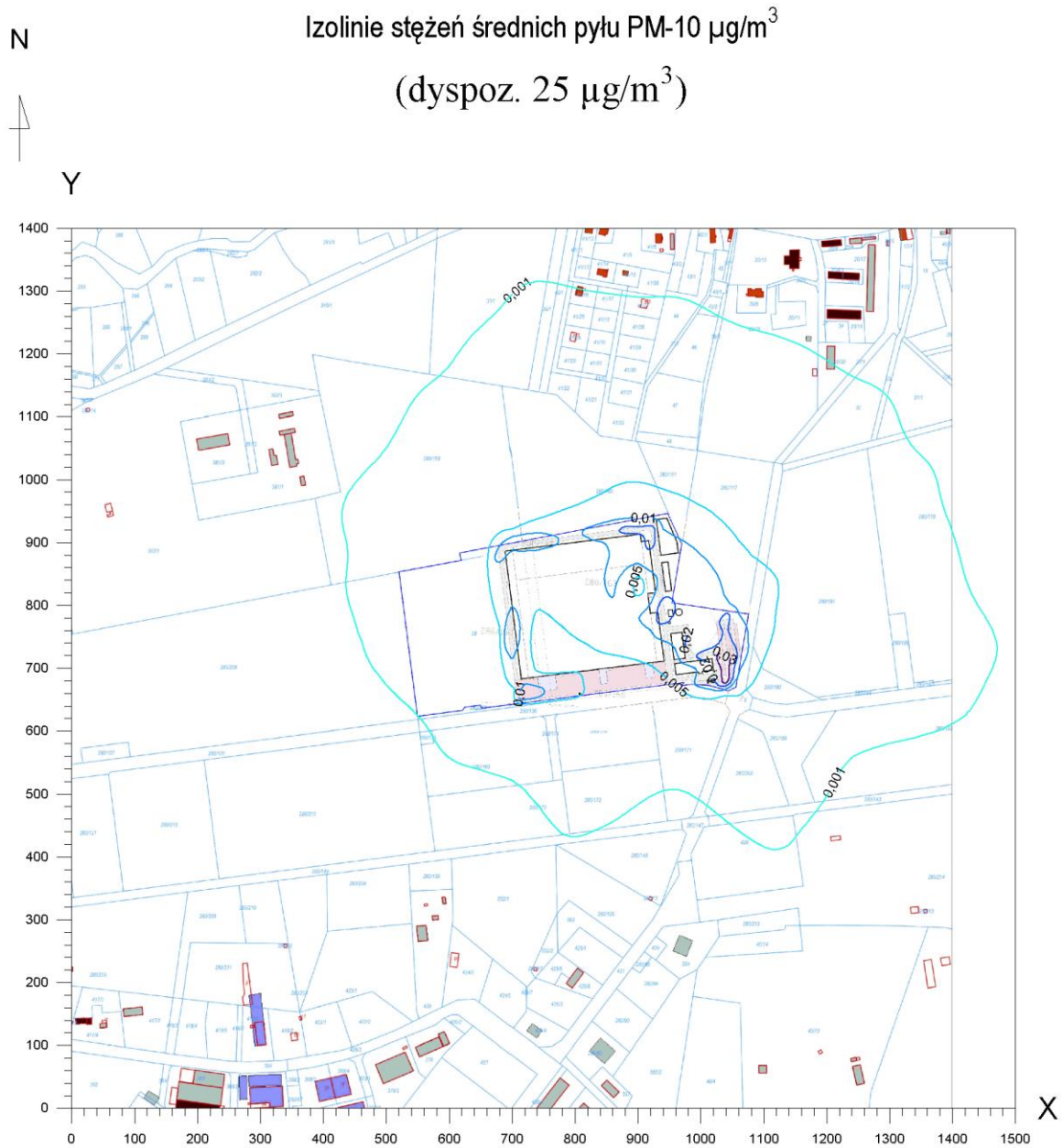
Parameter	Value	X m	Y m	crit. state	crit. speed	crit. head of
Maximum concentration µg/m ³	540,090	960	820	6	1	SSW
Annual average concentration µg/m ³	2.3712	960	820	6	1	SSW
Frequency exceeded. conc.200 µg/m ³	1	1020	660	6	1	NNW

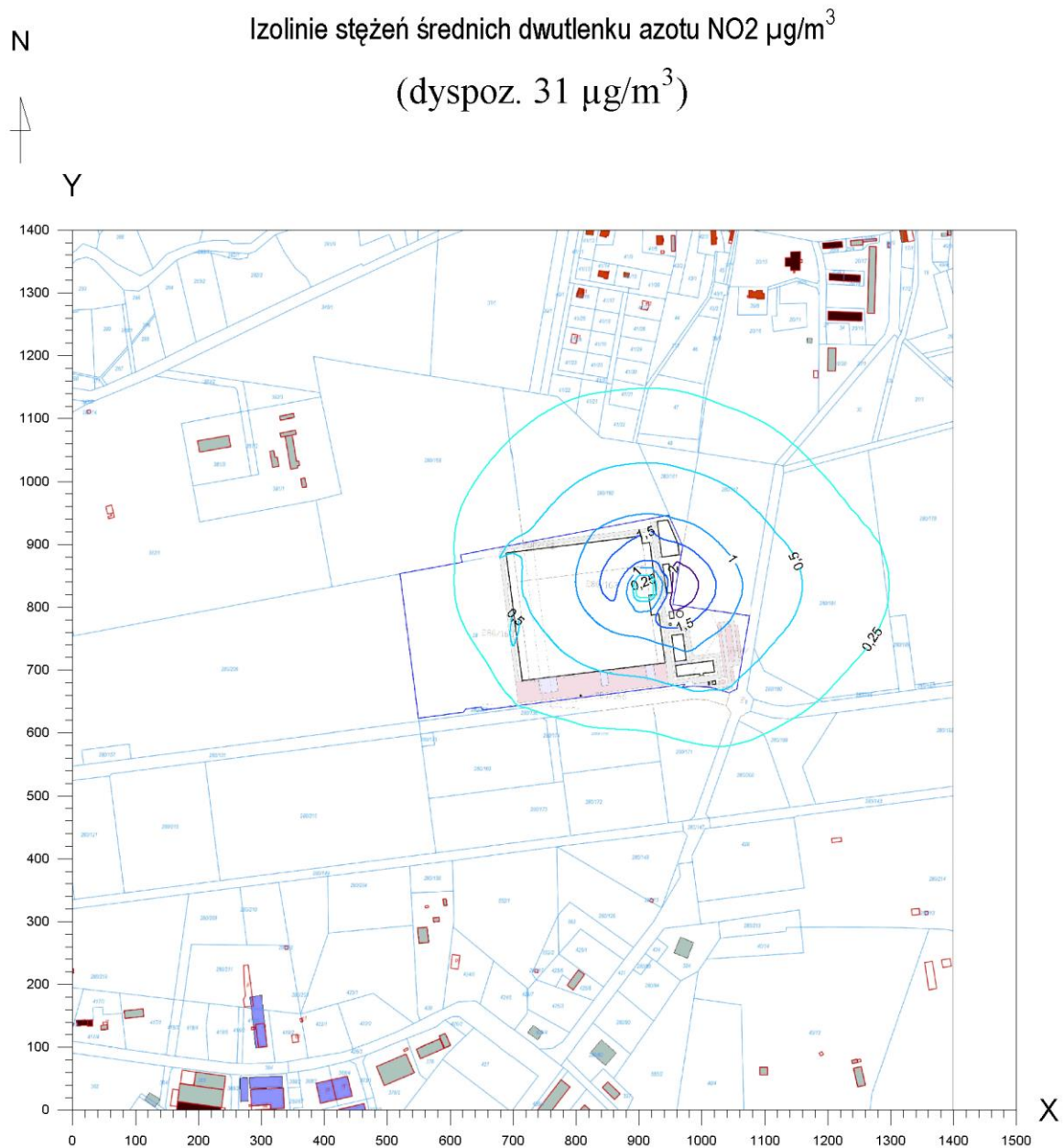
List of maximum concentration values at the plant boundary

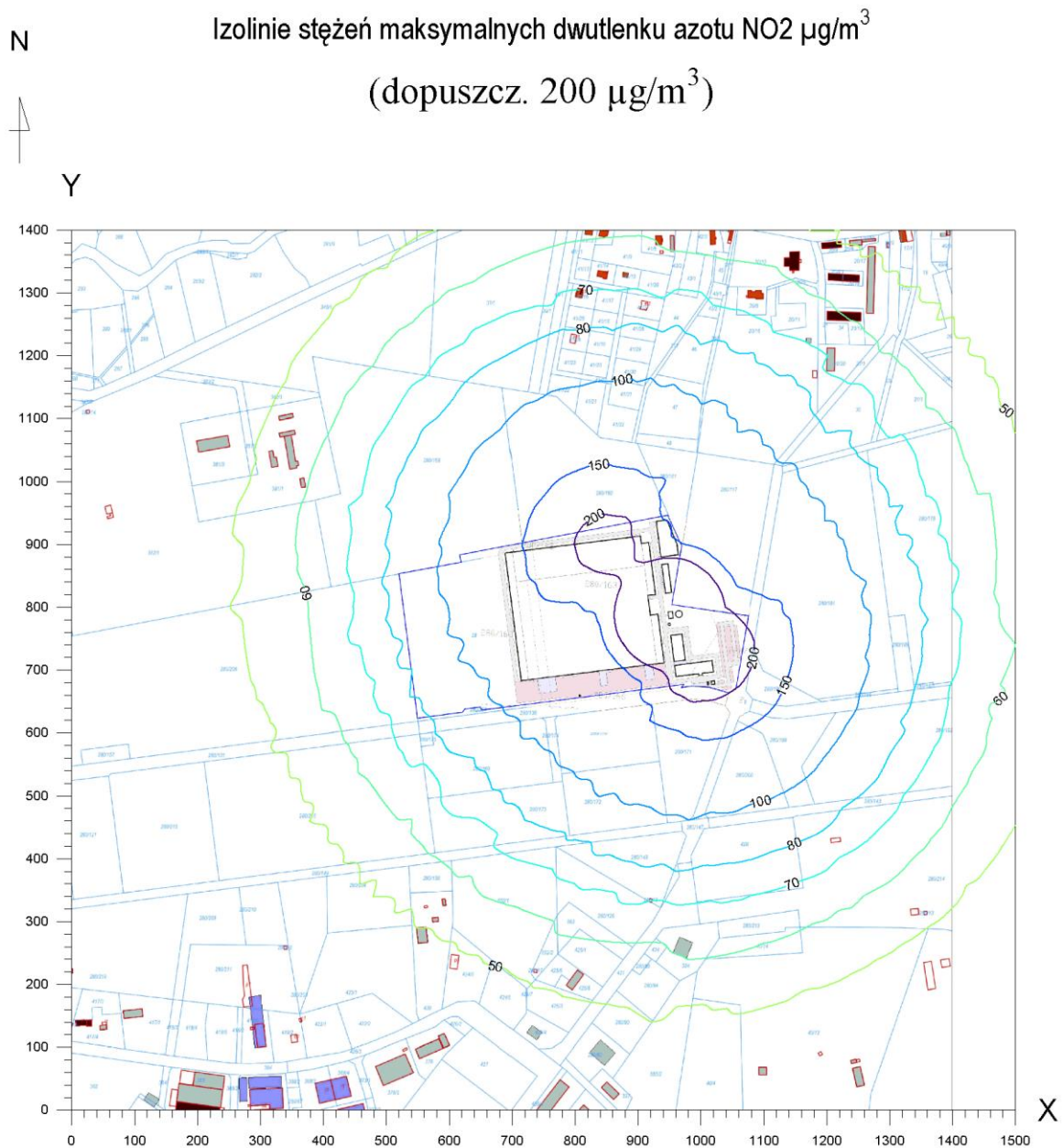
Parameter	Value	X m	Y m	crit. state	crit. speed	crit. head of
Maximum concentration µg/m ³	721,259	955.7	808.1	6	1	SSW
Annual average concentration µg/m ³	2.8192	959.4	827.7	6	1	S
Frequency exceeded. conc.200 µg/m ³	1	975.9	681.5	6	1	NNW

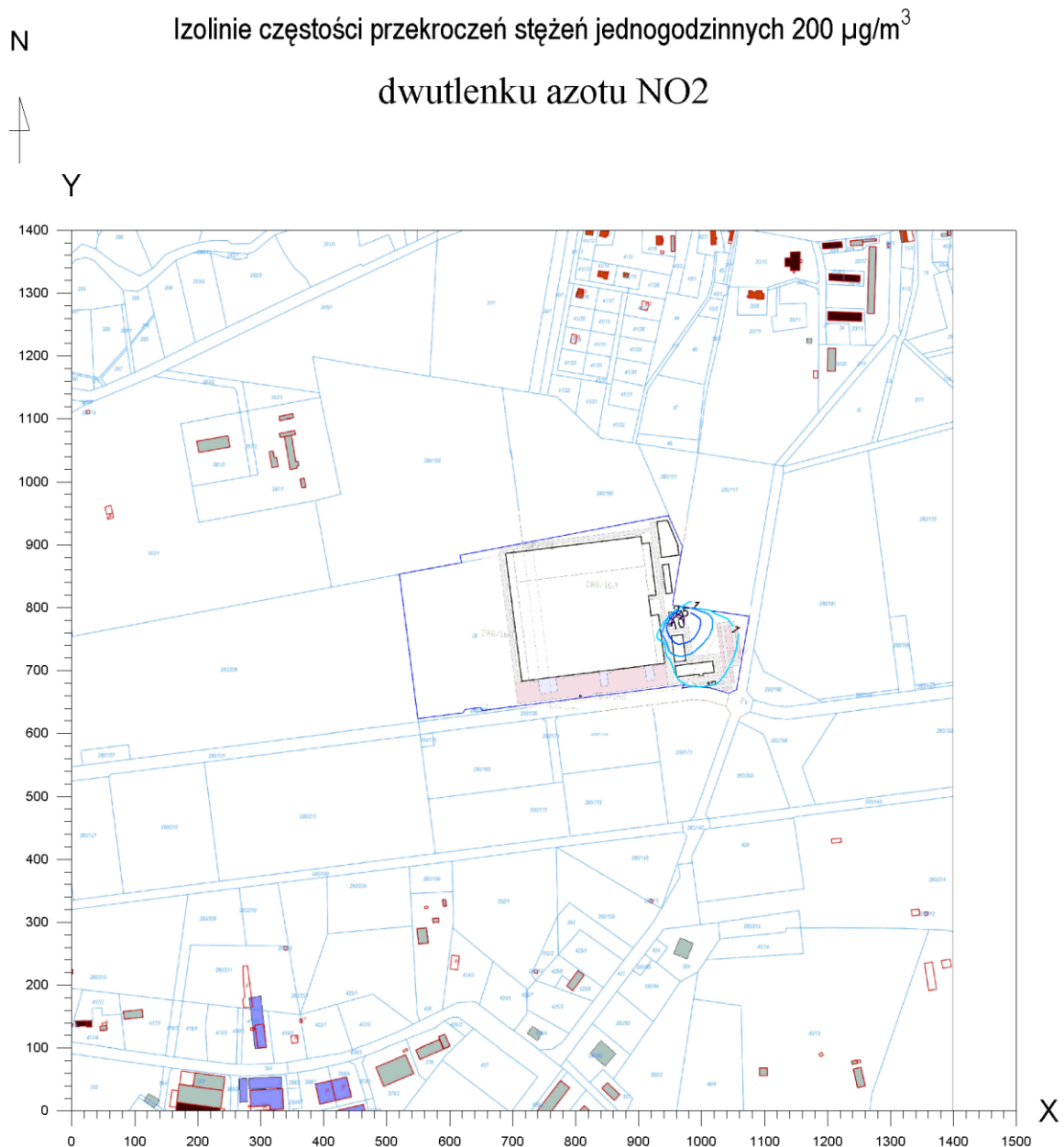












Full calculation documentation is included on the CD.

Calculations of concentrations at the building level.

In accordance with the guidelines contained in Annex No. 1 to the Regulation of the Ministry of the Environment *on reference values for certain substances in the air* at a distance from any of the emitters, less than 10 times its height, there are residential or office buildings higher than one-story, as well as buildings of nurseries, kindergartens, schools, hospitals or sanatoriums, it should be checked whether these buildings are not exposed to exceedances of the value reference substances in the air or permissible levels of substances in the air.

In the case of the analyzed investment, the highest emitter is 14.5 m high. There are no such buildings located within a radius of 10 m of its height (145 m) (drawing below). Therefore, the calculations have been completed at this stage.

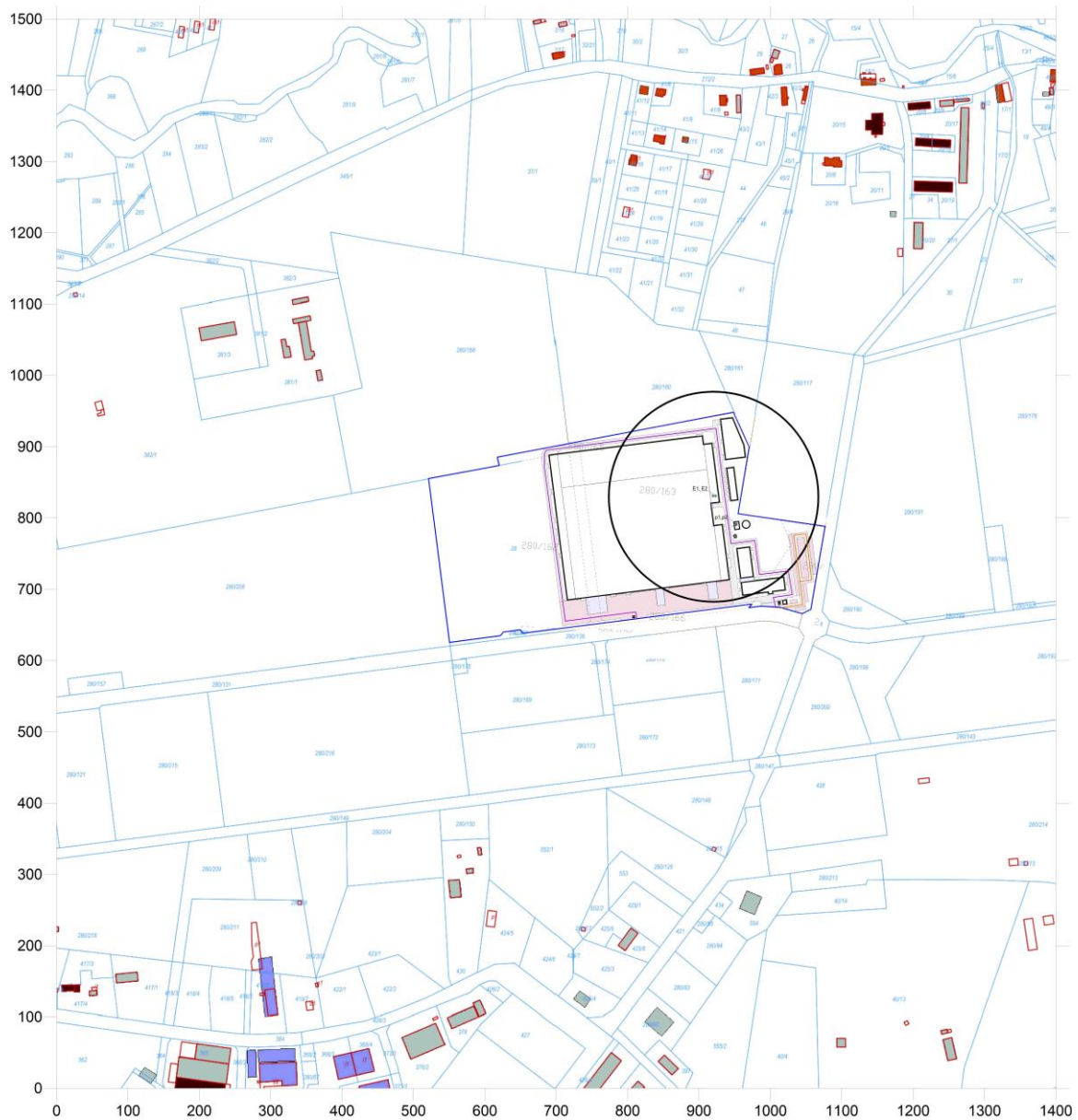


Figure 8. The range within which concentration calculations on the development should be performed

7.1.3 Summary

The environmental impact analysis of the investment showed that the construction of a warehouse with a social and office part and the necessary technical infrastructure at ul. Energetyczna in Wiechlice will not have an impact on the environment exceeding applicable standards.

7.2 ENOISE MISSION

7.2.1 Construction phase

Construction equipment and resources will be used during construction works transport, constituting a source of noise and vibration. The emitted noise will affect people staying in the investment area. The basic sources of noise related to the construction process include:

- bulldozer loaders,
- excavators,
- dump trucks,
- pumps,
- compressors,
- aggregates,
- as well as manual devices, such as tampers and others.

Issues regarding the permissible acoustic power, among others, of devices used on the construction site are regulated by the Regulation of the Minister of Economy of December 21, 2005. *on essential requirements for equipment used outdoors with regard to noise emission into the environment* (Journal of Laws 2005.263.2202, as amended. d.).

Practically, the level of sound generated at the construction site by construction machines and means of transport will change over time (according to changes in the scope of work being carried out), and the work front will also move as the work progresses. Information about the real impact of sources of this group is included in specialized studies, in particular reports from field research; for example, the British study *Update of noise database for prediction of noise on construction and open sites* (DEFRA, July 2006), provides sound intensity values measured at a distance of 10 m from operating machines and devices typical of a construction site. Measured values rarely exceed 80 dB (the estimated sound intensity at a distance of 100 m will be 60 dB), only in the case of specialized machines for crushing concrete the recorded values are much higher.

When organizing the site and the construction plan, special attention should be paid to ensuring that the devices used meet the presented criteria regarding their acoustic power, resulting from the above-mentioned Regulation of the Ministry of Economy. Meeting these criteria will not completely eliminate noise nuisance in the areas surrounding the construction site, but it should be remembered that the construction process will be limited in time, and after its completion, all inconveniences (including acoustic ones) will cease.

Additionally, the following solutions will be used during construction works:

1. Carrying out earthworks, construction and transport works that cause noise nuisance **only during the day, from 6⁰⁰ until 22⁰⁰.**
2. Construction works carried out using equipment emitting bothersome noise will be properly planned and spread over time. Applying organizational activities that help reduce noise emissions into the environment.
3. When organizing the construction site, pay attention to ensure that the construction equipment used meets the requirements regarding noise emission into the environment, resulting from the regulation of the Minister of Economy of December 21, 2005. *on essential requirements for equipment used outdoors with regard to noise emission into the environment* (OJ 2005.263.2202, as amended. d.).

in the field of machines and devices specific to this construction; large-scale crushing of concrete is not expected

4. Ensuring the good technical condition of the machines, their systematic maintenance, and equipping heavy construction machines with appropriate acoustic protection (the responsibility of the Contractor).
5. During breaks at work, turn off the engines of construction equipment.
6. Applying work schedules that limit exposure to noise.

At the implementation stage, technical methods will be used to reduce the risk of failures and construction disasters: technical systems supporting fire protection, systems for assessing the operational safety of neighboring facilities and the construction site, and construction monitoring systems.

7.2.2 Noise standards

Permissible noise levels in the environment are specified in the Regulation of the Minister of the Environment of June 14, 2007 *on permissible noise levels in the environment* (Journal of Laws 2007.120.526, i.e. Journal of Laws 2014.112). They concern areas whose intended use is consistent with one of the definitions given in Table 1 in the annex to the above-mentioned regulation. The study refers to the permissible levels of environmental noise caused by particular groups of noise sources, expressed in the LAeqD and LAeqN indicators, because only these indicators are applicable to establishing and controlling the conditions of use of the environment.

The investment area is covered by the local development plan:

- Resolution XXXVII/249/97 of the City Council in Szprotawa of December 11, 1997 (as amended) on amending the local general spatial development plan of the Szprotawa Commune.
- Resolution XXXIX/226/2001 of the Szprotawa City Council of October 11, 2001 on the adoption of an amendment to the local spatial development plan of the Szprotawa commune (A).

In accordance with the local development plan for the analyzed area, the following purpose was established: 1 P/U/R - production and service function

The investment areas are currently undeveloped. They are located in the area of the post-Soviet airport. The immediate surroundings of the investment area are areas designated in the local development plan for production and service development:

- to the north, east and west: areas designated in the local development plan for production and service development,
- southwards: access road, areas intended for production and service development.

The closest acoustically protected buildings are single-family residential buildings located to the north of the investment area at a distance of approx. 0.34 km. The area is not covered by the Local Development Plan.

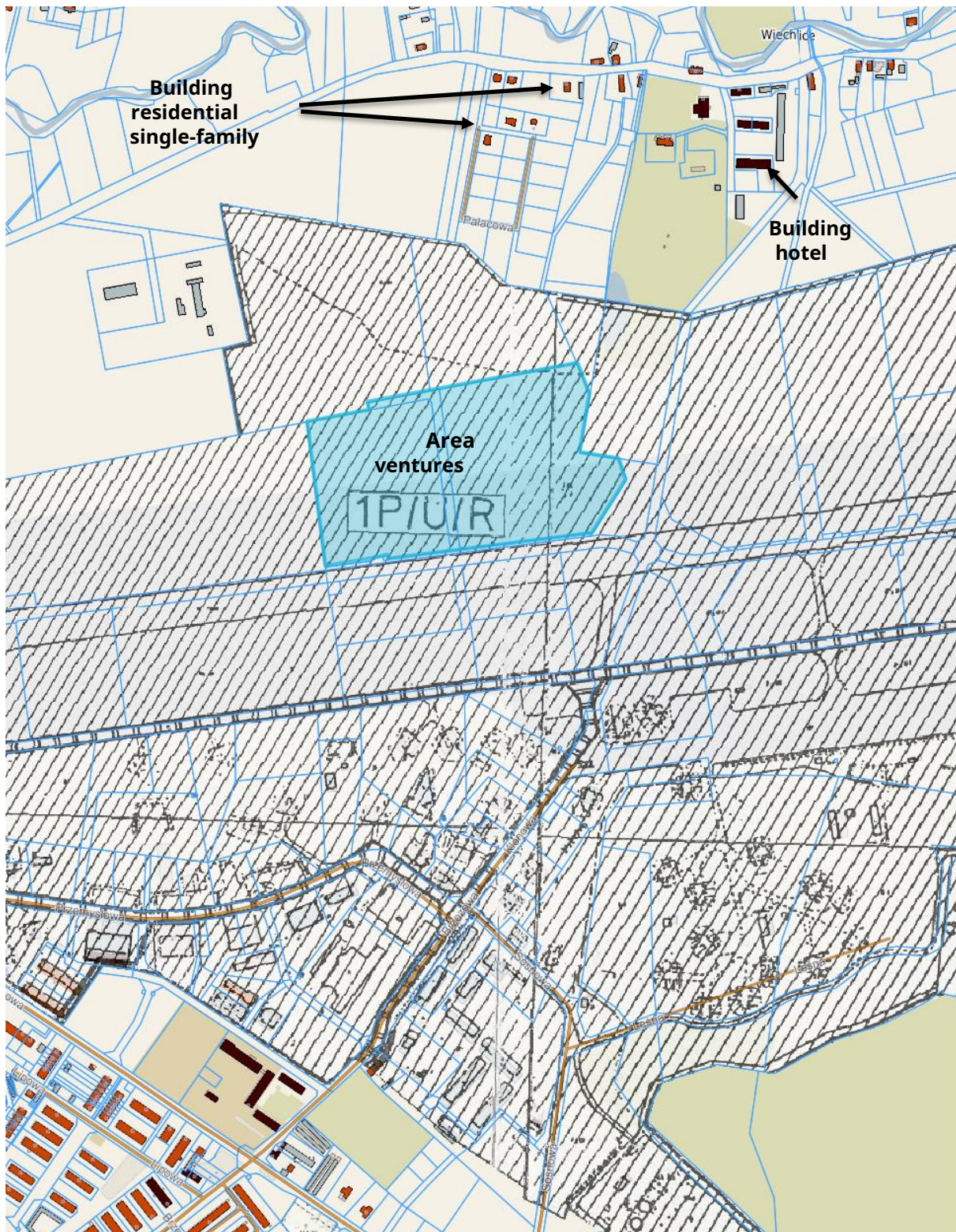


Figure 9. Location of the project area in relation to acoustically protected areas

Therefore, for the acoustically protected areas described above, the permissible noise levels in the acoustic analysis were adopted in accordance with the above-mentioned. By regulation of the Minister of the Environment:

- for single-family residential buildings:
 - during the day (6⁰⁰÷22⁰⁰) –50 dB(A), in a reference time interval equal to the 8 least favorable hours of daylight consecutively,
 - at night (22⁰⁰÷ 6⁰⁰) –40 dB(A), in a reference time interval equal to 1 of the least favorable hour of the night,
- multi-family buildings and collective housing (hotel):
 - during the day (6⁰⁰÷ 22⁰⁰) – 55 dB(A), in a reference time interval equal to the 8 least favorable hours of daylight consecutively,
 - at night (22⁰⁰÷ 6⁰⁰) – 45 dB(A), in a reference time interval equal to 1 of the least favorable hour of the night.

Table 8. Environmental quality standards for noise, dB

Type of terrain	other facilities and activities	
	Day 8 hours	night 1 hour
protection zone "A" of health resorts areas	45	40
– hospitals outside cities		
– single-family buildings	50	40
– development related to the permanent or temporary stay of children and young people*		
– social welfare homes		
– hospitals in the city		
– multi-family development and collective housing	55	45
– homestead development		
– recreation and relaxation*		
– residential and service		
– in the inner-city zone of cities >100 thousand inhabitant		

* the night standard applies only if the area is used as intended also at night

7.2.3 Operation phase

The main groups of noise sources that will be located in the analyzed plant include:

- a group of roof devices, including ventilation and air conditioning devices;
- a group of communication sources - these will be passenger cars (employees) moving within the parking lot and trucks moving on internal roads and maneuvering areas located within the plant.

The plant will operate in three shifts. It was assumed that all devices would operate 24 hours a day. Vehicle traffic will take place during the day and night (work in three shifts).

7.2.3.1 Building-type noise sources

Due to the fact that electric forklifts may operate in the main warehouse building, the warehouse facility may constitute a building-type noise source. For the purposes of acoustic analysis, it was assumed that the noise level inside the building was approximately 85 dB. The acoustic insulation of building partitions was assumed to be 30 dB.

Building-type sources are marked in blue in Figures 13 and 14.

7.2.3.2 Point sources of noise

External devices that are sources of noise have been introduced into the program, i.e.:

- air handling units: C1, C2, C3, C4, C20, C21, C22, C23 with an acoustic power of 65 dB,
- air handling units: C5 – C19 with a sound power of 73 dB,
- exhaust fans: W1 – W19 with a sound power of 75 dB,
- air conditioners: K1 – K7 with a sound power of 85 dB,
- roof exhaust vents: Wr1, Wr2 with acoustic power of 65 dB,
- wall air intakes: Cz1 – Cz5 with a sound power of 65 dB.

The table below summarizes the adopted parameters of the devices (acoustic power, height), and their location is shown in the drawing below. It was assumed that the devices operate 24 hours a day with maximum acoustic power.

Table 9. Parameters of sources entered into the program

Name	ID	Power acoustic [dB]	Height [m]
ventilation central	C1	65	10.00
ventilation central	C2	65	10.00
ventilation central	C3	65	10.00
ventilation central	C4	65	10.00
Air conditioning	K1	85	10.50
Exhaust fan	W1	75	9.50
Exhaust fan	W2	75	9.50
Exhaust fan	W3	75	9.50
Air conditioning	K2	85	10.50
ventilation central	C5	73	6 p.m
ventilation central	C6	73	6 p.m
ventilation central	C7	73	6 p.m
ventilation central	C8	73	6 p.m
ventilation central	C9	73	6 p.m
ventilation central	C10	73	6 p.m
ventilation central	C11	73	6 p.m
ventilation central	C12	73	6 p.m
ventilation central	C13	73	6 p.m
ventilation central	C14	73	6 p.m
ventilation central	C15	73	6 p.m
ventilation central	C16	73	6 p.m
ventilation central	C17	73	6 p.m
ventilation central	C18	73	6 p.m
ventilation central	C19	73	6 p.m
Roof launcher	Wr1	65	15.50
ventilation central	C20	65	9.00
Air conditioning	K3	85	9.50
Exhaust fan	W4	75	8.50
Exhaust fan	W5	75	8.50
Exhaust fan	W6	75	8.50
Exhaust fan	W7	75	8.50
Wall air intake	Part 1	65	3.50
Wall air intake	Part 2	65	4.00
Wall air intake	Part 3	65	4.00
Wall air intake	Part 4	65	4.00
ventilation central	C21	65	12.00

Name	ID	Power acoustic [dB]	Height [m]
ventilation central	C22	65	7.50
ventilation central	C23	65	7.50
Air conditioning	K4	85	8.00
Air conditioning	K5	85	12.50
Air conditioning	K6	85	12.50
Air conditioning	K7	85	12.50
Exhaust fan	W8	75	11.50
Exhaust fan	W9	75	11.50
Exhaust fan	W10	75	6.00
Exhaust fan	W11	75	9.00
Exhaust fan	W12	75	9.00
Exhaust fan	W13	75	9.00
Exhaust fan	W14	75	9.00
Exhaust fan	W15	75	9.00
Wall air intake	Part 5	65	4.50
Roof launcher	Wr2	65	11.50
Exhaust fan	W16	75	10.50
Exhaust fan	W17	75	10.50
Exhaust fan	W18	75	10.50
Exhaust fan	W19	75	5.50

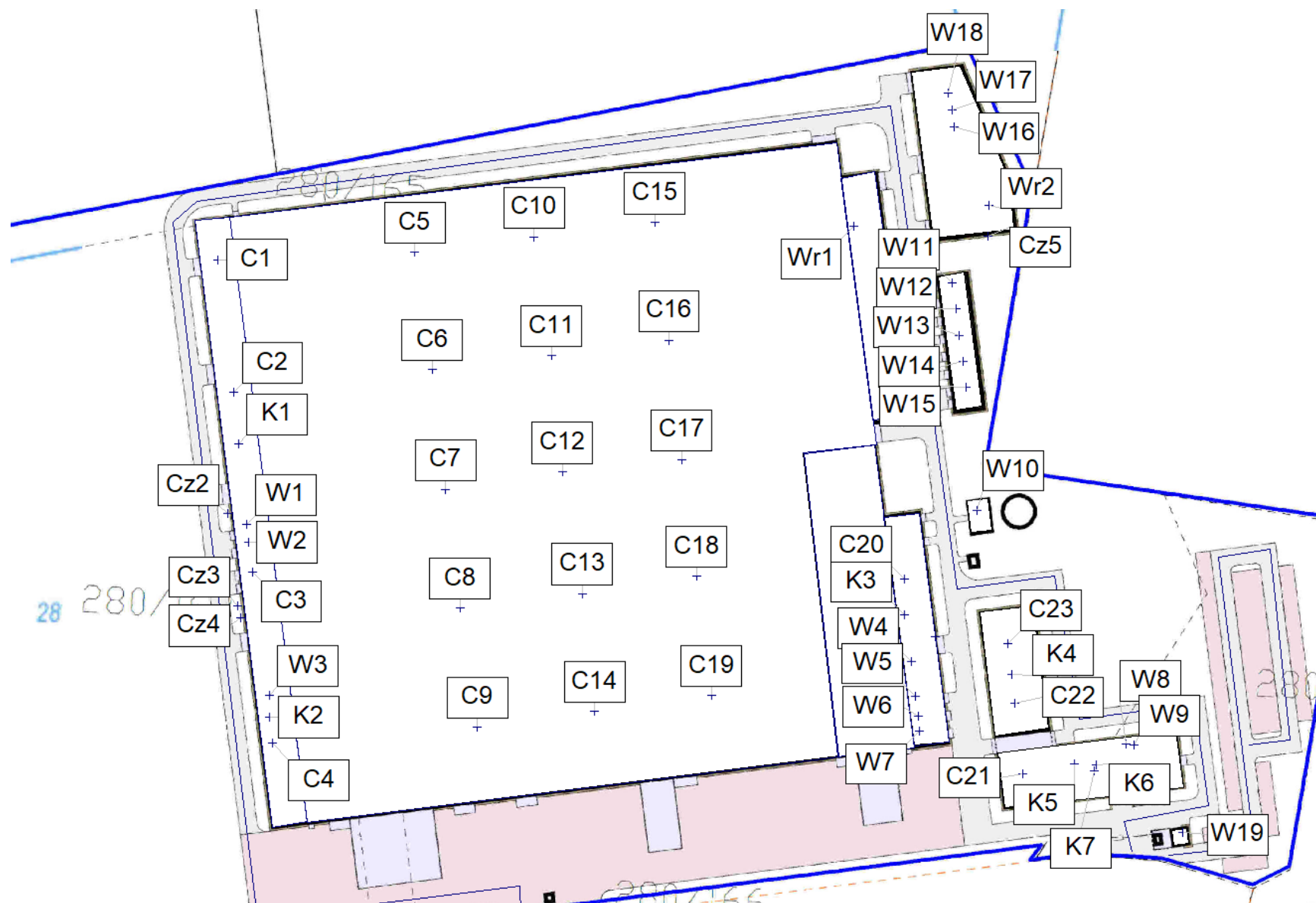


Figure 10. Location of point sources of noise in the investment area

7.2.3.3 Vehicle traffic

The table below shows the number of cars moving around the investment area, while the figure below shows the linear sections introduced into the program representing car traffic.

It was assumed that at the time of day in the reference period equal to the 8 least favorable hours, the following people would enter and leave the investment area:

- 120 capacity personal,
- 24 capacity trucks,

while at night at the reference time equal to 1 least favorable hour:

- 40 capacity personal,
- 1 capacity trucks.

Table 10. Number of passenger cars and trucks using toilets within one hour around the investment area - data entered e to the program

Name	Moving point source		speed km/h
	Number of pcs/hour		
	Day	night	
cars	15	40	20
cars vans/trucks	3	1	20

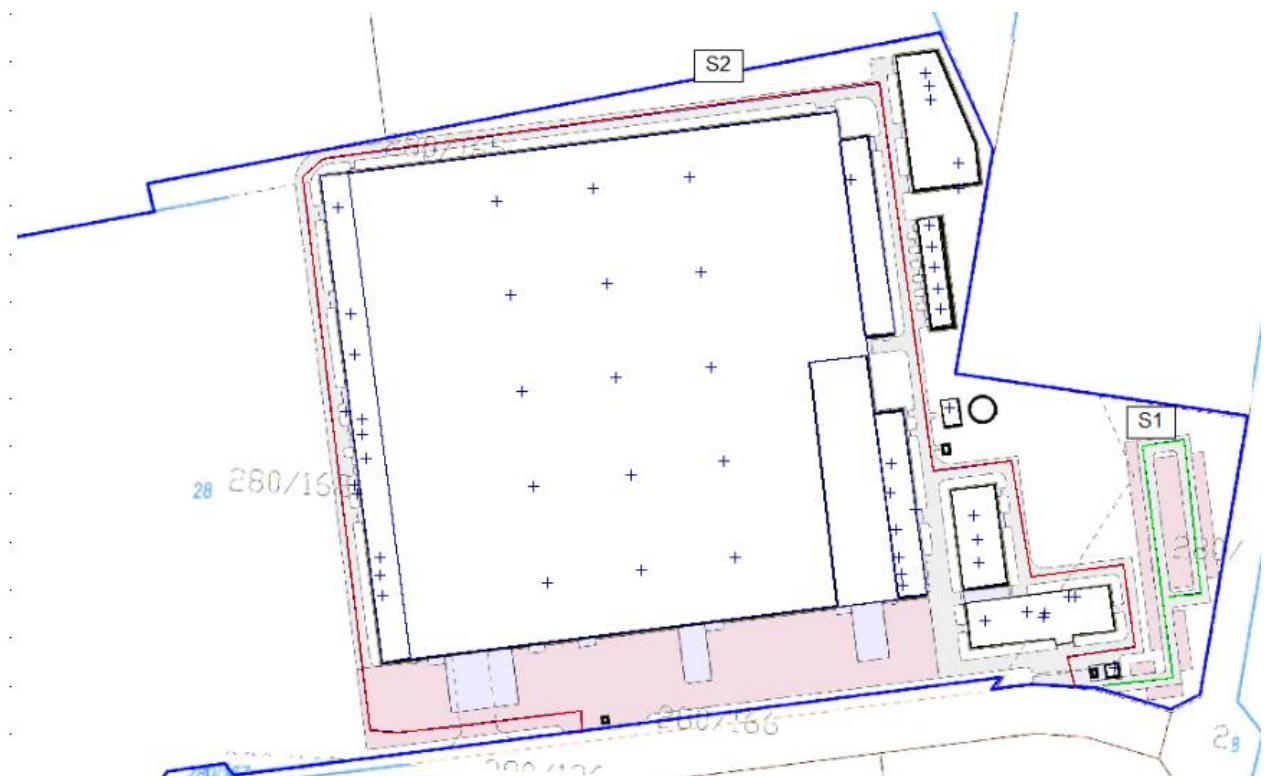


Figure 11. Location of road sections introduced into the program
S1 - green, passenger cars S2 - red, trucks

On the premises of the plants, in accordance with §66 of the Regulation of the Minister of Labor and Social Policy of September 26, 1997. *on general occupational health and safety regulations* (Journal of Laws 2003.169.1650, as amended) there should be traffic rules on internal roads in accordance with the provisions of road traffic law. The traffic rules will specify the maximum speeds of means of transport and communication on internal roads, and the roads will be marked with road signs in accordance with the provisions of road traffic law.

Pursuant to the applicable Road Traffic Law (Journal of Laws 2017.1260, as amended), the driver is prohibited from using the vehicle in a way that causes nuisance related to excessive emissions of exhaust gases into the environment or excessive noise (Article 60(2) (2)) . It is prohibited for a driver to leave the engine running while parking in a built-up area (Article 60(2)(3)).

The above regulations were the basis for the assumptions adopted for this study simulation of the plant's impact on the acoustic environment (speed 20 km/h and engine turned off during standstill).

The traffic of heavy vehicles was introduced into the program as linear sources with an acoustic power of 105 dB (as for the take-off maneuver), adopted in accordance with ITB Instruction 338/2008: Method for determining the emission and immission of industrial noise in the environment, Warsaw 2008: The traffic of passenger vehicles was introduced as linear sources with a sound power of 94 dB.

Detailed data entered into the program is attached to a file on the CD.

7.2.3.4 Noise level calculations

The CadnaA version 4.3 program from the German company DataKustik was used to perform the calculations in accordance with the calculation model included in PN-ISO 9613-2: 2002 Acoustics – sound attenuation during propagation in open space.

The calculations were carried out at 7 observation points, the locations of which are shown in the figure below.

Table 11. Observation points

No.	Calculation point	Admissible noise level		Height (m)
		Day (dBA)	Night (dBA)	
1	R1 - single-family residential development	50.0	40.0	1.50
2	R2 - single-family residential development	50.0	40.0	1.50
3	R2.1 - single-family residential development	50.0	40.0	4.00
4	R3 - single-family residential development	50.0	40.0	1.50
5	R4 - single-family residential development	50.0	40.0	1.50
6	R4.1 - single-family residential development	50.0	40.0	4.00
7	R5 - single-family residential development	50.0	40.0	1.50
8	R6 - single-family residential development	50.0	40.0	1.50
9	R6.1 - single-family residential development	50.0	40.0	4.00
10	R.7 - development of collective housing	55.0	45.0	1.50
11	R.7.1 - development of collective housing	55.0	45.0	4.00

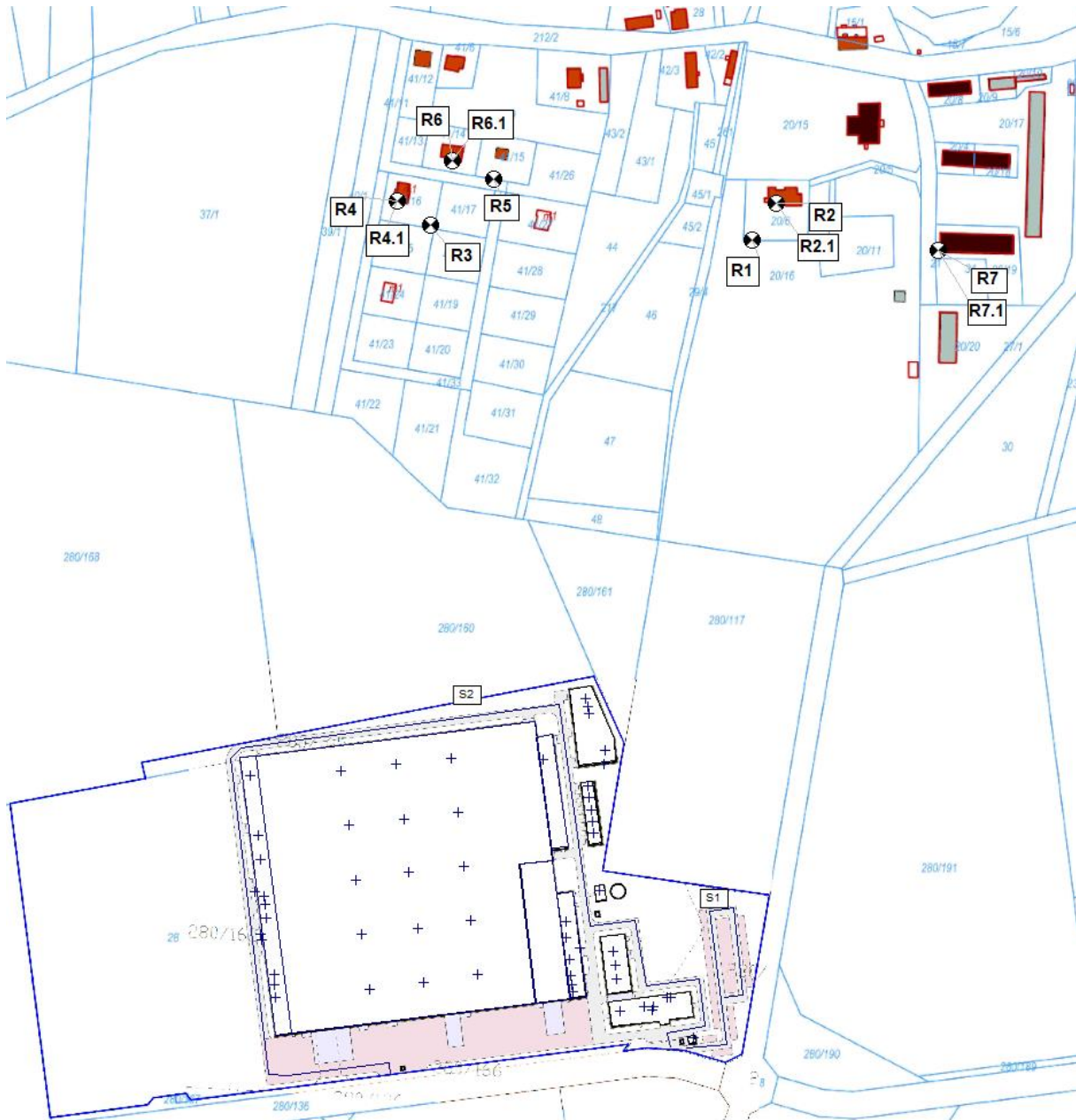


Figure 12.Location of observation points

For the purposes of calculations, a full digital 3D model of the investment was created along with all sources, as shown in the drawings below.

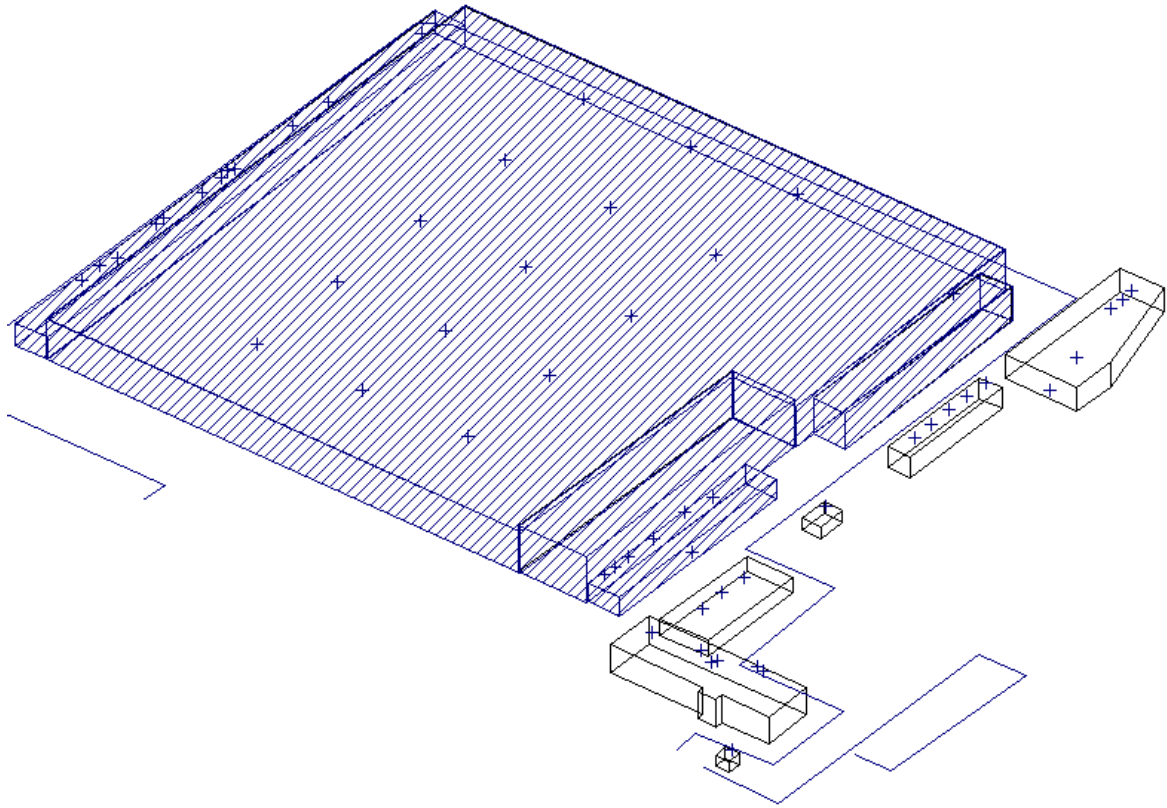


Figure 13.3D view of the investment from CadnaA

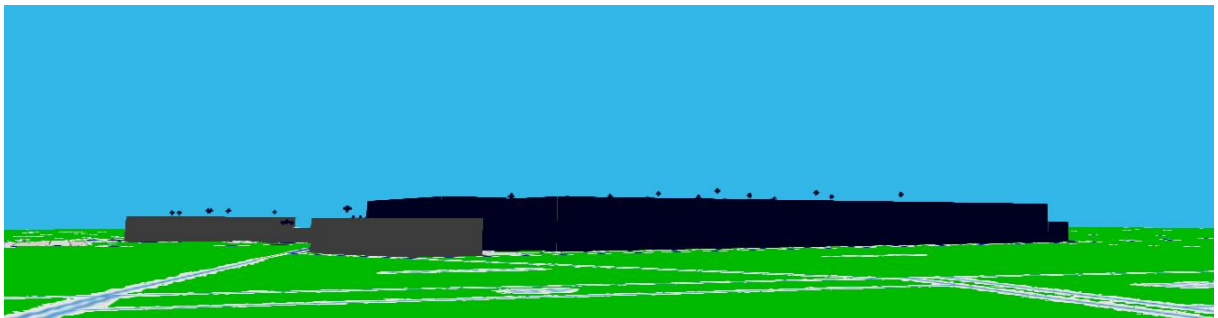
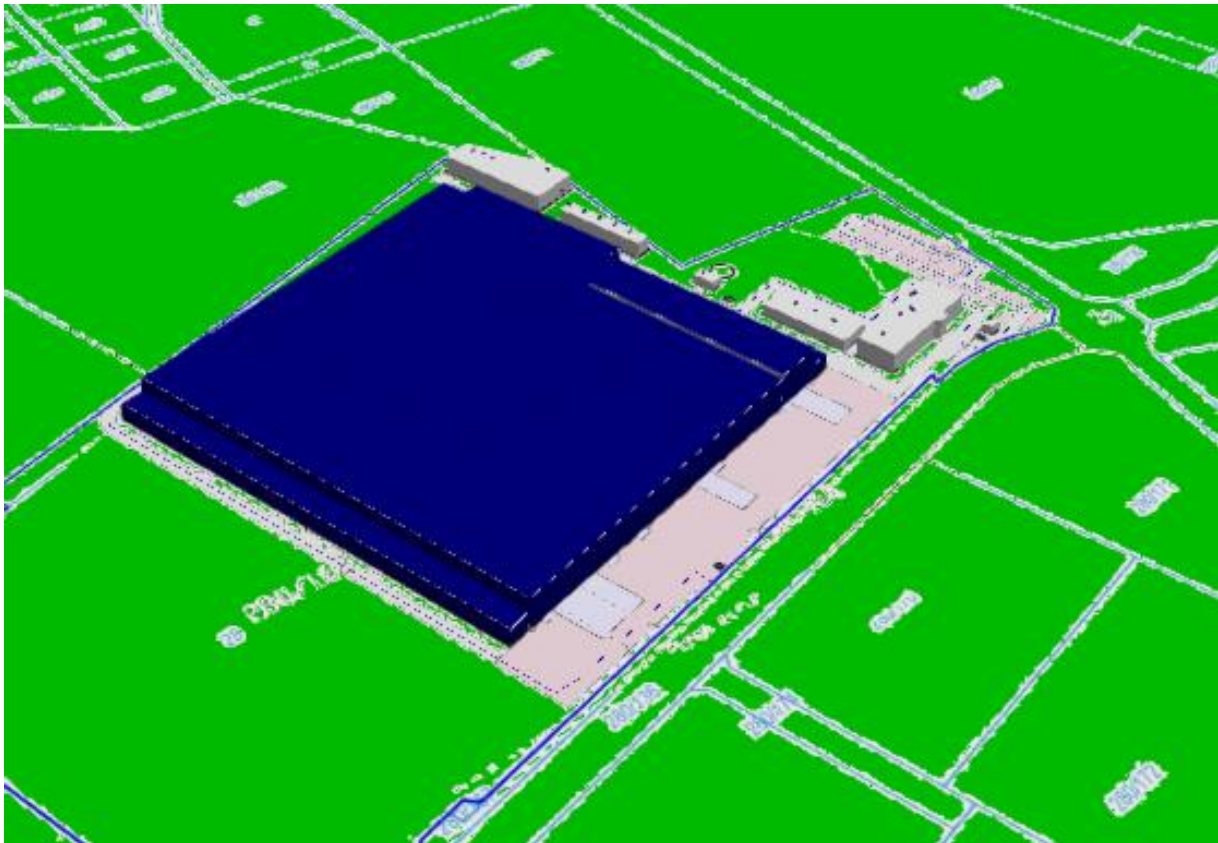


Figure 14.3D view of the investment from CadnaA

Calculations were carried out for the time of day and night in an area of 1400x1500 m with a step of 5 m in both directions, at a height of 4 m above sea level. It was assumed that the area surrounding the investment is flat. The results of the noise propagation simulation are presented graphically in the figures below for the time of day and night. **The summary of data entered into the program and the table of calculation results in the grid were saved on a CD.**

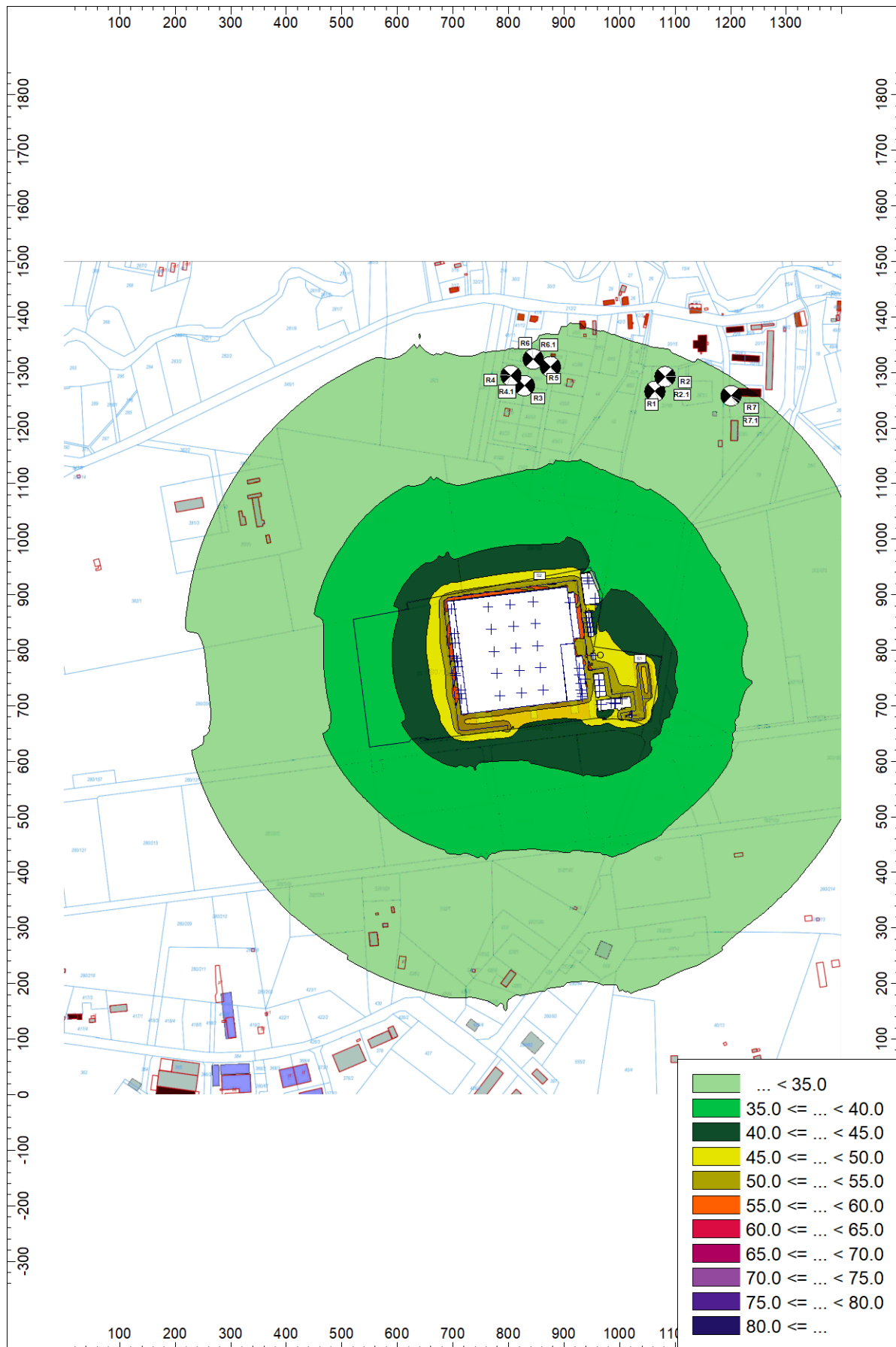


Figure 15. Noise level isophones at a height of 4 m - day

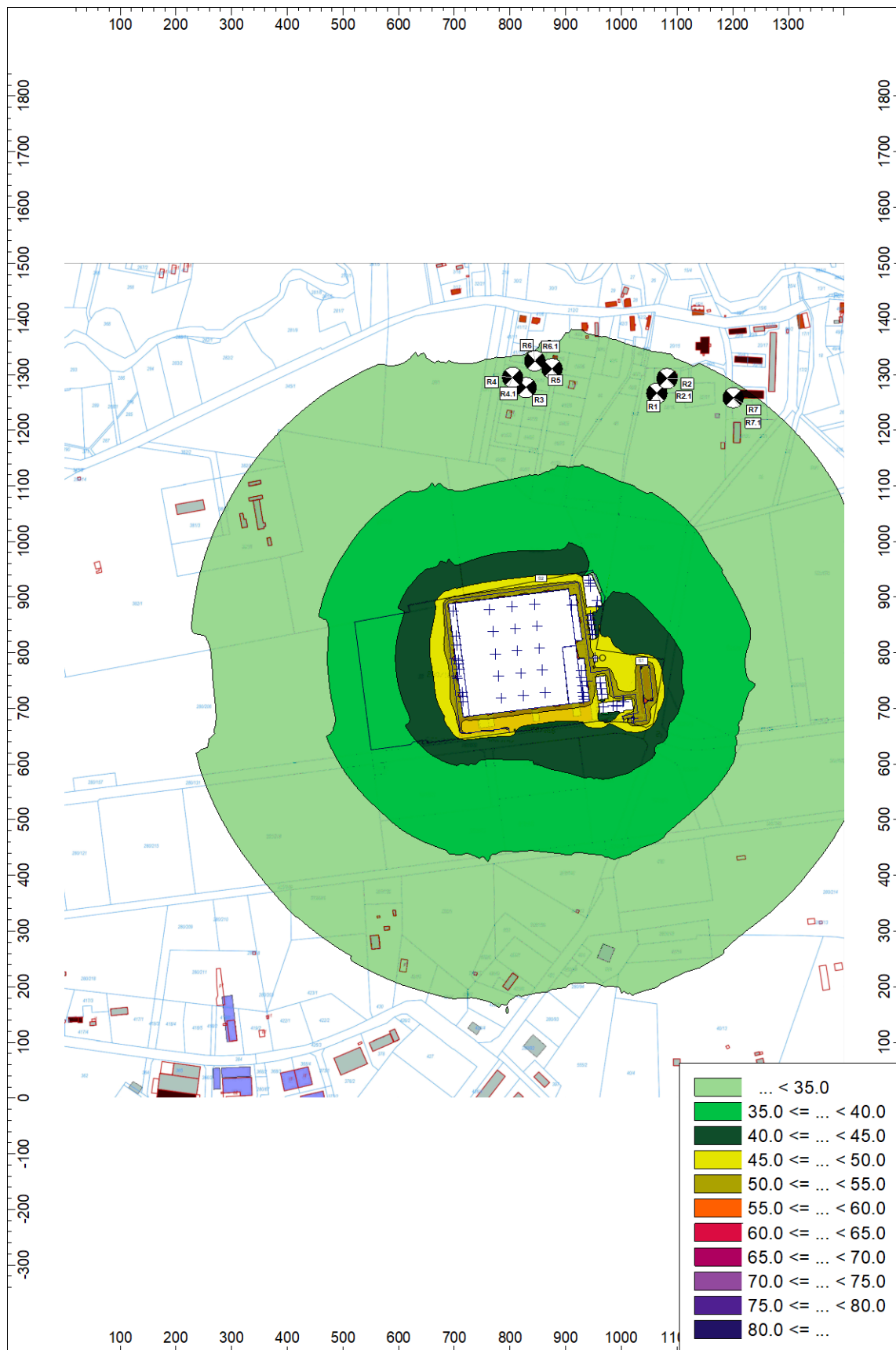


Figure 16. Noise level isophones at a height of 4m - night

The graphical presentation of the noise propagation simulation results shows that after the investment is completed, the permissible noise levels in acoustically protected areas will be maintained. Additional calculations performed in points R1-R7.2 confirm the above conclusion. The calculation results in points are summarized in the table below. Calculations were made on the facades of residential buildings at a height of 1.5 m and 4.0 m, in accordance with the Regulation of the Minister of the Environment of October 30, 2014. *on requirements for measuring emissions and the amount of water abstracted* (Journal of Laws 2019.2286 i.e.). The calculated noise levels at the points are below the permissible noise levels (for both day and night).

Table 12. Results of noise level calculations at observation points

No.	Calculation point	Computational level noise		Admissible noise level		Height (m)
		Day	Night	Day	Night	
		(dBA)	(dBA)	(dBA)	(dBA)	
1	R1 - single-family residential development	29.7	29.6	50.0	40.0	1.50
2	R2 - single-family residential development	29.1	29.0	50.0	40.0	1.50
3	R2.1 - single-family residential development	30/7	30/7	50.0	40.0	4.00
4	R3 - single-family residential development	29/9	29.8	50.0	40.0	1.50
5	R4 - single-family residential development	29.5	29.4	50.0	40.0	1.50
6	R4.1 - single-family residential development	30/9	30/7	50.0	40.0	4.00
7	R5 - single-family residential development	29.6	29.5	50.0	40.0	1.50
8	R6 - single-family residential development	29.1	29.0	50.0	40.0	1.50
9	R6.1 - single-family residential development	30.5	30.3	50.0	40.0	4.00
10	R.7 - development of collective housing	28.6	28.6	55.0	45.0	1.50
11	R.7.1 - development of collective housing	30.5	30.4	55.0	45.0	4.00

7.2.4 Possible liquidation phase

In the event of possible liquidation of the facilities, the impact on the acoustic climate will be no greater than during the construction phase and is also not subject to standardization. However, it is recommended that any work that generates significant noise be limited to the time of day.

7.2.5 Summary

The planned warehouse development in Wiechlice will be implemented in an area designated in the local development plan as production and service. Simulations have shown that the noise generated in connection with the operation of the planned facilities (even with assumptions maximizing this impact) will not threaten the quality standards of the acoustic environment - permissible noise levels in the nearest acoustically protected areas will be met with a margin.

7.3 WFEET

7.3.1 Construction phase

During construction, there is a potential risk of soil contamination with petroleum substances from construction equipment and means of transport (potential micro-leaks of gear oil, engine oil, fuel, etc.). To minimize the risk of contamination, the construction site where this equipment will be parked should be organized on a paved area or protected with an impermeable layer. In addition, the condition of construction equipment and means of transport should be monitored on an ongoing basis. This will allow for quick detection and elimination of leaks resulting in leaks of petroleum substances. This will minimize the potential threat to the soil and water environment.

The investment at the construction stage will require water abstraction both to meet the social needs of employees and for technological purposes ("wet" construction works). The water source will be the water supply network.

Due to water abstraction, the investment stage will not have a significant impact on the environment.

At this stage, no significant amounts of sewage will be generated. In particular, the problem of sanitary sewage associated with human construction work can be solved by installing "dry toilets" (known as toi-toi). This sewage will be collected by a septic tanker, which will transport it to the local sewage treatment plant.

Due to the tested groundwater level, a mixed technology of excavation construction and protection is planned in the form of sheet piling and wide-spatial excavations, wherever possible due to ground conditions. The method of securing the excavation will be included in the project, in which, depending on the identified water conditions, appropriate solutions will be selected to ensure no impact on water conditions in the vicinity of the investment (the depression funnel will not extend beyond the investment area).

The expected solutions are:

- securing the excavation with a sheet pile or diaphragm wall (steel sheet piles, larsens) deepened into impermeable soils,
- wide excavation while maintaining a safe angle of inclination,
- another adequate solution.

Ensuring the tightness of the excavation protection will prevent groundwater from flowing into the excavation and will not create a depression funnel.

If it is necessary to drain the excavation (e.g. from rainwater), the pumped water will be managed within the investment area or will be discharged into the storm sewage system after being pre-treated in a sand settling tank.

7.3.2 Operation phase

Due to its operation, the following wastewater streams will be generated at the plant:

- sanitary sewage from sanitary facilities,
- rainwater from roof surfaces (clean),
- rainwater from paved surfaces on which vehicles drive (cleaned of petroleum substances).

Sanitary sewage from the planned office and social areas will be discharged to the external sanitary sewage system. The expected amount of sanitary sewage is approximately 10 m³/day.

Rainwater and meltwater from roof surfaces directly, and from paved surfaces (roads, parking lots and maneuvering areas), after pre-treatment in a petroleum substance separator, will be directed to the municipal stormwater sewage system through

used canal retention and retention tank. An underground, tight retention reservoir with a capacity of approx. 870 m³ will be constructed.

Rainwater from the investment area with a reliable rainfall intensity of 170 dm³/ (s*ha):

type of surface	surface	factor runoff	surface reduced	amount of water rainfall
	[ha]	-	[ha]	[l/s]
Building area	50854.6	0.9	45769.14	778.08
Area of land hardened	18912.50	0.9	17021.25	289.36
Biological surface open	52596.90	0.1	5259.69	89.41
			sum	1155.85

The rainwater flow rate determined in this way is: **approx. 1155.85 dm³/s**, and during 15 minutes of heavy rain, 1040.3 m³ will be created. Retention capacity (assuming 15 minutes of heavy rain)

Outflow from the tank: approx. 200 dm³/p

$$V = 1155.85 - 200 \text{ l/w} \times 60 \text{ w} \times 15: 1,000 = 860.3 \text{ m}^3$$

A retention reservoir (retention tank and canal retention) with a capacity was established **approx. 870 m³**.

Rainwater from the road surface, maneuvering areas and parking lots will be treated in settling tanks integrated with road inlets, as well as in the main settling tank and the separator of petroleum substances. This method of treatment guarantees the appropriate quality of discharged rainwater.

7.3.3 Possible liquidation phase

The facility whose construction is the subject of the current proceedings is not expected to be closed down. It can only be stated that in the event of a need for liquidation (total or partial), contractors will be employed for whom ad hoc social support will be organized. However, this will not have a significant impact on the environment.

7.3.4 Summary

During the construction stage, the problem of sanitary sewage related to people's work on the construction site will be solved by installing portable toilets.

Sanitary sewage from the planned office and social areas will be discharged to the external sanitary sewage system.

Rainwater and meltwater from roof surfaces directly, and from paved surfaces (roads, parking lots and maneuvering areas), after pre-treatment in a petroleum substance separator, will be directed to the municipal stormwater sewage system through the used canal retention and retention tank. An underground, tight retention reservoir with a capacity of approx. 870 m³ will be constructed.

7.4 THREATS TO HUMAN HEALTH, INCLUDING RESULTING FROM EMISSIONS

During the investment implementation stage, threats to human health result from construction works. These threats will be limited by complying with the occupational health and safety rules specified in applicable regulations and standards. The threats, including those resulting from emissions, include:

- air dust arising, among others, during cleaning works - described in more detail in point 6.1 of the KIP - due to the amount of emissions typical for this scale of the project, it should be considered small,
- noise - emissions will be minimized by the solutions described in point 6.1 KIP,
- lifting loads - when carrying heavy objects,
- tripping, slipping, falling - while moving on the construction site or on communication roads,
- falling to a lower level, falling from a height - while moving on scaffoldings and mobile work platforms,
- electric shock - when operating electrical devices and tools,
- traffic accident - threat related to the movement of heavy vehicles on the investment site,
- cuts, abrasions, wounds, injuries to the eyes, face, limbs - while performing masonry, formwork and reinforcement work,
- burns - during contact with hot surfaces of electrical equipment used on construction sites, exposure to sunlight, while performing welding work

- fire - during the operation of machines and devices, in transformer and distribution stations and electrical switching stations, at work stations, in social facilities, short circuits in the electrical installation, leaks in fuel and pressure lines, as a result of starting a fire as a result of welding work or caused by unauthorized persons' actions intentional.

Pursuant to Art. 21a. Act of 7 July 1994 *Construction law* (Journal of Laws 2020.1333 i.e. as of later amended) a safety and health protection plan on the construction site will be developed, taking into account the specificity of the buildings and the conditions of work. To protect the health of employees and third parties, the contractor will train all employees in occupational health and safety before allowing them to perform work. Persons will be appointed on the investment site to conduct direct supervision of particularly dangerous work. The construction site will be marked and secured against access by unauthorized persons.

The impact of the investment on the environment will not pose a threat to people, either to residents of distant houses or to people staying in the area of the planned investment.

The facility was designed by experienced designers, and the implementation of the project will be entrusted to proven contractors, which guarantees the safety of the people staying there. Moreover, the operation of the proposed investment does not involve emissions that could pose a threat to human health.

Due to its characteristics and scale, the operation of the investment will not have an impact on climate change and will not be significantly affected by its effects.

Taking into account the types and quantities of materials stored and used in the planned investment area, it should be stated that the planned project will not be classified as plants with an increased or high risk of serious industrial accidents (Regulation of the Minister of Development of January 29, 2016 *on the types and quantities of hazardous substances present in the plant, determining whether the plant is classified as a plant with an increased or high risk of a serious industrial accident* (Journal of Laws 2016.138)).

8 POSSIBLE CROSS-BORDER ENVIRONMENTAL IMPACT

Act on providing information about the environment and its protection, public participation in environmental protection and environmental impact assessments (art. 62a, section 1, point 8)

The investment does not have a significant impact on any of the environmental components, even in its close surroundings.

Cross-border environmental impact of the analyzed investment is not possible, both due to the size of the impact on the environment (air, noise) and the distance from the country's borders. Cross-border impact is also not possible due to water and sewage management or waste management.

9 AREAS SUBJECT TO PROTECTION UNDER THE ACT OF 16 APRIL 2004 ON NATURE PROTECTION AND ECOLOGICAL CORRIDORS LOCATED WITHIN THE RANGE OF SIGNIFICANT IMPACT OF THE PROJECT

Act on providing information about the environment and its protection, public participation in environmental protection and environmental impact assessments (art. 62a, section 1, point 9)

9.1 ABOUT AREAS SUBJECT TO PROTECTION ON THE BASIS OF JOINTS OF THE DAY 16 APRIL 2004

R. ABOUT NATURE PROTECTION

In accordance with the Act of April 16, 2004 on nature conservation (OJ No 92, item 880, i.e.: Journal of Laws 2020.55, as amended. amended) forms of nature protection are:

- 1) national parks;
- 2) nature reserves;
- 3) landscape parks;
- 4) protected landscape areas;
- 5) Natura 2000 areas, including areas of Community importance;
- 6) natural monuments;
- 7) documentation stations;
- 8) ecological lands;
- 9) natural and landscape complexes;
- 10) species protection of plants, animals and fungi.

The table below lists the closest protected areas.

Table 13. Location of protected areas in relation to the investment area

Type of area	Name	Distance from investment area, km	Direction
Reserve	Buczyna Szprotawska	6.7	southern - east
	Przemkowskie Ponds	10.7	east
Landscape park	Przemkowski Park Landscape	7.90	east
National Park	none within 30 km		
Protected landscape area	Szprotawka Valley	0.53	midnight
	Bóbr Valley	1.82	West
Nature and nature complex landscape	Słowiński Park	4.06	West
Documentation stations	none within 30 km		
Ecological areas	Owl Swamp	6.76	West
Natural monument: tree - Resolution No. XXXVI/241/2017 of the City Council in Szprotawa of January 26, 2017 on the establishment of a natural monument		0.37	midnight

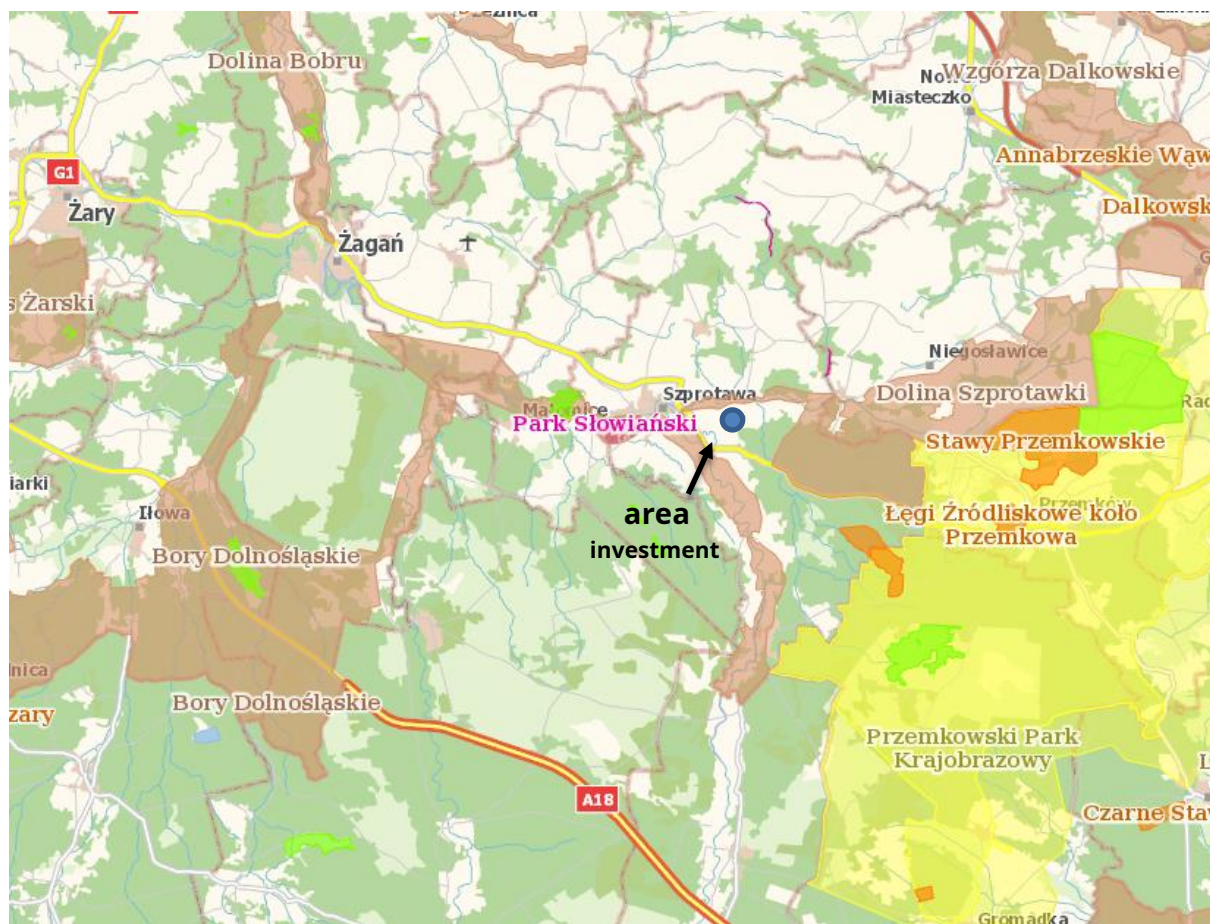


Figure 17. Location of investments in relation to forms of nature protection
[map source: <http://geoserwis.gdos.gov.pl/mapy/>]

Natura 2000 areas

The European Ecological Network Natura 2000 is a network of protected areas in the European Union. The purpose of designating these areas is to protect naturally valuable and endangered components of biological diversity. The Natura 2000 network includes:

- special protection areas for birds (Special Protection Areas – SPA) designated pursuant to Council Directive 79/409/EEC *on the protection of wild birds*, the so-called "Ptasia", the list of areas in Poland was announced in the form of a regulation of the Minister of the Environment of January 12, 2011. *on areas of special protection for birds* (Journal of Laws 11.25.133, as amended. d.); the list includes 145 areas;
- special areas of conservation (SAC) – (Special Areas of Conservation – SAC) designated under Council Directive 92/43/EEC *on the protection of natural habitats and wild fauna and flora*, the so-called "Habitat", for natural habitats listed in Annex I and plant and animal species listed in Annex II to the Directive. So far, the list of areas in Poland has not been announced in a legal document.

SAC areas (Special Habitat Protection Areas)

The area of Małomickie Łęgi PLH080046 is located approximately 3.95 km west of the investment area.

SPA areas (Special Bird Protection Areas)

The closest SPA area is located approx. 0.73 km from the border of the investment area to the south-east: Bory Dolnośląskie PLB020005.

The location of Natura 2000 areas in the area of the planned implementation of the project is shown on the next map. The source of these maps is the server of the General Directorate for Environmental Protection.

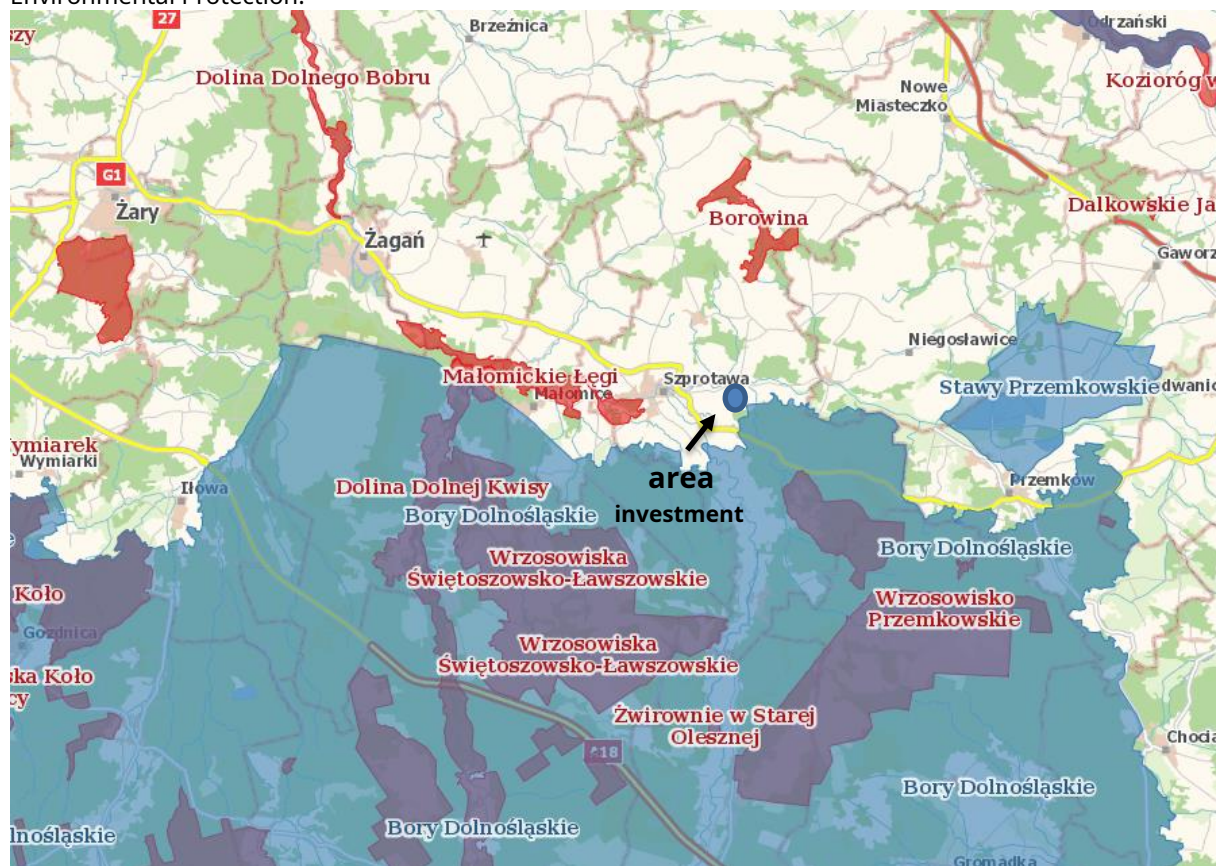


Figure 18. Location of the investment in relation to Natura 2000 areas
[map source: <http://geoserwis.gdos.gov.pl/mapy/>]

Due to the nature of the investment and its location, it can be concluded that its implementation does not pose a threat to any forms of nature protection.

There are no grounds for concern that the planned investment may have any impact, even indirectly, on Natura 2000 areas, both those included on the list and those proposed. Within the statutory meaning (Act of October 3, 2008 *on providing information about the environment and its protection, public participation in environmental protection and on environmental impact assessments*, Journal of Laws 2021.247 i.e.) under the concept significant negative impact on the Natura 2000 area is understood *impact on the conservation objectives of a Natura 2000 area, including in particular activities that may worsen the condition of natural habitats or habitats of plant and animal species for the protection of which a Natura 2000 area has been designated, or have a negative impact on species for the protection of which a Natura 2000 area has been designated, or impair the integrity of the Natura 2000 site or its links with other sites.*

In this case, due to the location of the project and its nature, there is no risk of any negative impact on natural areas.

9.2 KECOLOGICAL ORITARIES

The designation and protection of ecological corridors ensures functional preservation communications in the conditions of currently widespread environmental fragmentation. Ecological corridors are areas enabling the movement of plants and animals between habitats. The main objectives of defining and protecting corridors are:

- counteracting the isolation of naturally valuable areas and ensuring functional connections between individual regions of the country,
- ensuring the possibility of functioning stable populations of plant and animal species,
- protection and restoration of biodiversity in the country and Europe,
- creating a coherent network of protected areas that will provide optimal living conditions for as many species as possible.

The map of ecological corridors in Poland was developed by the Mammal Research Institute of the Polish Academy of Sciences in Białowieża (currently the Institute of Mammal Biology) under the supervision of prof. Dr. hab. Włodzimierz Jędrzejewski. The study was developed in two stages:

- stage I - in 2005, at the request of the Ministry of the Environment, a map of the corridor network for Natura 2000 areas was developed, taking into account the protection needs of key species of large mammals;
- stage II - in 2011, in cooperation with the Workshop for All Beings (as part of a project financed by the EEA/EEA), a complete map of corridors important for the population of large forest mammals and the coherence of forest and wetland habitats was developed on a national and continental scale.

The main purpose of developing the map was to create a practical tool for the protection of habitats and species threatened by environmental fragmentation, used in spatial planning and designing linear investments. The figure below shows the location of the project in relation to the nearest ecological corridor. The source of the map was the geoservice: <http://mapa.korytarze.pl>. The corridor map is from 2012.



Figure 19. Location of the investment in relation to ecological corridors
[source: <http://mapa.korytarze.pl>]

The Bory Dolnośląskie GKZ-4 ecological corridor is located approximately 0.63 km south-east of the investment area - outside the project's impact area.

Local ecological corridors

According to the authors of the work "Ecological corridors in Małopolska" (Institute of Nature Conservation of the Polish Academy of Sciences, Kraków, 2005), there are five types of corridors in the landscape:

1. Major river systems and wide swathes of natural habitats between protected areas (which constitute nodes or junction areas),
2. Riverside vegetation,
3. Hedges, margins and other linear structures in agricultural landscapes,
4. Roadside vegetation,
5. Forest connections.

In connection with the implementation of the investment, it is not planned to cut down trees and shrubs requiring a cutting permit. The planned construction will be carried out in an undeveloped area. The project is not located in an ecologically sensitive area. There are no natural habitats requiring special treatment in the investment area, and there are no protected species of plants or fungi.

The implementation of the investment will not disturb the spatial continuity of the valley ecosystem, meadow ecosystems, does not threaten the protection of oxbow lakes, riparian forests and wicker thickets - it will not constitute a barrier to the migration of valuable plant and animal species. The planned investment will not significantly affect local ecological corridors.

Before work begins, the area will be fenced to prevent larger animals from entering the construction site.

9.3 LAWSSITUATION OF THE INVESTMENT IN RELATION TO THE AREAS SPECIFIED IN AND RT. 63 SET. 1 POINTS 2) EIA LAWS

9.3.1 Wetlands, other areas with shallow groundwater, including riparian habitats and estuaries

There are no riparian habitats or river mouths in the investment area. The investment is located outside Ramsar areas (wetlands) and areas with shallow groundwater.

9.3.2 Coastal areas and marine environment

The investment is located outside the coastal and marine environment.

9.3.3 Protected areas, including protection zones of water intakes and protection areas of inland water reservoirs

There are no groundwater intakes in the investment area. According to the PSH website, the nearest groundwater intakes are:

- the intake with identification number 04_20349 is located approximately 0.5 km north of the investment area,

In the investment area there is a hydrogeological facility with identification number 6490114 - BUNKIER-JAR - an exploitation hole with a depth of 35 m - the hole will not be exploited as part of the project.

At a distance of approx. 71.9 m to the east and approx. 103 m to the south of the investment area, there are observation holes with identification numbers 6490176 - AIRPORT - JAR 49P, and 6490191 - AIRPORT-JAR 50P.



Figure 20. Location of the investment area in relation to the nearest groundwater intake
source: <http://spdps.gov.pl/>

9.3.4 Areas requiring special protection due to the occurrence of plant, fungi and animal species or their habitats or protected natural habitats, including Natura 2000 areas and other forms of nature protection

Areas subject to protection under the Act of April 16, 2004. *on nature conservation* described in section 9.1.

9.3.5 Areas where environmental standards have been exceeded or are likely to be exceeded

Air quality standards

According to the letter of the Chief Inspectorate of Environmental Protection, Department of Environmental Monitoring, Regional Department of Environmental Monitoring in Zielona Góra regarding the current state of air pollution in the area of the investment site, there are no exceedances of the standards regarding permissible concentrations of certain substances in the air in accordance with the Regulation of the Minister of the Environment of August 24, 2012. *on the levels of certain substances in the air* and the Regulation of the Minister of the Environment of January 26, 2010 *on reference values for certain substances in the air*.

Acoustic environment quality standards

Permissible noise levels in the environment are specified in the Regulation of the Minister of the Environment of June 14, 2007 *on permissible noise levels in the environment* (Journal of Laws 2007.120.526, i.e. Journal of Laws 2014.112). They concern areas whose intended use is consistent with one of the definitions given in Table 1 in the annex to the above-mentioned regulation. In accordance with the intended use of the investment area specified in the local development plan as areas for production and service development, the area is not and will not be acoustically protected. To talk about exceeding environmental standards, permissible noise levels must be defined for a given area. It follows from the above that there are no standards for the area covered by the project, so they cannot be exceeded.

9.3.6 Areas with landscapes of historical, cultural or archaeological importance

There are no monuments within the investment area subject to protection under the provisions on the protection and care of monuments, and those located further away are not exposed to any impact from the planned investment.

The nearest historic building is located approx. 249 m north-east of the investment area (Manor Park)

Below is a map showing the location of the investment in relation to the nearest monuments.



Figure 21. Location of the nearest monuments in relation to the investment area
[[https:// polska.e-mapa.net/](https://polska.e-mapa.net/)]

9.3.7 Population density

According to data from the Central Statistical Office, in rural areas of the Szprotawa commune in 2020, the population density was 40 people/km².

Since the plant's operations do not generate any significant impact on the environment in its surroundings, it should be stated that local residents will not be exposed to any significant impacts, even after the intended investment is implemented.

9.3.8 Areas adjacent to lakes

The investment area is located outside the areas adjacent to the lakes.

9.3.9 Spas and spa protection areas

The investment area is located outside health resorts and health resort protection areas.

9.3.10 Waters and applicable environmental objectives

Water (GZWP, JCWP, JCWPd) and the impact of the investment on achieving environmental goals are described in point 6.3.

9.4 WIMPACT OF THE PLANNED PROJECT ON THE NATURAL ENVIRONMENT, INCLUDING BIODIVERSITY

The investment areas are currently undeveloped. The project is not located in an ecologically sensitive area. In connection with the implementation of the project, there will be no cutting of trees and shrubs requiring obtaining a cutting permit. There are no natural habitats requiring special treatment in the investment area, and there are no protected species of plants or fungi. Therefore, the implementation of the investment, both at the construction and operation stages, will not have a significant impact on the natural environment.

9.5 WIMPACT OF INVESTMENTS ON THE LANDSCAPE

As part of measures to minimize the impact of the project on the landscape, it is planned to introduce subdued colors typical of industrial construction.

9.6 QPOTENTIAL SOCIAL CONFLICTS

The nature of the investment is consistent with the purpose specified in the local development plan. The investment should not cause any inconvenience to local residents during the construction phase.

Due to the nature of the project and its location and remoteness from inhabited areas, it is unlikely that social protests will occur.

No significant social conflicts are expected during the operation of the designed facility, because the project will not cause any unfavorable changes in the state of the environment in the analyzed area, will not violate the interests of third parties or cause any nuisance related to, for example, deprivation of the possibility of using water or energy. The project includes solutions that minimize the negative impact of the investment on the environment.

9.7 RTYPE, FEATURES AND SCALE OF POSSIBLE IMPACT CONSIDERED WITH REGARD TO THE CRITERIA LISTED IN POINT 1 AND 2 AND IN ART. 62 SET. 1 POINTS 1, RESULTING FROM: :

a) scope of impact - the geographical area and population that may be affected by the project,

The project will not have any excessive impact outside its area and will not pose any threat to the local population. In particular: the project does not have a significant impact on air quality, acoustic climate, waste management or water and sewage management).

b) the cross-border nature of the impact of the project on individual natural elements,

The project has no cross-border impact (Chapter 8).

c) the nature, size, intensity and complexity of the impact, taking into account the load on the existing technical infrastructure and the expected moment of commencement of the impact,

Due to the construction of the plant, the load on technical and road infrastructure will change.

d) probability of impact,

The probability of impact is high (the operating plant has a permanent impact on the environment), but the impact will be very weak.

e) duration, frequency and reversibility of the impact,

The plant's poor environmental impact will continue throughout the year. The impact on the environment will be very weak. After cessation of operations and cessation of emissions (noise, gases and dust), the environmental condition will improve slightly, as the pressure from the plant will be very weak.

f) connections with other projects, in particular the accumulation of impacts of projects underway and completed for which a decision on environmental conditions has been issued, located in the area where the project is planned to be implemented and in the area of impact of the project or whose impacts fall within the area impact of the planned project - w

the extent to which their impacts may lead to cumulative impacts with the planned project,

The issue of cumulative impacts is discussed in Chapter 11. It has been shown that the planned investment will not threaten environmental quality standards.

g) possibilities of limiting the impact.

The impact of the plant outside its boundaries will be weak. Therefore, it should be concluded that there is no need to reduce this impact and the costs incurred would not be justified.

10 IMPACT PLANNED DEAR ON SECURITY MOVEMENT ROAD IN THE CASE OF A ROAD IN THE TRANS-EUROPEAN ROAD NETWORK

Act on providing information about the environment and its protection, public participation in environmental protection and environmental impact assessments (art. 62a, section 1, point 10)

Does not apply to the analyzed investment.

11 IMPLEMENTED AND COMPLETED PROJECTS THAT ARE IN THE AREA WHERE THE PROJECT IS PLANNED TO BE IMPLEMENTED AND IN THE IMPACT AREA OF THE PROJECT OR WHICH IMPACTS ARE IN THE AREA OF IMPACT OF THE PLANNED PROJECT - TO THE EXTENT THAT THEIR IMPACTS MAY BE IMPACTED TO CUMULATE THE IMPACTS OF THE PLANNED PROJECT

Act on providing information about the environment and its protection, public participation in environmental protection and environmental impact assessments (art. 62a, section 1, point 11)

The investment is not related to other projects. There are no other projects in the area where the investment is planned.

In the vicinity of the investment area (within 100 m from the area covered by the project/transformed area) there are geodesic plots (investments) for which a decision on environmental conditions has been issued: plot no. 280/216, Wiechlice district - TECHNOMICOL membrane production plant

Due to the nature of the plant's operations, The project does not foresee the possibility of excessive accumulation of impacts at the stage of their operation.

Therefore, taking into account the nature and scale of the proposed project, it is not expected that it will have an above-average cumulative impact on the environment, and thus that environmental standards will not be exceeded in connection with the operation of the investment.

In order to confirm the above conclusion, an analysis of the cumulative impact of both plants on air and noise was carried out.

The analysis of the cumulative impact on atmospheric air and the acoustic environment took into account the emission sources specified in the documentation for the decision on environmental conditions issued on April 20, 2022 by the Mayor of Szprotawa for the project: construction of a TECHNOMICOL membrane production plant on plot no. 280/216, Wiechlice district, in Szprotawa (case reference ROŚ.6220.3.2022). The investment parameters included in these calculations were assumed on the basis of the above-mentioned. decision on environmental conditions and the Project Information Card.

The assumptions used to calculate the cumulative impact are presented below.

11.1 PCUMULATIVE IMPACT OF INVESTMENTS ON ATMOSPHERIC AIR

The calculations took into account all emission sources from the planned investment area (listed in Chapter 7.1.2) as well as from the area of neighboring projects regarding the same emitted substances.

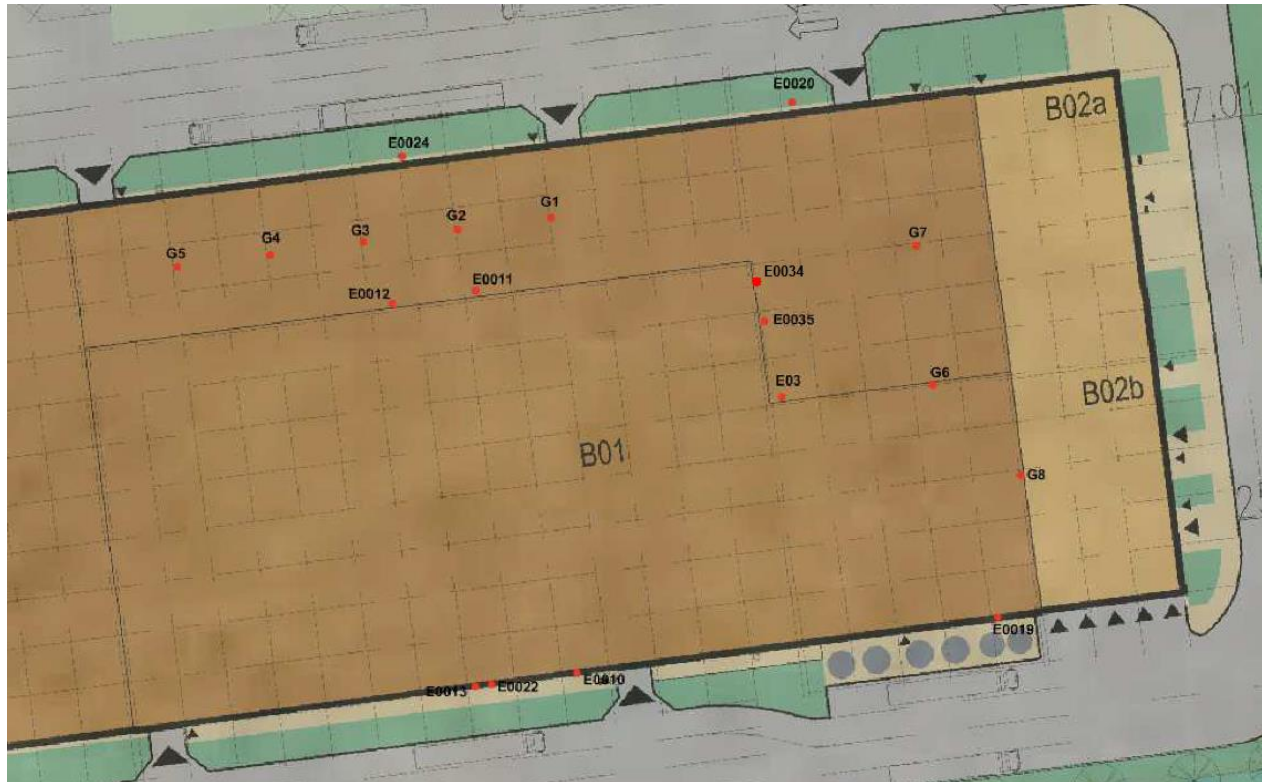


Figure 22. Location of emitters - Technicol

Table 14.Emitter parameters – neighboring investment

Symbol	Name of the emitter	Height m	Cross-section m	Speed gases m/s	Temperature. gases K	Xe m	Yeah m	Name of the pollutant	Emission max. kg/h
G1	heater	13.5	0.15	0	373	468	482.4	Sulphur dioxide nitrogen dioxide NO2 Carbon monoxide total dust - including dust up to 2.5 µm - including dust up to 10 µm	0.0001 0.0061 0.0012 2.00E-6 2.00E-6 2.00E-6
G2	heater	13.5	0.15	0	373	458.8	482.4	total dust - including dust up to 2.5 µm - including dust up to 10 µm µm sulfur dioxide nitrogen dioxide NO2 Carbon monoxide	3.00E-6 3.00E-6 3.24E-6 0.0002 0.0083 0.0016
T1	personal care technonicol	0.0 L	498.2	0	293	327.3	537.3	Carbon monoxide total dust - including dust up to 2.5 µm - including dust up to 10 µm µm sulfur dioxide aliphatic hydrocarbons, aromatic hydrocarbons, benzene nitrogen dioxide NO2	0.00461 0.000408 0.000408 0.000408 0.000062 0.001911 0.000433 0.00002864 0.001314
G3	heater	13.5	0.15	0	373	445.7	479.1	nitrogen dioxide NO2 Sulphur dioxide Carbon monoxide total dust - including dust up to 2.5 µm - including dust up to 10 µm	0.0379 0.0007 0.0075 0.000012 0.000012 0.000012
G4	heater	13.5	0.15	0	373	434.9	476.9	total dust - including dust up to 2.5 µm - including dust up to 10 µm µm sulfur dioxide nitrogen dioxide NO2 Carbon monoxide	0.000012 0.000012 0.000012 0.0007 0.0379 0.0075
G5	heater	13.5	0.15	0	373	422.6	477.5	nitrogen dioxide NO2 Sulphur dioxide Carbon monoxide total dust - including dust up to 2.5 µm - including dust up to 10 µm	0.0379 0.0007 0.0075 0.000012 0.000012 0.000012
G6	heater	13.5	0.15	0	373	518.8	462.1	total dust - including dust up to 2.5 µm - including dust up to 10 µm, nitrogen dioxide NO2 Sulphur dioxide	0.000012 0.000012 0.000012 0.0379 0.0007

Symbol	Name of the emitter	Height m	Cross-section m	Speed gases m/s	Temperature. gases K	Xe m	Yeah m	Name of the pollutant	Emission max. kg/h
								Carbon monoxide	0.0075
G7	heater	13.5	0.15	0	373	516.8	479.8	nitrogen dioxide NO2 Sulphur dioxide Carbon monoxide total dust - including dust up to 2.5 µm - including dust up to 10 µm	0.0379 0.0007 0.0075 0.000012 0.000012 0.000012
G8	gas boiler room	17.5	0.16	0	373	530.6	451.6	total dust - including dust up to 2.5 µm - including dust up to 10 µm µm sulfur dioxide nitrogen dioxide NO2 Carbon monoxide	8.00E-6 8.00E-6 8.00E-6 0.0005 0.0239 0.0047
E03	General ventilation	12.4	1	0	293	498.8	460.1	Carbon monoxide total dust - including dust up to 2.5 µm - including dust up to 10 µm and aliphatic hydrocarbons	0.375 0.006 0.006 0.006 0.00112
T2	cars technonicol trucks	0.0 L	649.9	0	293	367.5	483	Carbon monoxide total dust - including dust up to 2.5 µm - including dust up to 10 µm µm sulfur dioxide aliphatic hydrocarbons, aromatic hydrocarbons, benzene nitrogen dioxide NO2	0.00342 0.000458 0.000458 0.000458 0.000055 0.0002328 0.0000714 4.02E-6 0.00563
E0010	extruder	17.5	0.45	0	293	475.2	426	Carbon monoxide	0.375
E0011	extruder	17.5	0.45	0	293	463.2	474.7	Carbon monoxide	0.75
T3	cars technonicol trucks	0.0 L	333.7	0	293	458.8	564.9	Carbon monoxide total dust - including dust up to 2.5 µm - including dust up to 10 µm µm sulfur dioxide aliphatic hydrocarbons, aromatic hydrocarbons, benzene nitrogen dioxide NO2	0.000597 0.00008 0.00008 0.00008 9.62E-6 0.0000614 0.00001678 9.44E-7 0.000597
E0012	extruder	17.5	0.45	0	293	450.8	473.2	Carbon monoxide	0.75
E0013	extruder	17.5	0.45	0	293	461.6	426.5	Carbon monoxide	0.375
E0019	unloading zone	17.5 Z	0.5	0	293	527.1	432.6	total dust - including dust up to 2.5 µm - including dust up to 10 µm	0.2207 0.2207 0.2207
E0020	locksmith workshop	10.5 Z	0.4	0	293	502.9	498.1	total dust - including dust up to 2.5 µm	0.01268 0.01268

Symbol Name of the emitter	Height m	Cross-section m	Speed gases m/s	Temperature. gases K	Xe m	Yeah m	Name of the pollutant	Emission max. kg/h
							- including dust up to 10 µm	0.01268
E022 extruder	17.5	0.45	0	293	462.9	423.9	Carbon monoxide	0.75
E0024 extruder	17.5	0.45	0	293	451.4	489.8	Carbon monoxide	0.375
E0034 extruder	10.5	0.45	0	293	497	473.9	Carbon monoxide	0.15
E0035 extruder	10.5	17.5	0	293	498.1	469.6	Carbon monoxide	0.15

Determining the scope of calculations

Bet: Construction of a warehouse with a social and office part and the necessary technical infrastructure at ul. Energetyka in Wiechlice - cumulative impact
Plots: 280/162, 280/163, 280/165, Wiechlice district, Szprotawa commune, Żagań district

Number of emitters subject to classification: 28

Full range	Scope shortened
nitrogen dioxide NO ₂ PM-10 dust	Sulphur dioxide Carbon monoxide aromatic hydrocarbons, aliphatic hydrocarbons, benzene

Criterion for calculating dust fall

Dust emissions from 15 emitters were

analyzed. $0.0667/n \cdot h_{3.15} = 248.1$

Sum of average annual dust emissions = 24.5 < 248.1 [mg/

s] Total annual emissions = 0.773 < 10,000 [Mg]

There is no need to calculate dust fall.

Calculation of the distance at which spa protection areas must be taken into account (30x_{mm})

Maximum distance of occurrence of maximum concentrations $\max(x_{mm}) = 75.0$ [m]

Emitter: extruder

An area with a radius of 2250 m from the emitter should be analyzed for the occurrence of stricter reference values.

List of maximum PM-10 dust concentration values in the receptor network

Parameter	Value	X m	Y m	crit. state	crit. speed	crit. head of
Maximum concentration $\mu\text{g}/\text{m}^2\text{s}$	61.0	960	820	6	1	SSW
Annual average concentration $\mu\text{g}/\text{m}^3$	0.318	600	440	4	1	IN
Frequency exceeded. conc. 280 $\mu\text{g}/\text{m}^3$	0	-	-	-	-	-

List of maximum concentration values at the plant boundary

Parameter	Value	X m	Y m	crit. state	crit. speed	crit. head of
Maximum concentration $\mu\text{g}/\text{m}^2\text{s}$	81.4	955.7	808.1	6	1	SSW
Annual average concentration $\mu\text{g}/\text{m}^3$	0.350	575.9	440.3	3	1	IN
Frequency exceeded. conc. 280 $\mu\text{g}/\text{m}^3$	0	-	-	-	-	-

List of maximum values of nitrogen dioxide NO₂ concentrations in the receptor network

Parameter	Value	X m	Y m	crit. state	crit. speed	crit. head of
Maximum concentration µg/m ² ₃	540,090	960	820	6	1	SSW
Annual average concentration µg/m ³	2.4275	960	820	6	1	SSW
Frequency exceeded. conc.200 µg/m ³	1	1020	660	6	1	NNW

List of maximum concentration values at the plant boundary

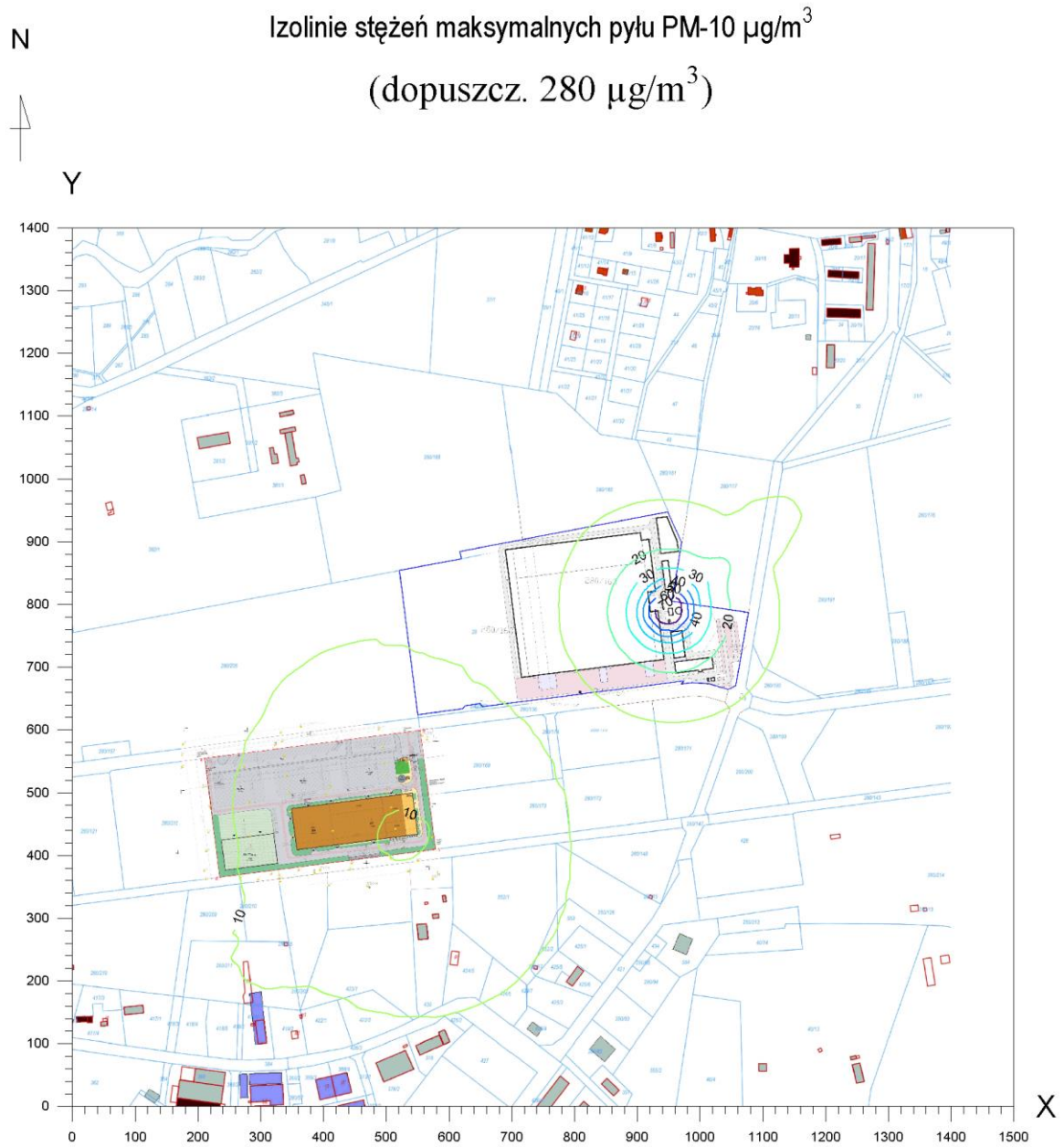
Parameter	Value	X m	Y m	crit. state	crit. speed	crit. head of
Maximum concentration µg/m ² ₃	721,259	955.7	808.1	6	1	SSW
Annual average concentration µg/m ³	2.8697	959.4	827.7	6	1	S
Frequency exceeded. conc.200 µg/m ³	1	975.9	681.5	6	1	NNW

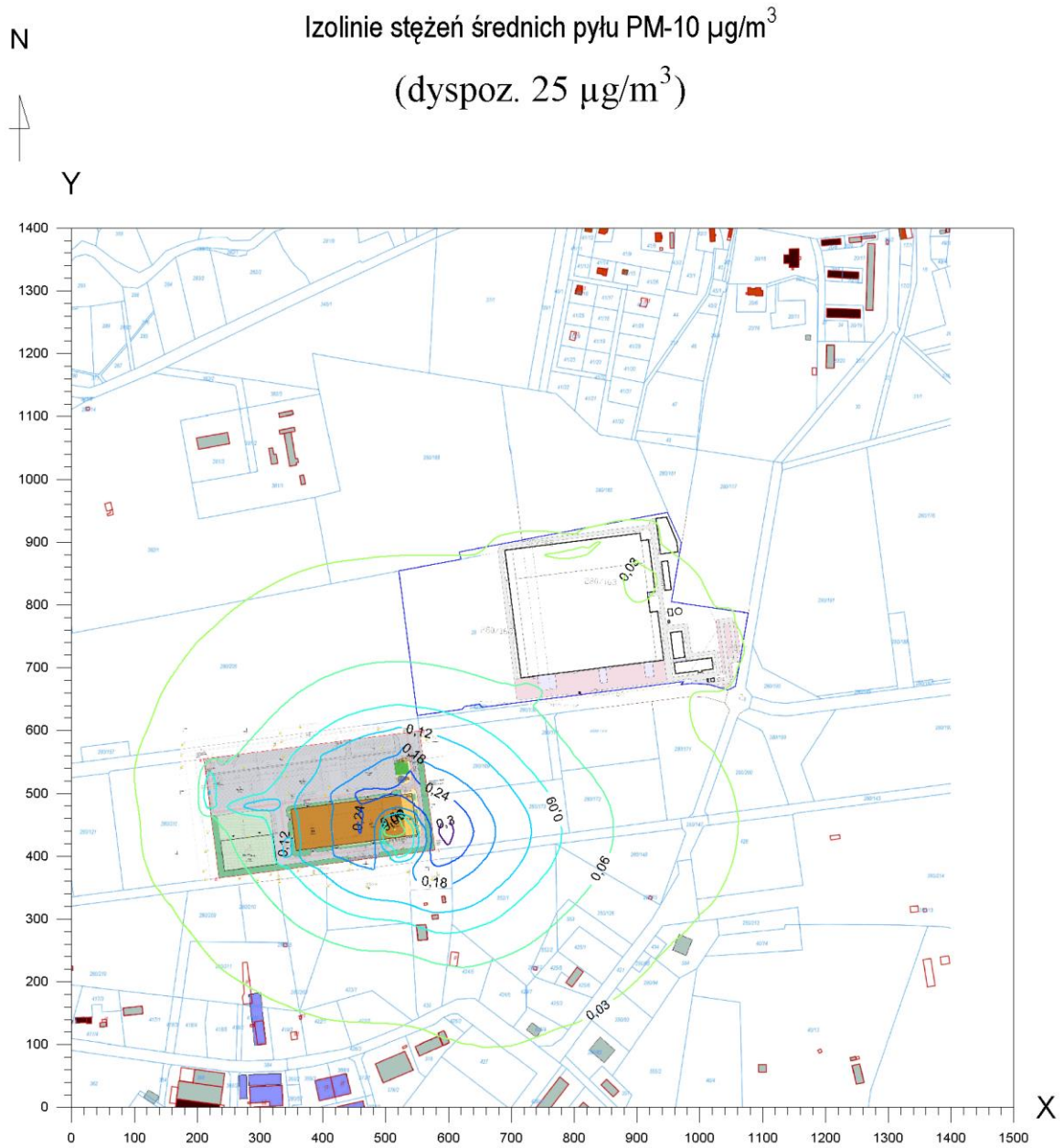
List of maximum PM 2.5 concentration values in the network receptors

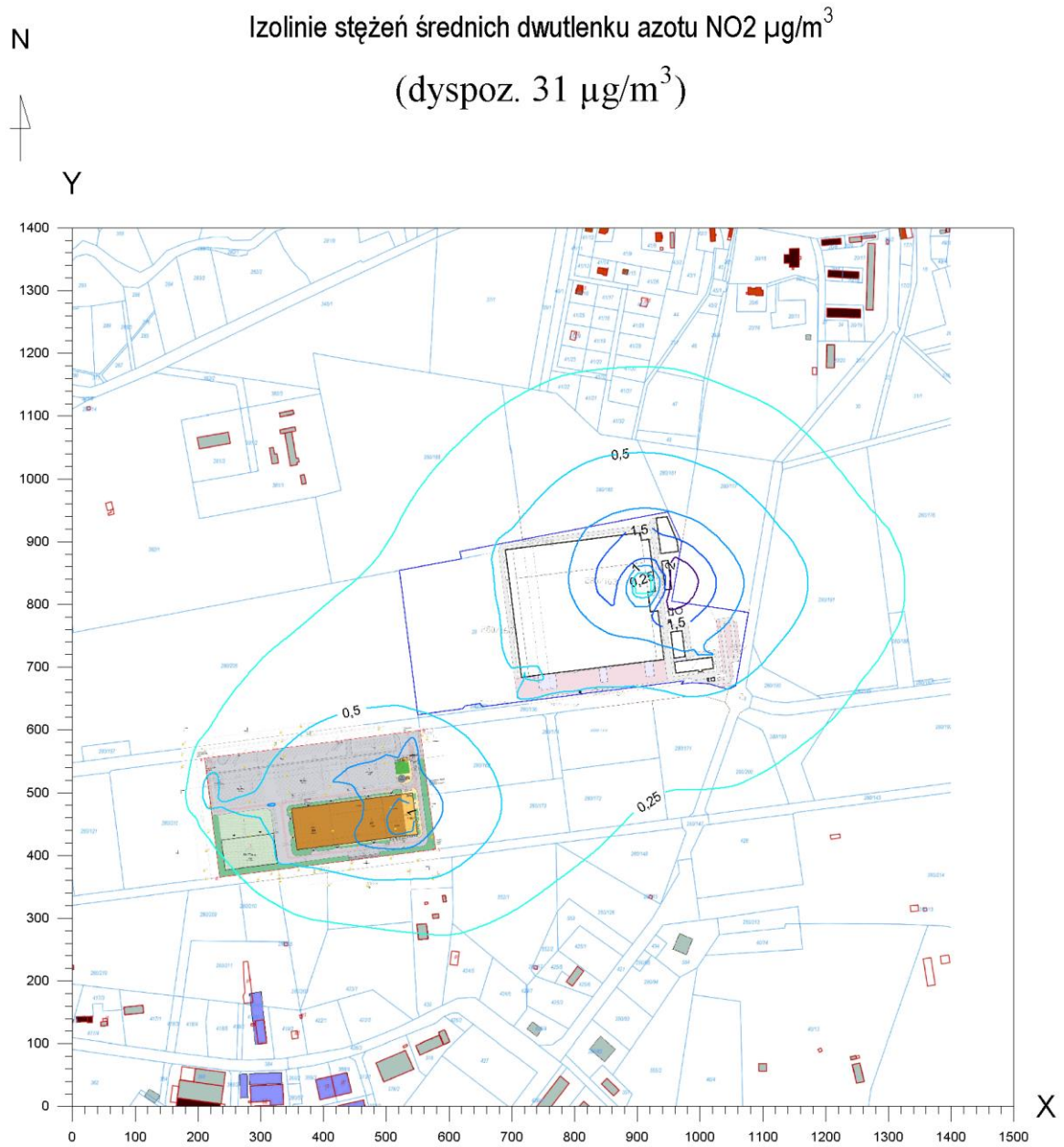
Parameter	Value	X m	Y m	crit. state	crit. speed	crit. head of
Maximum concentration µg/m ² ₃	61.0	960	820	6	1	SSW
Annual average concentration µg/m ³	0.318	600	440	4	1	IN
Frequency of exceedances - not applicable, none D1	0	-	-	-	-	-

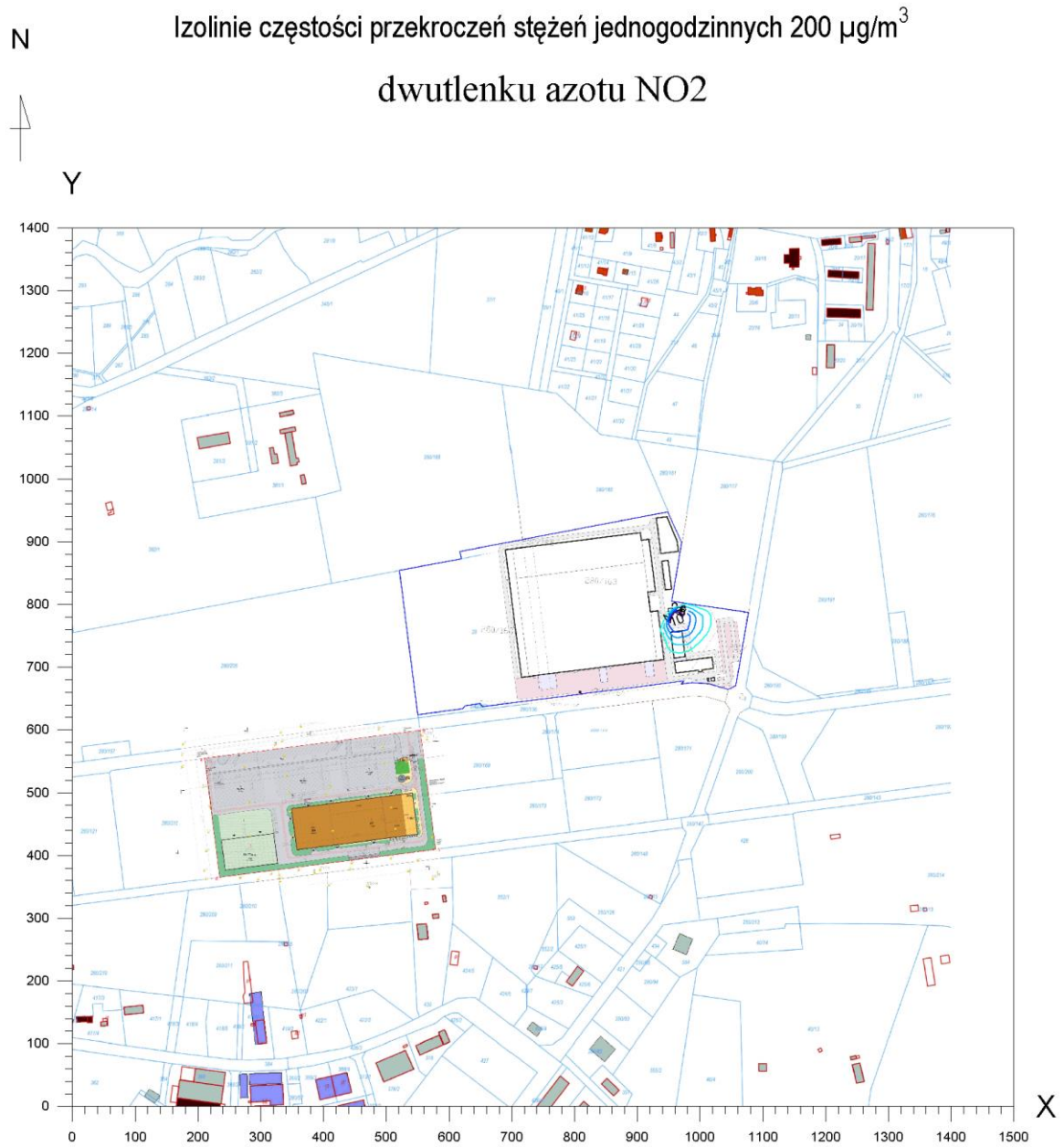
List of maximum concentration values at the plant boundary

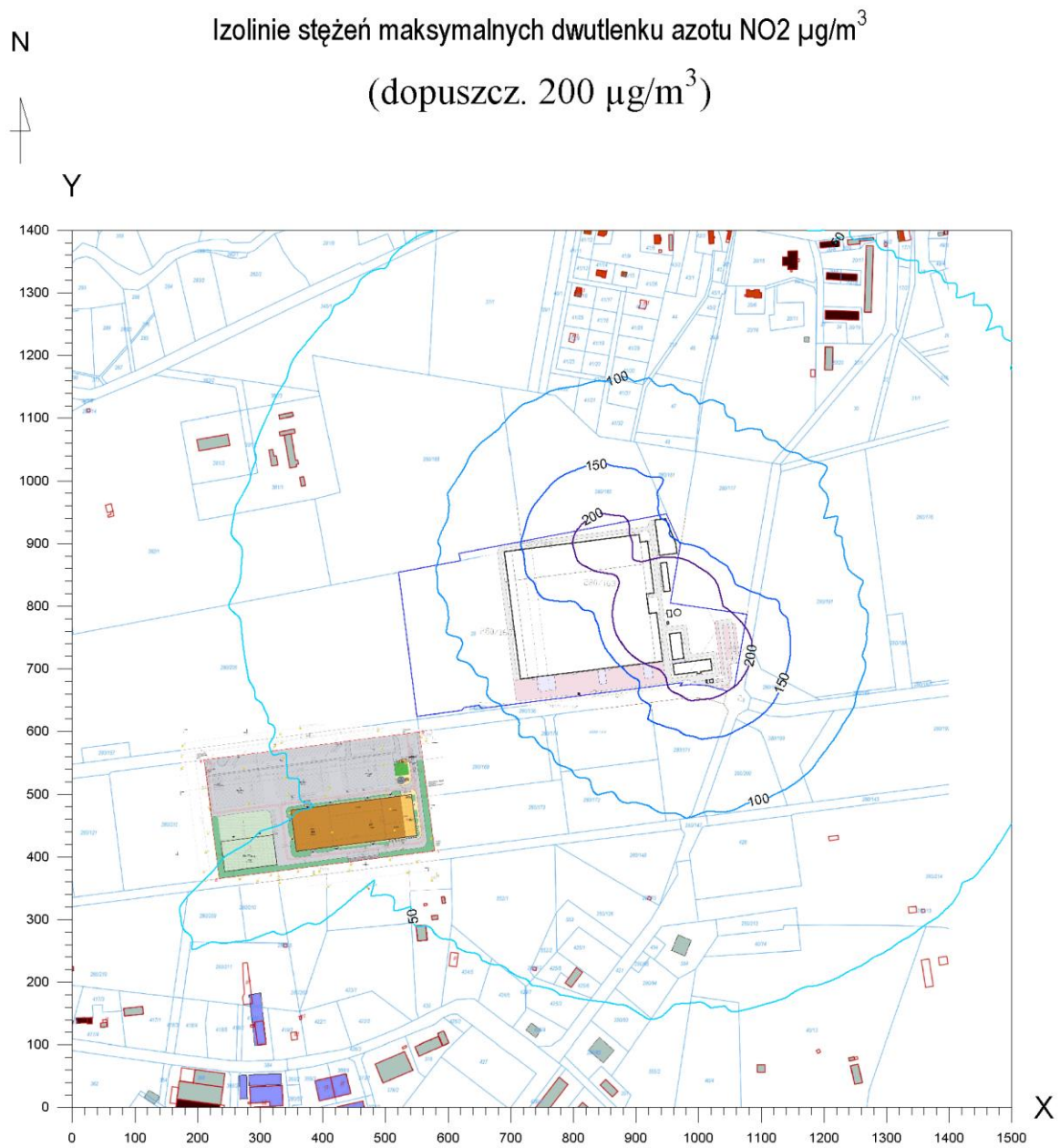
Parameter	Value	X m	Y m	crit. state	crit. speed	crit. head of
Maximum concentration µg/m ² ₃	81.4	955.7	808.1	6	1	SSW
Annual average concentration µg/m ³	0.350	575.9	440.3	3	1	IN
Frequency of exceedances - not applicable, none D1	0	-	-	-	-	-

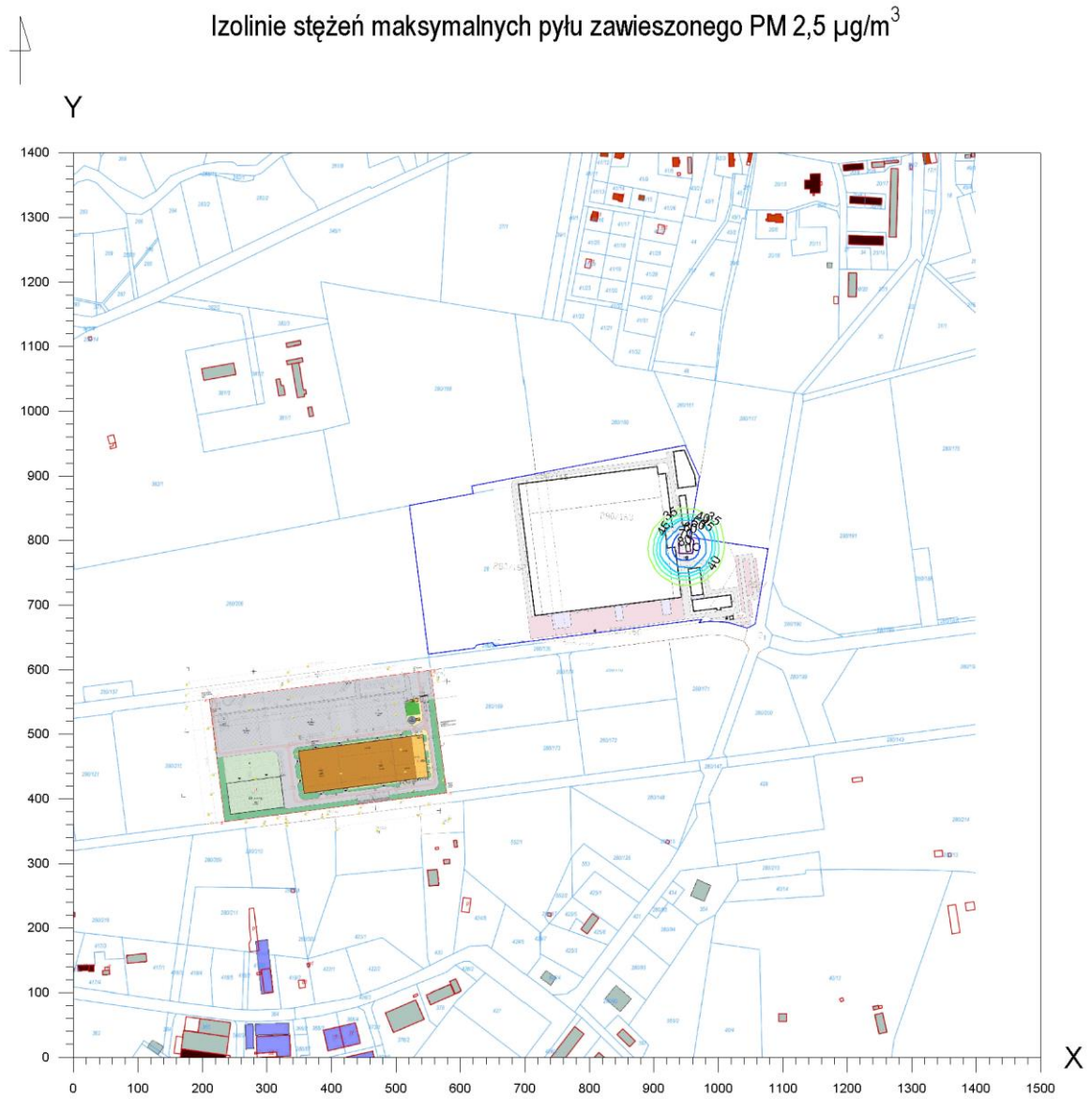


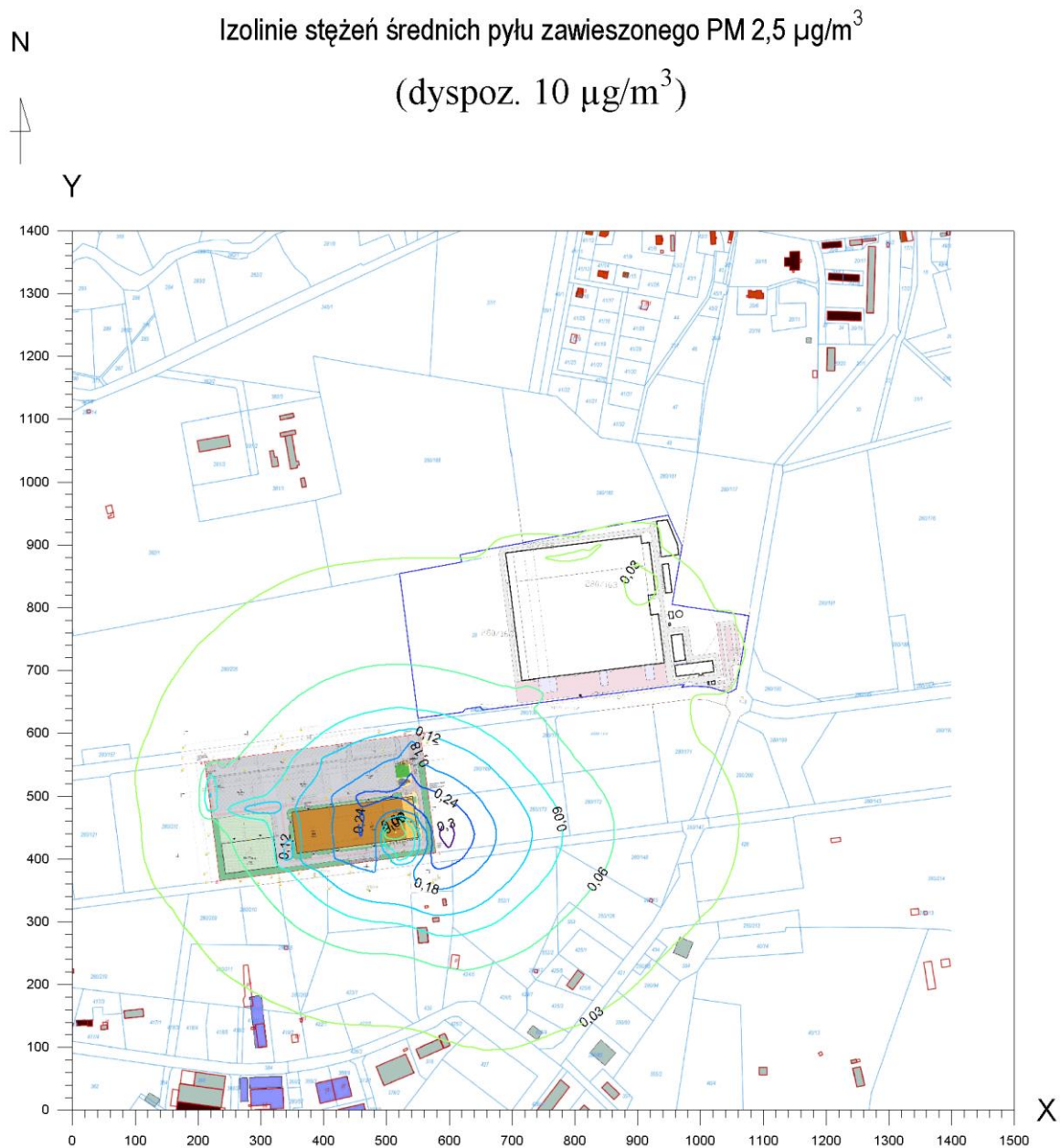












Summary

The analysis of the cumulative environmental impact of the proposed investment and the neighboring one showed that the operation of the facilities will not have an excessive impact on the air quality in the vicinity of both plants.

11.2 CUMULATIVE IMPACT OF THE INVESTMENT ON THE ACOUSTIC ENVIRONMENT

The calculation model presented in section 7.2.3 was supplemented with noise sources from the neighboring investment, for which it was necessary to obtain environmental decisions.

Building type noise source

The source of noise in a building is a production or warehouse hall, consisting of several volume sources in which the source of noise emission is the equipment operating in them. For the purposes of acoustic analysis, it was assumed that the noise level inside was approximately 85 dB. Noise emitted from technological equipment in buildings is shielded by walls and roof. The assumed acoustic insulation of building partitions and walls was 28 dB.

External ventilation sources-according to the information contained in the KIP, significant sources of noise (external) in the area of the planned project will be: aggregates, air intakes, ventilation units, exhausters, fans and condensers. Details are provided in the table below

Table 15. Characteristics of point sources of noise emission

No.	Source name	Height replacement sources point [m]	Acoustic power single source	Working time in periods references	
			[dB(A)]	Time of day [min/8h]	Time night [min/1h]
V.1	Supply air handling unit	12.6	70	480	60
V.1.1	Czerpnia	12.6	70	480	60
V.1.2	DX unit	13.5	62	480	60
V.2	Supply air handling unit	12.6	70	480	60
V.2.1	Czerpnia	12.6	70	480	60
V.2.2	DX unit	13.5	62	480	60
V.3	Supply air handling unit	12.6	70	480	60
V.3.1	Czerpnia	12.6	70	480	60
V.3.2	DX unit	13.5	62	480	60
V.4	Supply air handling unit	12.6	70	480	60
V.4.1	Czerpnia	12.6	70	480	60
V.4.2	DX unit	13.5	62	480	60
V.5	Supply air handling unit	12.6	70	480	60
V.5.1	Czerpnia	12.6	70	480	60
V.5.2	DX unit	13.5	62	480	60
V.6	Supply air handling unit	12.6	68	480	60
V.6.1	Czerpnia	12.6	68	480	60
V.7	Exhaust ventilation unit	12.6	65	480	60
V.7.1	Launcher	12.6	65	480	60

The location of point noise sources is presented below.

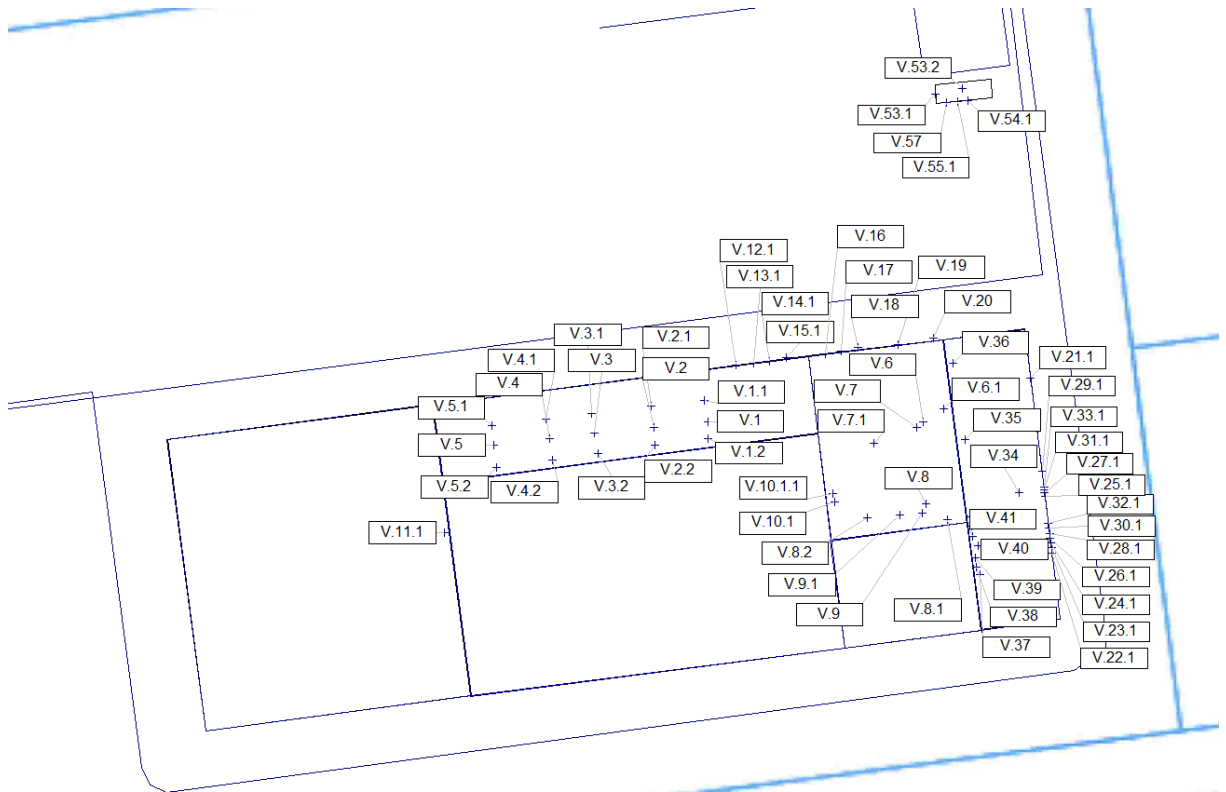


Figure 23. Location of point sources of noise - neighboring plant

Car traffic

Trucks and passenger cars drive around the plant in connection with its operations. It was assumed that at the time of day in the reference period equal to the 8 least favorable hours, the following people would enter and leave the investment area:

- 84 capacity passenger cars (i.e. 10.5 units/h),
- 32 capacity trucks (i.e. 4 units/h),

while at night at the reference time equal to 1 least favorable hour:

- 42 capacity personal,
- 16 capacity trucks.

Table 16. Linear noise sources - neighboring investment

Name	ID	Lw/Li		Moving point source			Speed (km/h)
		Type	Value	Quantity			
				Day	Evening	Night	
Passenger cars - Technicol	T3	Lw-Fri	94	10.5	0.0	42.0	20.0
Trucks - Technicol	T1	Lw-Fri	105	2.0	0.0	8.0	20.0
Trucks - Technicol	T2	Lw-Fri	105	2.0	0.0	8.0	20.0

The location of the linear noise sources is shown below.

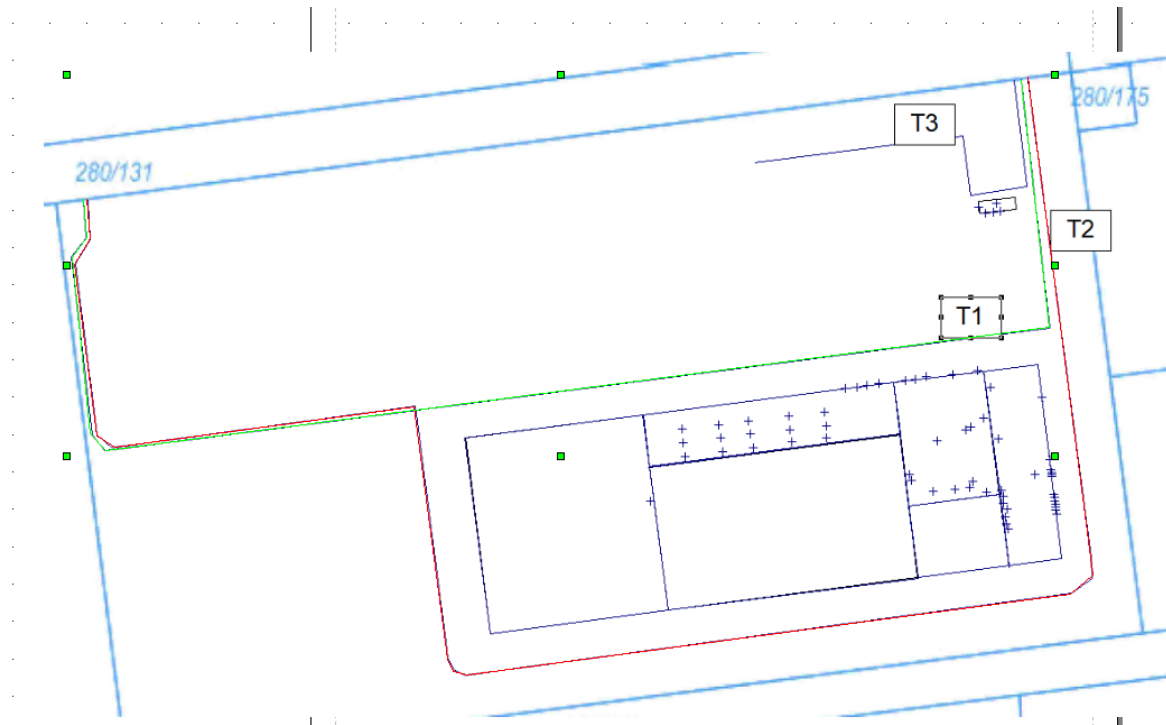


Figure 24. Location of noise sources - neighboring plant

Calculations of the cumulative noise level from both investments

Calculations of the cumulative noise range of the project planned under this application and the neighboring investment were carried out for a grid of observation points with dimensions of 1400 × 1500 m with a step of 5 m in both directions, at a height of 4 m above sea level. It was assumed that the area surrounding the investment is flat. The results of the noise propagation simulation are presented graphically in the figures below for the time of day and night. **The summary of data entered into the program and the table of calculation results in the grid were saved on a CD.**

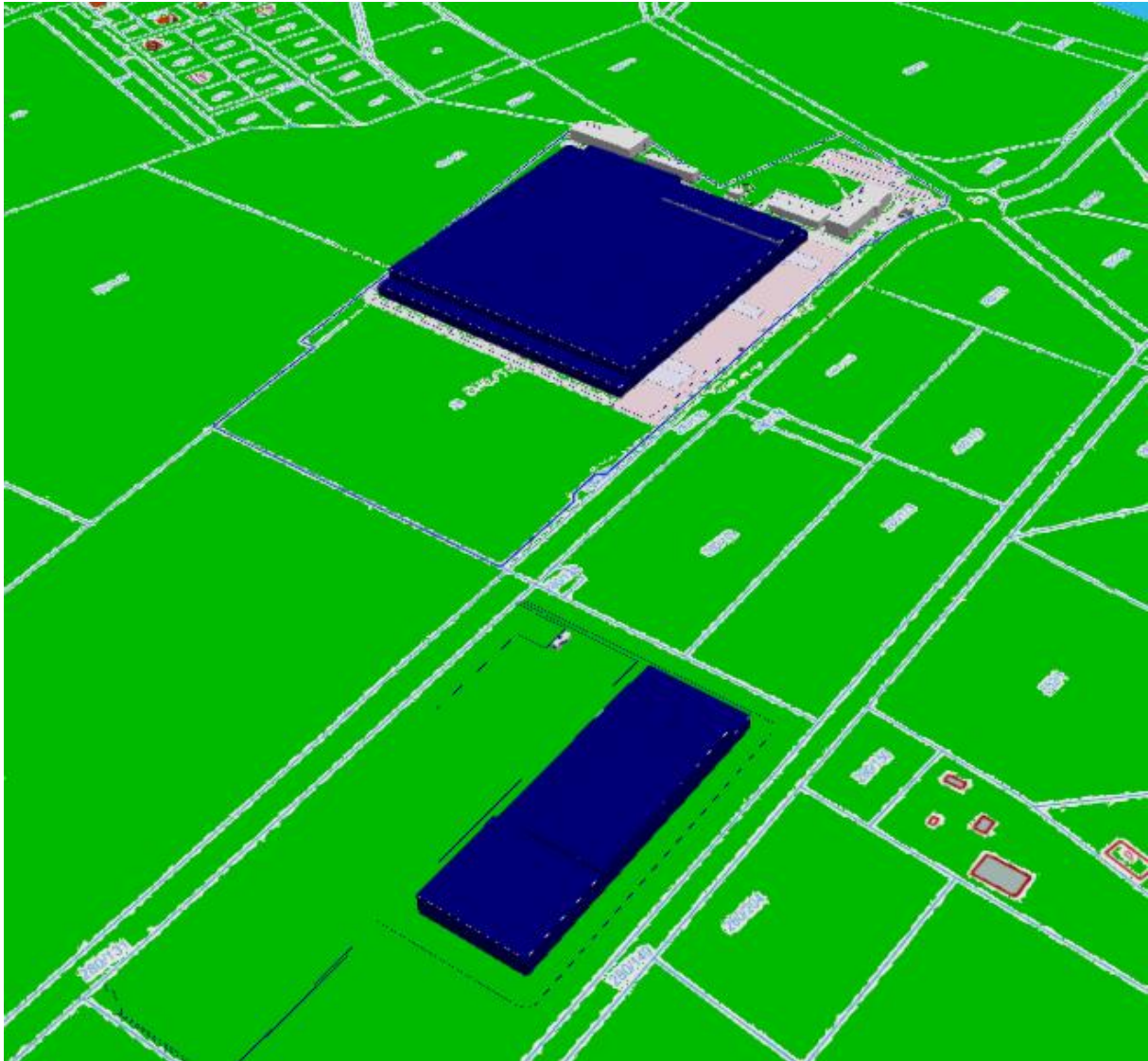


Figure 25.3D view from the CadnaA program of the investment and the neighboring plant

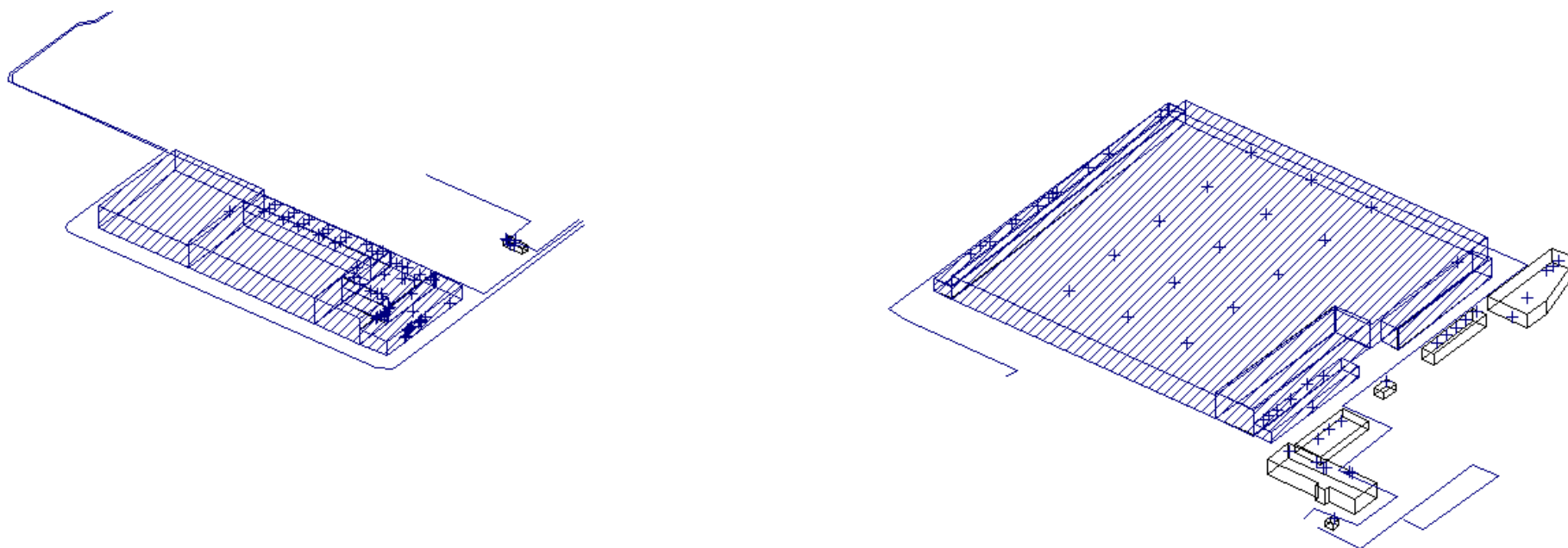


Figure 26.3D view from the CadnaA program of the investment and the neighboring plant

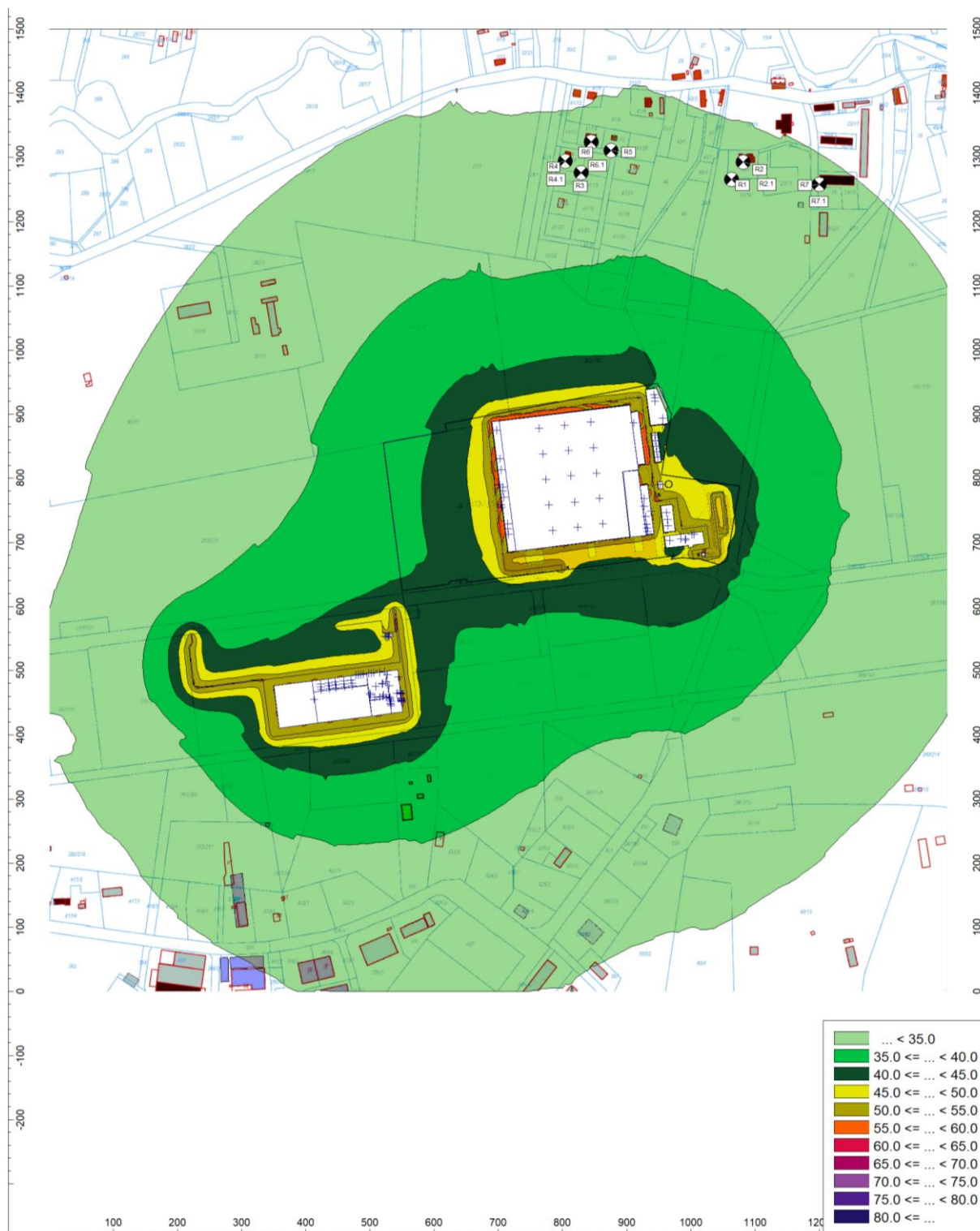
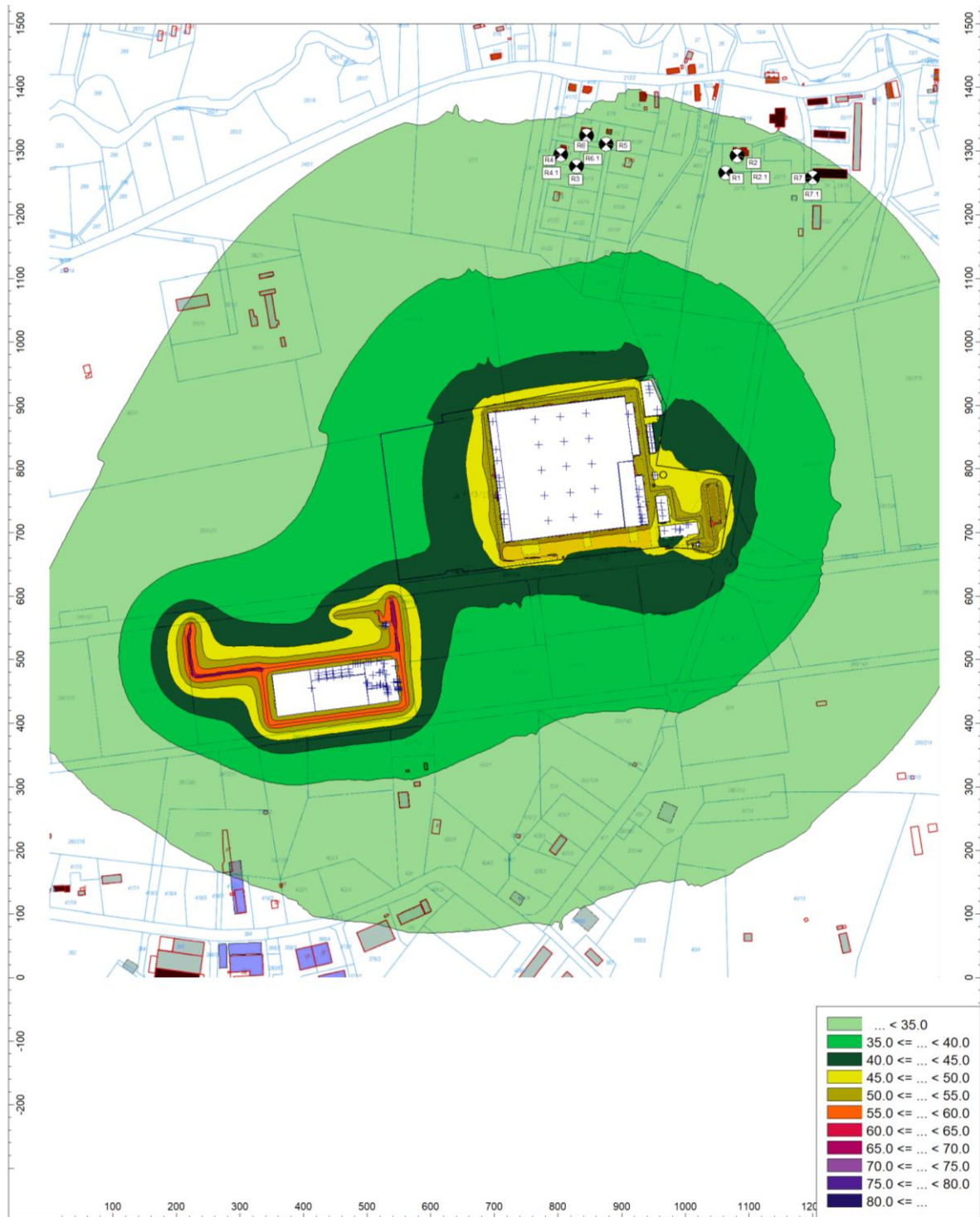


Figure 27. Noise level isophones at a height of 4 m - day



The graphical presentation of the noise propagation simulation results shows that after implementation investment, permissible noise levels in acoustically protected areas will be maintained. Additional calculations performed in points R1-R7.1 confirm the above conclusion. The calculation results in points are summarized in the table below. The location of the points is presented in Figures 25 and 26. Calculations were made on building elevations at a height of 1.5 m and 4.0 m, in accordance with the Regulation of the Minister of the Environment of October 30, 2014. *on requirements for measuring emissions and the amount of water abstracted* (Journal of Laws 2019.2286 i.e.). The calculated noise levels at the points are below the permissible noise levels (for both day and night).

Table 17. Results of noise level calculations at calculation points

No.	Calculation point	Computational level noise		Admissible noise level		Height (m)
		Day	Night	Day	Night	
		(dBA)	(dBA)	(dBA)	(dBA)	
1	R1 - single-family residential development	29/9	29.8	50.0	40.0	1.50
2	R2 - single-family residential development	29.3	29.2	50.0	40.0	1.50
3	R2.1 - single-family residential development	30/9	30/9	50.0	40.0	4.00
4	R3 - single-family residential development	30.2	29/9	50.0	40.0	1.50
5	R4 - single-family residential development	29.8	29.5	50.0	40.0	1.50
6	R4.1 - single-family residential development	31.3	31.0	50.0	40.0	4.00
7	R5 - single-family residential development	29/9	29.7	50.0	40.0	1.50
8	R6 - single-family residential development	29.4	29.2	50.0	40.0	1.50
9	R6.1 - single-family residential development	30/9	30.6	50.0	40.0	4.00
10	R.7 - development of collective housing	28.8	28/7	55.0	45.0	1.50
11	R.7.1 - development of collective housing	30.6	30.6	55.0	45.0	4.00

Summary

Analysis of the cumulative environmental impact of the proposed investment and the neighboring one showed that the operation of the facilities will not have an excessive impact on acoustically protected areas located in the vicinity of both investments. Permissible noise levels will be maintained.

12 RISK SPEECHES SERIOUS FAILURE OR DISASTERS NATURAL AND CONSTRUCTION

Act on providing information about the environment and its protection, public participation in environmental protection and environmental impact assessments (art. 62a, section 1, point 12)

12.1 PIMPORTANT INDUSTRIAL FAILURE

Construction phase

The main threat to the environment in the investment area in this phase is:

- contamination of land and groundwater with petroleum substances originating from used motor vehicles and work machines,
- possible damage to existing underground utilities.

In order to prevent this type of failures and minimize their effects, you should:

- entrust the work to an experienced contractor;
- the contract with the contractor should emphasize his responsibility for causing environmental pollution (applies to land) and oblige him to immediately remove this contamination;

- the contractor should ensure the necessary daily maintenance of vehicles and machines, paying particular attention to possible leaks, and exercise caution during earthworks.

Operation phase

The concept of a serious (industrial) failure within the statutory meaning of the Environmental Protection Act means: *an event, in particular an emission, fire or explosion, occurring during an industrial process, storage or transport, in which one or more hazardous substances are present, leading to an immediate threat to human life or health or the environment or to the emergence of such a threat with a delay.*

The term serious industrial failure means a serious failure in a plant. The basis for inclusion in one of the categories:

about bets with increased risk bets

about with high risk

The risk of a serious accident is the amount of hazardous substances present at the plant.

There will be no hazardous substances in the investment area in the same quantity or greater than those specified in the annex to the regulation of the Minister of Development of January 29, 2016. *on the types and quantities of hazardous substances present in the plant, determining whether the plant is classified as a plant with an increased or high risk of a serious industrial accident* (Journal of Laws 2016.138). Therefore, a serious industrial accident is not expected to occur.

The main threat to the immediate surroundings and people staying in the project area may be the possibility of fire. Minimization of this threat was achieved by the Investor meeting the requirements contained in the Regulation of the Minister of Internal Affairs and Administration *regarding fire protection of buildings, other structures and areas* (Journal of Laws 2010.109.719, as amended). The regulation describes detailed rules for fire protection and fire protection of buildings and equipping them with fire-fighting equipment and devices.

The impact on the environment during the fire will be uncontrolled. However, its scope and scope will not differ from the impact of fires of similar industrial facilities. The main direction of impact will be the emission of combustion products of building construction materials and other flammable objects and substances located at the plant. It is also possible to contaminate soil and groundwater with extinguishing agents.

Possible liquidation phase

Due to the similar nature of the works and equipment used, emergency situations during the possible decommissioning of the facilities will be of a similar nature to those during the construction stage.

12.2 KCONSTRUCTION AND NATURAL DISASTER

Pursuant to Art. 73 of the Act *Construction law* of July 7, 1994 (Journal of Laws 2020.1333, i.e. as amended) a construction disaster is the unintentional, violent destruction of a building or its parts, as well as structural elements of scaffolding, elements of forming equipment, sheet piling and excavation lining.

Construction phase

The risk of construction disaster is minimized by:

- preparation of design documentation by an experienced company,
- commissioning construction works to a proven contractor,
- ensuring supervision at the construction stage in accordance with applicable construction law and health and safety regulations.

Operation phase

During the operation phase, technical inspections of the facilities will be carried out regularly, which will affect the safety of people using them. The facility manager will ensure that the buildings are kept in good technical condition. Thanks to regular inspections and maintaining facilities in accordance with their intended use, it will be possible to prevent construction disasters.

- Fires - minimization of this threat is achieved by the Investor meeting the requirements contained in the Regulation of the Minister of Internal Affairs and Administration of June 7, 2010. *regarding fire protection of buildings, other structures and areas* (Journal of Laws 2010.109.719, as amended. d.). The regulation describes detailed rules for fire protection and fire protection of buildings and equipping them with fire-fighting equipment and devices. The investment area includes, among others:

about dear fire brigade,

about network of hydrants.

The building materials, partitions, etc. used have appropriate fire resistance classes in accordance with the requirements of building regulations.

- Heat and frost waves - the analyzed project will use heat energy generated on site; thanks to this, it will have sufficient energy reserves to counteract excessive frosts; in the event of a heat wave, ventilation and air conditioning systems installed in the designed facilities will be responsible for limiting their effects; in extreme situations when the installed heating or ventilation and air-conditioning equipment will not be able to provide appropriate conditions during frost or heat, the operation of the project will be suspended; In the event of heat or frost waves occurring at the stage of implementation or liquidation of the project, it is expected that, if necessary, the works will be suspended until they cease.
- Droughts - water supply is provided by an external operator, therefore drought periods will not affect the operation of the project; in the event of a drought resulting in the need to limit water supplies from the water supply network, the project will adapt its work to the existing restrictions and, in extreme situations, will suspend its operations; in the event of a drought at the stage of implementation or liquidation of the project, no special preventive or protective measures are planned because a possible drought will not affect these works; it is only planned to pay special attention to meeting the requirements and recommendations in the field of fire protection.
- Long-term occurrence of extreme temperatures - raw materials and materials for the construction of facilities will meet the applicable requirements of regulations, norms and technical standards; the objects will be made using modern techniques and technologies. The facilities will be monitored in terms of, among others: temperature in the building due to the need to ensure appropriate climatic conditions in various parts of the building; in winter, at low temperatures, the facilities will be heated; the facilities will be equipped with ventilation and air-conditioning systems.
- Heavy rains and storms - Rainwater and meltwater from roof surfaces directly, and from paved surfaces (roads, parking lots and maneuvering areas), after pre-treatment in a petroleum substance separator, will be discharged to the external rainwater drainage system through retention. There is no flood risk in the investment area.
- Lightning - the facilities are equipped with a lightning protection system.
- Seismic tremors - facilities are located in aseismic areas where mass movements, landslides, water erosion, etc. do not occur.

12.3 YRISKS RELATED TO CLIMATE CHANGE

12.3.1 Adaptation to climate change - mitigation, i.e. mitigating climate change by the project

Due to its characteristics and scale, the operation of the investment will not have an impact on climate change and will not be significantly affected by its effects. The operation of the investment will not contribute to deepening climate change.

✓ Identification of direct and indirect greenhouse gas emissions related to the implementation, operation and liquidation of the project

Implementation stage

Direct, Vehicles and construction machines used during work will be an insignificant source of greenhouse gas emissions.

Emissions from construction equipment can be described with the same indicator as for trucks, i.e. approximately 450 g of CO₂/km.

Indirect emissions occur at the supplier of electricity used by consumers at the construction site. Depending on the type of fuel used, it can be described using the following indicators:

Fuel Type	Standard emission factors [tCO ₂ /MWh]
Natural gas	0.202
Coal	0.354

<http://www.ipcc-nggip.iges.or.jp/public/2006gl/index.html>

The impact during the investment implementation phase is temporary (it will cease after the investment is completed) and has a small scope.

Operation stage

Direct emissions will be related to vehicle traffic within the investment area - passenger cars 155 g of CO₂/km.

Indirect emissions occur during the production of electricity (external supplier) used by consumers.

Emission factors:

Fuel Type	Standard emission factors [tCO ₂ /MWh]
Natural gas	0.202
Coal	0.354

<http://www.ipcc-nggip.iges.or.jp/public/2006gl/index.html>

Liquidation stage

Similarly to the construction stage. The impact in this phase of the investment is of a temporary nature (it will cease after the investment is completed) and has a small scope.

Due to the scope of work and the scale of the project, direct and indirect greenhouse gas emissions from the investment area during the construction, operation and decommissioning stages of the project will be negligible.

✓ Demonstrating that the project will not contribute to worsening climate change

Actions resulting in the reduction of greenhouse gas emissions - low-emission fuel (natural gas) is used for heating and hot water production.

✓ **Indirect emissions of greenhouse gases occurring during the movement of vehicles around the investment site - the operation stage, exhaust gas emissions related to the operation of construction machines at the construction and decommissioning stages.**

Construction stage

The scale and scope of the works will not involve generating heavy vehicle traffic. Exhaust gas emissions related to the operation of construction machines during the construction phase will be negligible.

Operation stage

During the operation stage, the project will not generate heavy vehicle traffic. Exhaust gas emissions from vehicles at this stage will be negligible.

Liquidation stage

Similarly to the construction stage. The impact in this phase of the investment is of a temporary nature (it will cease after the investment is completed) and has an extremely local scope.

✓ **Indirect greenhouse gas emissions related to the energy demand associated with the project**

Electricity is taken from the power grid (from an external supplier). Depending on the type of fuel used, it can be described using the following indicators by the supplier

Fuel Type	Standard emission factors [tCO ₂ /MWh]
Natural gas	0.202
Coal	0.354

<http://www.ipcc-nggip.iges.or.jp/public/2006gl/index.html>

12.3.2 Demonstrating that the project is adapted to ongoing climate change

✓ **Fires**

Minimization of this threat is achieved by the plant meeting the requirements contained in the Regulation of the Minister of Internal Affairs and Administration of June 7, 2010. *regarding fire protection of buildings, other structures and areas* (Journal of Laws 2010.109.719, as amended. d.). The regulation describes detailed rules for fire protection and fire protection of buildings and equipping them with fire-fighting equipment and devices.

The plant's premises include, among others:

about dear fire brigade,

about network of hydrants.

The building materials, partitions, etc. used have appropriate fire resistance classes in accordance with the requirements of building regulations. In the event of a fire occurring on the project site during the implementation or liquidation stage of the project, the fire brigade will be called and, if necessary, the works will be suspended until the fire is under control.

✓ **Waves of heat and frost**

Potential heatwaves have no impact on the project. The analyzed project will use heat energy generated on site; thanks to this, it will have sufficient energy reserves to counteract excessive frosts; In the event of a heat wave, they will be responsible for limiting their effects

ventilation and air conditioning systems installed in the designed buildings; in extreme situations when the installed heating or ventilation and air-conditioning equipment will not be able to provide appropriate conditions during frost or heat, the operation of the project will be suspended; In the event of heat or frost waves occurring at the stage of implementation or liquidation of the project, it is expected that, if necessary, the works will be suspended until they cease.

All buildings, including partitions, heating systems, etc., were constructed taking into account the temperature coefficients for the climatic zone in which the Szprotawa commune is located.

✓ **Droughts**

The water supply is provided by an external operator, therefore periods of drought will not affect the operation of the project; in the event of a drought resulting in the need to limit water supplies from the water supply network, the project will adapt its work to the existing restrictions and, in extreme situations, will suspend its operations; in the event of a drought at the stage of implementation or liquidation of the project, no special preventive or protective measures are planned because a possible drought will not affect these works; it is only envisaged that special attention will be paid to meeting the requirements and recommendations in the field of fire protection.

✓ **Heavy rains and storms**

Rainwater and meltwater from roof surfaces directly, and from paved surfaces (roads, parking lots and maneuvering areas), after pre-treatment in a petroleum substance separator, will be directed to the municipal stormwater sewage system through retention.

✓ **Disastrous snowfall**

The facilities were designed taking into account the strength coefficients for snowfall occurring in the Szprotawa commune. The facilities will be designed in accordance with applicable regulations so that they are able to maintain a certain snow cover required by the regulations. In the event of heavy snowfall, snow removal is planned from the building's roof. In the event of heavy snowfall; activities related to the implementation or liquidation of the project will be carried out in periods when snowfall is unlikely; However, in the event of heavy snowfall, work is expected to be suspended until it stops and the already completed structures, construction equipment, etc. will be properly secured.

13 EXPECTED QUANTITIES AND TYPES OF WASTE GENERATED AND THEIR IMPACT ON THE ENVIRONMENT

Act on providing information about the environment and its protection, public participation in environmental protection and environmental impact assessments (art. 62a, section 1, point 13)

13.1 FAZA OF IMPLEMENTATION

The investment areas are agricultural land devoid of tall vegetation - the investment will not require cutting down any greenery.

During the construction stage, waste related to earthworks and construction works will be generated. It is advisable to carry out construction works based on modern technologies, and waste generated during construction should, whenever possible, be reused or disposed of in accordance with applicable regulations on the performance of construction works.

The following types of waste may be generated on the construction site during the implementation of the investment:

- earth and soil from excavations, also spoil containing stones (significant amount),
- concrete rubble, concrete waste,
- steel scrap, metal mixtures, including reinforcement elements,
- used cables,
- wood, including wood from packaging,
- plastic waste,
- glass waste,
- construction waste, miscellaneous,
- used cleaning cloths and protective clothing, gloves, etc.,

as well as municipal waste, including unsegregated (mixed) waste. Some of the waste generated may be classified as hazardous waste. The classification of the above-mentioned waste determined on the basis of the Regulation of the Minister of Climate of January 2, 2020. *regarding the waste catalogue* (Journal of Laws 2020.10), is presented in the table below. The table includes the types and estimated amounts of waste that could potentially occur **(but they don't have to)** arise on the construction site. All waste generated on the construction site will be stored selectively, and on the basis of waste transfer cards, it will be collected by external entities with appropriate authorizations and technical capabilities to manage this type of waste. Currently, the design phase of the project is underway, contractors will be selected at a later investment stage.

The earth masses will be used in the investment area for landscaping purposes - therefore, in accordance with Art. 2 point 3 of the Act of December 14, 2012 *about waste* (Journal of Laws 2013.21, consolidated text: Journal of Laws 2020.797, as amended) will not constitute waste. Part of the fertile soil (humus) will be used on the site, and the excess will be used similarly to earth masses from excavations for foundation footings. **will be collected and managed by an excavation company (with appropriate waste management permits), which will be formally confirmed in the form of waste transfer cards.**

The estimated amount of earth masses created during the works is approximately 60,000 m³, i.e. approx. 96 thousand Mg.

Table 18. Classification of waste that may be generated on the construction site

No.	Type of waste	Waste subgroup	Waste group	Place, method of storage and methods to minimize the negative impact of waste on environment	Code	Quantity Mg
1.	Other hydraulic oils	Waste oils hydraulic 13/01	<i>Waste oils and liquid fuel waste (excl edible oils and groups 05, 12 and 19) 13</i>	Way: selectively Place: In the case of micro-leaks of operating fluids resulting from equipment failure, the leachate will be collected in tight containers placed under the machines on a hardened surface until the arrival of the company servicing the device. The waste will be sent for recovery (or, if it is not possible, disposal) to a specialist company with appropriate permits.	13/01/13*	0.01
2.	Synthetic oils motor, gear and lubrication	Waste engine, gear and lubricating oils 13 02			13/02/06*	0.01
3.	Paper and cardboard packaging	Packaging waste (including selectively collected municipal waste packaging) 15/01	<i>Packaging waste; sorbents, fabrics for wiping, materials filters and protective clothing not included in other groups 15</i>	Way: selectively Place: in tight containers placed in a separate place on a hardened surface within the investment area. After collecting the appropriate amount, it is sent for recycling or recovery in a specialized company with appropriate permits.	15/01/01	8
4.	Plastic packaging				15/01/02	8
5.	Wooden packaging				15/01/03	8
6.	Metal packaging				15/01/04	8
7.	Multi-material packaging				15/01/05	8
8.	Glass packaging				15/01/07	8
9.	Packaging containing residues substances dangerous or them contaminated				15/01/10*	3
10.	Sorbents, filter materials (including oil filters not included in other groups), wiping cloths (e.g. rags, cloths) and protective clothing contaminated substances dangerous (e.g. PCB)				Sorbents, materials filters, wiping cloths and clothes protective 15 02	Way: selectively Place: in tight containers placed in a separate place on the investment site; After collecting an appropriate amount, it is sent for recovery (or, if it is not possible, disposal) to a specialist company with appropriate permits.
11.	Absorbents, filter materials, wiping cloths (e.g. rags, cloths) and protective clothing other than those mentioned in 15 02 02	15/02/03	3			
12.	Waste concrete and rubble concrete from demolitions and renovations	Waste materials and construction elements and infrastructure road (e.g. concrete, bricks, slabs, ceramics) 17/01	<i>Waste from construction and renovation and dismantling of objects construction and road infrastructure (including soil and soil from contaminated areas) 17</i>	Way: selectively Place: in tight containers in a separate place on the investment site; After collecting an appropriate amount, it is sent for recovery (or, if it is not possible, disposal) in a specialized company with appropriate permits.	17/01/01	1,485
13.	Waste other materials ceramic and elements equipment				17/01/03	92
14.	Wood				17/02/01	181

No.	Type of waste	Waste subgroup	Waste group	Place, method of storage and methods to minimize the negative impact of waste on environment	Code	Quantity Mg
15.	Glass	Wood and glass waste and plastics 17 02		Place: in tight containers in a separate place on the investment site; After collecting the appropriate amount, it is sent for recycling or recovery in a specialized company with appropriate permits.	17/02/02	20
16.	Plastics				17/02/03	56
17.	Bituminous mixtures other than those mentioned in 17 03 01	bituminous mixtures, tar and tar products 17 03		Way: selectively Place: in a separate place within the investment area; After collecting the appropriate amount, it is sent for recovery (or, if it is not possible, disposal) in a specialized company with appropriate permits.	17/03/02	186
18.	Iron and steel	Waste and scrap metallic and alloys metals 17/04		Way: selectively Place: in tight containers placed in a separate place on the investment site; After collecting the appropriate amount, it is sent for recycling or recovery in a specialized company with appropriate permits.	17/04/05	80
19.	Metal mixtures				17/04/07	209
20.	Cables other than those mentioned in 17 04 10				17/04/11	56
21.	Soil and earth, including stones, other than those mentioned in 17 05 03	Soil and earth (including soil and earth from contaminated areas and dredging spoil) 17/05		Way: selectively Place: any excess earth masses (not used in the investment area) will be collected and managed by an excavation company (with appropriate permits for waste management).	17/05/04	96 thousand
22.	Mixed waste from construction, renovation and dismantling other than those mentioned in 17 09 01, 17 09 02 and 17 09 03	Other waste from construction, renovation and dismantling 17/09		Way: selectively Place: in tight containers in a separate place on the investment site; After collecting the appropriate amount, it is sent for recycling, recovery or disposal to a specialist company with appropriate permits.	17/09/04	226
23.	Unsegregated municipal waste (confused)	Other municipal waste 20/03/2019	<i>Municipal waste including collected fractions selectively 20</i>	Way: selectively Place: in tight containers in a separate place on the investment site; After collecting the appropriate amount, it is sent for recycling, recovery or disposal to a specialist company with appropriate permits.	20/03/01	6

Building background will be located on the plot constituting the investment area. The construction site, where construction equipment and means of transport will be parked, will be organized on a hardened area, e.g. with concrete slabs. Building materials will be stored in designated places, properly leveled and hardened, in a way that prevents stacks of materials from tipping over, sliding or moving apart. It is not allowed to lean stored materials against fences, buildings or overhead line poles. Loose materials, such as sand and gravel, will be stored in piles, maintaining the natural slope angle of these materials. Bulk materials should be stacked in piles with a height not exceeding 2 m. Bagged materials should be stacked crosswise to a maximum of 10 layers. Prefabricated elements will be placed in accordance with the manufacturer's instructions. The construction site will have water, sewage and electricity connections from the existing underground utility networks.

Repairs to equipment and machines will not be carried out on the premises of the planned project. If a failure is detected, work using the equipment will be interrupted. The damaged device will be placed on a hardened surface to prevent contaminants from entering the ground environment. The equipment will be transported to the service location. In the event of micro-leaks of operating fluids resulting from equipment failure, the leachate will be collected in tight containers placed under the machines until the arrival of the company servicing the device. Waste collection will be handled by specialized external companies with which the construction contractor (waste owner) will sign appropriate contracts. Inspections, repairs of equipment and maintenance will be carried out off-site at specialized construction machinery services.

Method of dealing with generated waste, i.e. method of storage, with particular emphasis on hazardous waste and further waste management

The producer of waste generated during the construction phase will be the construction contractor. Pursuant to Art. 3, point 32, Act of December 14, 2012. *about waste* (Journal of Laws 2013.21, consolidated text: Journal of Laws 2020.797, as amended), the producer of waste arising from the provision of services in the field of construction, demolition, renovation of facilities, cleaning of tanks or equipment as well as cleaning, maintenance and repairs is the entity that provides the service, unless the service provision agreement provides otherwise.

The generated waste will be collected selectively and stored in a separate place on a drained surface until it is transferred to specialized companies, which will be documented in waste transfer cards. External entities collecting waste will have appropriate permits and technical capabilities for further waste management.

Any hazardous waste will be stored in tight, marked containers or containers in a designated place with a hardened floor, covered and protected against access by unauthorized persons.

Pursuant to Article 17 of the Act, the waste generator will introduce the following hierarchy of waste management methods:

1. waste prevention;
2. preparation for reuse;
3. recycling;
4. other recovery processes;
5. disposal.

Due to the above, the waste producer, in order to ensure safe and proper management of waste generated during the construction phase, will, among others:

- selectively store generated waste in an appropriate manner, in places designated specifically for this purpose,
- hand over waste for recovery or disposal to an authorized, specialist company,

- transfer to a landfill only waste whose recovery or neutralization in any other way would be impossible for technological reasons or justified for ecological or economic reasons,
- keep qualitative and quantitative records of waste generated, in accordance with the applicable regulations.

It should be emphasized that the priority when implementing construction contracts is the prevention of waste generation and minimization of its quantity. However, if this fails, both the producer and any other waste holder is obliged to ensure waste recovery in accordance with the principles of environmental protection. A special form of waste recovery is waste recycling, i.e. recovery that involves the repeated processing of substances or materials contained in waste in the production process in order to obtain a substance or material for its original or other purpose. Only waste that cannot be recovered should be disposed of, including: by depositing them in a landfill.

Only the transfer of waste to a person with appropriate authorizations, confirmed by a permit or entry in the register, transfers the responsibility for the waste to the person to whom it was issued.

13.2 FAZA OF EXPLOITATION

Due to the operation of the planned investment, the following types of waste may be generated:

about related to planned activities,

about social, living and utility purposes in connection with the employees' stay on the premises.

An indicative list, classification and estimated balance of waste that may be generated in the area of the analyzed project are presented in the table below.

In the case of waste from renovations, servicing of machines and equipment on the premises of the planned plant - in accordance with Art. 3 point 1 subpoint 32 of the Act *about waste* (Journal of Laws 2020.797, as amended), the producer of waste arising from the provision of such services in the field of construction, demolition, renovation of facilities, cleaning of tanks or equipment as well as cleaning, maintenance and repairs will be the entity providing the given service (unless the contract for the provision of services states otherwise). Therefore, the waste producer will be responsible for waste management. These companies will have appropriate waste management permits for recovery, recycling or disposal. The method of further management will be decided by the waste recipient.

If this is not possible, packaging contaminated with materials with the characteristics of hazardous substances (flammable, harmful to the aquatic environment, etc.) should be treated as waste and appropriate procedures for dealing with this waste should be implemented in the plant: separate a storage area ensuring safe conditions (tight floor, ventilation, marking, protection against unauthorized access) and transfer this waste to an entity entered in the BDO database.

Table 19. Classification of expected waste that may be generated at the plant - operation stage

No.	Type of waste	Waste group	Waste subgroup	Place, method of storage and methods minimizing negative impact waste to the environment	Code	Quantity
						[Mg/year]
1.	Other engine, transmission and lubricating oils	<i>Waste oils i liquid waste fuels (z excluding oils edibles and groups 05, 12 and 19) 13</i>	<i>Waste engine, gear and lubricating oils 13 02</i>	Way: selectively Place: tight, closed containers, properly described, placed in a separate place within the investment area	13/02/08*	0.3
2.	Sludge from oil dewatering in separators		<i>Dewatering waste oils in separators 13/05</i>	Way: selectively Place: Waste will be collected directly from the separator. This waste is extracted during periodic inspections carried out by a specialist company, which is also the producer of this waste and is responsible for its disposal.	13/05/02*	0.3
3.	Paper and cardboard packaging	<i>Waste packaging; sorbents, fabrics for wiping, filter materials i protective clothing not included in others groups 15</i>	<i>Packaging waste (including selectively collected municipal waste packaging) 15/01</i>	Way: selectively Place: in tight, properly labeled containers	15/01/01	21
4.	Plastic packaging				15/01/02	21
5.	Wooden packaging				15/01/03	11
6.	Multi-material packaging				15/01/05	3
7.	Mixed packaging waste				15/01/06	3
8.	Glass packaging				15/01/07	2
9.	Packaging containing residues of hazardous substances or contaminated with them				15/01/10*	0.2
10.	Sorbents, filter materials (including oil filters not included in other groups), wiping cloths (e.g. rags, cloths) and protective clothing contaminated with hazardous substances (e.g. PCBs)				<i>Sorbents, materials filters, wiping cloths and clothes protective 15 02</i>	Way: selectively Place: tight, closed containers, properly described, placed in a separate place on the investment site.
11.	Absorbents, filter materials, wiping cloths (e.g. rags, cloths) and protective clothing other than those mentioned in 15 02 02	Way: selectively Place: tight, closed containers, properly described, placed in a separate place on the investment site.	15/02/03	0.2		
12.	Waste equipment containing hazardous components other than those mentioned in 16 02 09 to 16 02 12	<i>Waste not included in other groups 16</i>	<i>Equipment waste electrical and electronic 16 02</i>	Way: selectively Place: stored in tight, described containers in a separate place room (until they are collected by external entities for recovery or, if this is not possible, disposal).	16/02/13*	0.6
13.	Waste equipment other than those mentioned in 16/02/09 to 16/02/13				Way: selectively	16/02/14

No.	Type of waste	Waste group	Waste subgroup	Place, method of storage and methods minimizing negative impact waste to the environment	Code	Quantity
						[Mg/year]
14.	Items removed from used equipment other than those listed in 16 02 15		<i>Product batches not responding requirements and products expired or unsuitable for use</i> <small>16/03/2019</small>	Place: stored in closed, described containers, placed in a separate place inside the hall.	16 02 16	0.3
15.	Inorganic waste other than those mentioned in 16 03 03, 16 03 80				16/03/04	3
16.	Food products that are expired or unsuitable for consumption				16/03/80	5
17.	Other batteries and accumulators				<i>Batteries and accumulators</i> 16/06	16/06/05
18.	Cytotoxic and cytostatic drugs	<i>Medical waste i veterinary (z exclusion waste kitchen and restaurants unrelated to Healthcare or veterinary)</i> 18	<i>Care waste perinatal, diagnosis, treatment and medical prevention</i> 18/01	Way: selectively Place: stored in closed, described containers, placed in a separate place inside the hall.	18/01/08*	0.1
19.	Medicines other than those mentioned in 18 01 08			Way: selectively Place: stored in closed, described containers, placed in a separate place inside the hall.	18/01/09	0.1
20.	Cytotoxic and cytostatic drugs		<i>Research waste, veterinary diagnosis, treatment and prevention</i> 18 02	Way: selectively Place: stored in closed, described containers, placed in a separate place inside the hall.	18/02/07*	0.1
21.	Medicines other than those mentioned in 18 02 07			Way: selectively Place: stored in closed, described containers, placed in a separate place inside the hall.	18/02/08	0.1
22.	Paper and cardboard	<i>Municipal waste including factions collected selectively</i> 20	<i>Municipal waste segregated and collected selectively (z excluding 15 01)</i> 20/01	Way: selectively Place: in tight containers located on a paved surface in a separate place on the investment site	20/01/01	9
23.	Glass				20/01/02	9
24.	Plastics				20/01/39	9
25.	Biodegradable waste				<i>Garden waste i parks (including cemeteries)</i> <small>20/02/2019</small>	Way: selectively Place: in appropriately marked, tight containers located on a paved surface in a separate place within the investment area

No.	Type of waste	Waste group	Waste subgroup	Place, method of storage and methods minimizing negative impact waste to the environment	Code	Quantity
						[Mg/year]
26.	Unsegregated (mixed) municipal waste		<i>Other municipal waste</i> <small>20/03/2019</small>	Way: selectively Place: in appropriately marked, tight containers located on a paved surface in a separate place within the investment area	20/03/01	160

The investor will transfer all waste generated on its premises to companies with appropriate authorizations and technical capabilities to manage or recover it. All hazardous waste will be stored in a way that minimizes the possibility of its release into the environment. The storage area is equipped with a tight floor and protected against unauthorized access.

The specific nature of the Logistics Center does not allow for the complete elimination of waste, however, properly carried out work allows their quantity to be maintained at a specified and justified minimum level. The methods that reduce the nuisance of waste management include:

- rational management of packaging waste,
- keeping devices and machines in good technical condition,
- monitoring the amount of raw materials and materials used as well as the amount and types of waste generated,
- waste management in accordance with the following principles:
 - waste will be stored selectively;
 - waste will be stored in the area to which the operator has legal title;
 - waste will be stored depending on its physical (state of matter, dimensions) and chemical properties: in the described containers and containers adapted to the properties of the waste - made of materials resistant to the effects of waste components; medical waste (expired medicines may be found in the hall and office) in tightly closed single-use polyethylene bags and in specialized single-use containers
 - hazardous waste will be stored in the described tight containers, equipped with tight closures;
 - waste will be stored in designated and marked (described) places, protected against weather conditions, on a tight surface;
 - it is forbidden to open bags containing medical waste (expired medicines may be found in the hall); if the bag is damaged, it should be placed in another larger one; storage of medical waste will be carried out in accordance with specific regulations,
 - waste storage places will be secured against access by unauthorized persons;
 - waste will be stored solely for the purpose of collecting sufficient quantities for transport;
 - waste will be sent for recovery first, and if this is impossible or unreasonable, the waste will be sent for neutralization;
 - waste will be transferred to specialized companies that have the required permits from the competent authority for waste management or entry in the register - directly or through waste collectors;
 - the transport of hazardous waste will be carried out in compliance with the regulations applicable to the transport of hazardous goods.

External companies with which the investor will sign contracts for waste collection will be equipped with specialized equipment and means of transport and will have the legal permits required by law for waste management activities.

13.3 FAZA OF POSSIBLE LIQUIDATION

The impact at the stage of possible liquidation of the facilities will be similar to that which occurred during the implementation of the investment. This impact will be temporary and will be limited in terms of its range. According to the currently applicable law, this impact is not subject to regulation. Nevertheless, efforts should be made to limit it by technical means (condition of machines and means of transport) and organizational means (avoiding concentration of means of truck transport).

If, for any reason, it becomes necessary to liquidate the described investments or very serious changes - the nature of the waste will be similar to that which characterized the construction phase. Since the Investor assumes that the operation and use of the hall will last for many years, waste related to the thorough modernization of the facilities or their liquidation will be generated in the long term (several dozen years). Currently, it is not possible to predict what the legal regulations regarding waste management will be - they are expected to change over the coming years. You can only be sure that the Owner of the facilities will comply with applicable law during any liquidation of the facilities - he will obtain a permit for the demolition of the facilities or another permit of a similar nature.

If it is necessary to carry out demolition works of the designed facilities, they will include:

- identification of the facility (measurements and tests) needed for full knowledge of the layout and condition of the structure as well as existing installations and networks,
- demolition of the facility in question and removal of rubble along with securing means of waste disposal,
- necessary stampings and scaffolding to protect the building and its defined fragments against accidental (uncontrolled) collapse at each stage of the works and to protect the structural elements to be left, i.e. diaphragm walls, ramp and lower layer of the foundation slab,

- erecting a temporary fence and required construction site signaling,
- construction and maintenance of entrances to the demolition site,
- securing the surroundings and entrances during demolition works,
- preparation of technical documentation for works and obtaining official approvals from relevant state administration bodies,
- preparation of documentation regarding possible transfers of external networks and cutting off all utilities along with obtaining appropriate permits.

The demolition works contractor will comply with occupational health and safety regulations, in particular he should:

- apply all health and safety measures at the construction site and on public and private roads and provide access to scaffolding, shelters, rain protection and protection of passers-by and vehicles, etc.,
- ensure the presence of security at the demolition site,
- do not load trucks on a public road without obtaining appropriate permits,

- provide and place safety signs on roads and at exits from the demolition site after obtaining permits from the relevant administrative authorities,
- make sure that the building to be demolished is not connected to the water, electricity or telephone networks and complete all appropriate formalities with local technical services,
- make sure that he does not dismantle networks that, if eliminated, could harm the proper operation of neighboring buildings,
- comply with the absolute ban on the use of explosives.

The demolition contractor will need to employ qualified and experienced technical personnel in the performance of demolition works, as well as have appropriate equipment, mechanical equipment and means of transport.

During the possible liquidation of the project, various types of waste may be generated, in particular:

- concrete rubble, concrete waste,
- steel scrap, metal mixtures, including reinforcement elements,
- used cables,
- wood, including wood from packaging,
- plastic waste,
- glass waste,
- construction waste, miscellaneous,
- used cleaning cloths and protective clothing, gloves, etc.,
- as well as municipal waste, including unsegregated (mixed) waste.

Some of the waste generated may be classified as hazardous waste.

The owner of the facilities will sign contracts for demolition works. Pursuant to Art. 27 of the Act, the waste producer (contractor of demolition works) will be obliged to manage the waste generated during the works. The waste producer will only commission entities that have appropriate permits to perform the obligation **for collection or processing and technical possibilities for waste management**(in accordance with art. 27 section 2). Waste will be transferred based on waste transfer cards, which will transfer the responsibility from the Contractor to the person to whom it is issued.

Pursuant to Art. 27 section 9 of the Act, the holder of waste may transfer it to a natural person or an organizational unit that is not an entrepreneur, specific types of waste, to be used for its own needs using acceptable recovery methods, in accordance with the requirements specified in the Regulation of the Minister of the Environment of November 10, 2015. *on the list of types of waste that natural persons or organizational units other than entrepreneurs may recover for their own needs, and permissible methods of their recovery*(Journal of Laws 2016.93).

Waste will be transferred to entities that have valid permits for collection or processing as well as technical capabilities to manage waste.

Demolition works will be carried out in accordance with the law currently in force. Therefore, the investment will not have a negative impact on the environment, both in terms of waste management and other environmental elements. Waste storage is not planned on the investment site.

13.4 QSUMMARY

1. The planned investment, at the operational stage, will be a facility with little environmental impact in terms of waste management. Proper waste management in accordance with the principles set out in waste regulations, storing waste in an orderly and organized manner and systematically transferring waste for management will minimize and limit the possibility of their negative impact on the environment.
2. There is no need to store hazardous waste generated as a result of the activities of the planned investment.
3. The obligation to regulate the management of waste that will arise as a result of maintenance, repairs, cleaning and renovations within the facility will rest with entities providing such services in the above-mentioned. scope.

14 DEMOLITION WORKS CONCERNING PROJECTS THAT MAY HAVE A SIGNIFICANT IMPACT ON THE ENVIRONMENT

Act on providing information about the environment and its protection, public participation in environmental protection and environmental impact assessments (art. 62a, section 1, point 14)

The investment area is undeveloped. No demolition works are planned for projects that may have a significant impact on the environment.

Attached to the information card:

1. Full documentation of calculations in the field of air protection and acoustics only in electronic version due to its size (CD).

2. Background

3. PZT

