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UN ECE

Implementation of the pilot SEA of the Orhei Town Master Plan

Strategic Environmental Assessment (SEA) of the Master Plan of the Municipality of Orhei

SEA Environmental Report

Chisinau-Orhei, April-June 2015

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List of abbreviations

SEA - Strategic Environmental assessment
MP - Master Plan
UNECE - United Nations Economic Commission for Europe
LAC - Limited Allowed Concentration

Background and purpose of this report

Strategic Environmental Assessment (SEA) promotes sustainable development by mainstreaming environment into economic development at a national and local level. SEA is a well-established planning and environmental governance tool/system set out in the UNECE Protocol on SEA to the Convention on Environmental Impact Assessment (EIA) in a Trans-boundary Context. It ensures that development plans in key sectors such as energy, water and waste management or urban planning with likely significant adverse environmental impacts take into account environmental (and health) considerations.

Since 2004 the UNECE secretariat has provided technical assistance and capacity building support to foster ratification of, and accession to, the Espoo Convention and its Protocol on SEA in the countries of Eastern Europe, Caucasus and Central Asia. The secretariat has a broad experience in assisting the countries in improving their legislative and institutional frameworks for the implementation of both treaties. The tailor made training and pilot projects provided by the UNECE have proven to be efficient in building the necessary institutional and human capacities in countries for the effective application of EIA and SEA to their development projects, plans and programmes.

At the six Meeting of the Parties to the Espoo Convention, in June 2014 in Geneva, the Government of the Republic of Moldova (RM) requested the secretariat to assist the country in development of national SEA systems and practices and to raise awareness and understanding of the benefits of SEA among various stakeholders. Based on this request the work-plan of the two treaties for 2014–2017 includes several relevant activities such as: (a) finalizing drafting of national legislation on SEA; (b) a pilot application of the SEA procedure to a draft Government plan or programme. The funding for the activities is secured through the EU funded programme Greening Economies in the Eastern Neighborhood (EaP GREEN).

The Government of Moldova selected the Master Plan of Orhei Town as a strategic document for a pilot application of SEA procedure. The development of the plan extends from the end of June 2014 to the end of May 2015.

The development of this SEA Environmental Report is carried out within the Pilot Project, which started in June 2014 and it is based on the following provisions of the UNECE Protocol on SEA:

1. For plans and programmes subject to strategic environmental assessment, each Party shall ensure that an environmental report is prepared.

2. The environmental report shall identify, describe and evaluate the likely significant environmental, including health, effects of implementing the plan or programme and its reasonable alternatives. The report shall contain such information specified in the general outline of the report and taking into account:

a) Current knowledge and methods of assessment;

b) The contents and the level of detail of the plan or programme and its stage in the decision-making process; The interests of the public; and

c) The information needs of the decision-making body.

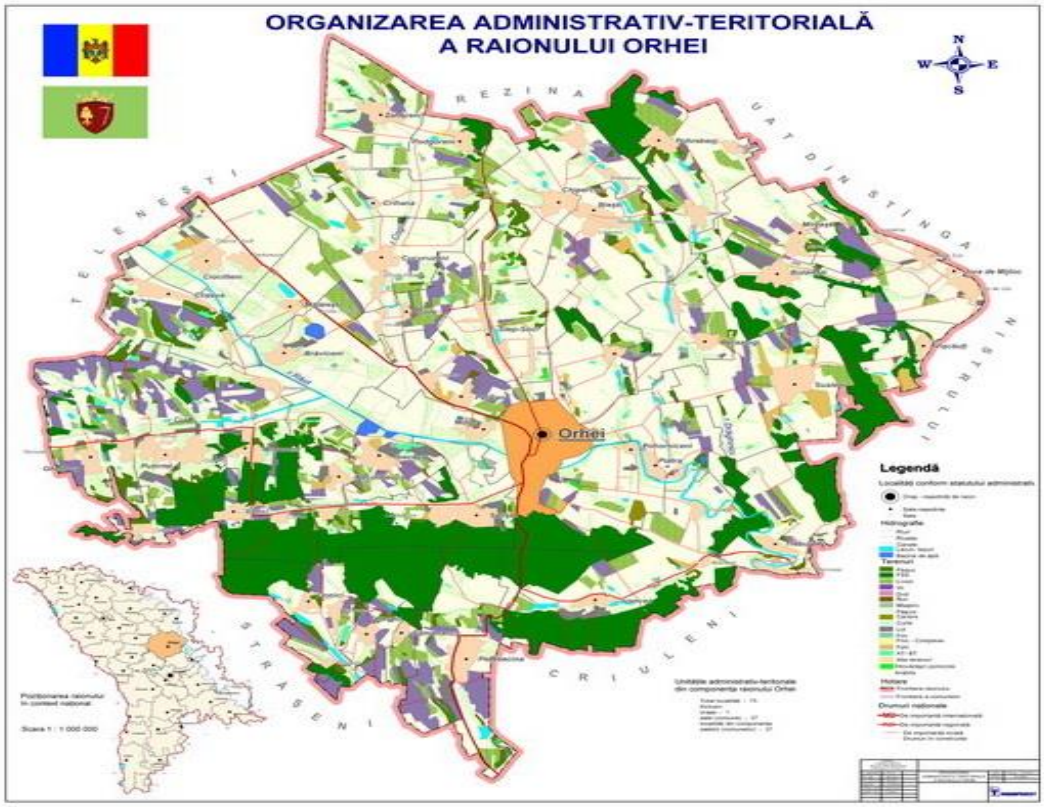
The information presented within this SEA Environmental Report were collected within the whole SEA process, including initial scoping consultations (July 2014), SEA Scoping Report development, SEA Scoping public consultations (17 December 2014), during several working meetings in Orhei city with major stakeholders, and eventually during the joint public consultations of the draft Master Plan (as of April 2015) and draft SEA Environmental Report (13 May 2015).

The Environmental Report presents the major environmental problems of the city, examines the way they are reflected in the Master Plan development process, identifies potential environmental effects and proposes recommendations for actions and alternatives and measures, that need to be taken to prevent, minimize or mitigate potential negative impacts associated with the Master Plan implementation. It also outlines principles and indicators for the monitoring of these effects.

CHAPTER 1. The content and the main objectives of the Master plan and its link with other plans or programmes

The Orhei city it is located in the centre of the Republic of Moldova, 45 km north from the capital Chisinau, on the highway Chisinau-Balti, on the banks of the Raut River. The city occupies 1402 ha of territory with a diverse landscape influencing the urban composition.

Although it has one of the biggest natural monument protected by state "Defileul Orhei", a number of significant historical, cultural and touristic sites from 16-19 century, the city was not included in the territory of the National Park Orhei,



Master Plan preparation process

The "owner" and the beneficiary of the Master Plan preparation project is the City Council Orhei and responsible for the overall work is the Mayor of the Orhei.

The updated Master Plan is to be developed in accordance with the provisions of the *Program of midterm development of urbanized plans at the level of localities 2013-2016*. According to the Plan of Actions of the Program (annex 2 of the decision, item 4), the development of the Updated Master Plan Orhei was included and budgeted for the year 2014.

The Master Plan update is prepared by the company ISC Land Support Systems, under the supervision of the Chief Architect of the city.

The development of the Updated Master Plan of Orhei started in the spring of 2014. The objectives and planning process were presented and discussed during the Workshop on SEA in Moldova, 29-31 July 2014.

The Updated Master Plan was expected to be developed and approved by the end of May 2015. The extension of the originally envisaged deadline (February 2015) was linked with the need to collect additional data and take into consideration the parliamentary election period in Moldova (October-November 2014) and local elections (May-June 2015), as well, harmonization with the SEA process.

There were planned two public consultations of the draft plan:

- Mid December 2014 for the identification/coordination with general public of the options and alternatives for the proposed amendments/ changes and development proposals (in parallel with the public consultations of the SEA Scoping Report). Consultations took place on December 16, 2014 and their findings were incorporated in the final version of the SEA Scoping Report;
- In May 2015 for the discussion of the final draft of the Updated Master Plan and Environmental Report.

The consultation with local governmental agencies and organizations was planned to take place in the end of April 2015 and final approval by the Orhei City Council – end of May-June 2015.

The content and main objectives of the Master Plan and its links with other plans and programmes

The overall goal of the development of the Orhei Master Plan (amended version) is to reflect the current social and economic development situation in the Orhei city and to update the existing Master Plan (approved in 2008). The new Master Plan is supposed to include the digitized cadastral information, further develop functional zoning and take into consideration the national and local development and sectorial strategies and plans, relevant for the locality. Since 2008 a significant number of national and regional development strategies and plans were approved. There has been a development in social and economic conditions of the city, a growth in small and medium business and service sector, and more investments in infrastructure and public services took place.

The **major goals** of the Master Plan, included in the general description of the plan, based on the provisions of the current national policy documents and requirements of the sectorial institutions, are:

1. Development and adjustment of the existing urban plan to the new social and economic conditions, and relevant strategies and programmes;
2. Ensuring functionality of the territorial development;
3. The major development of the city in the western direction (City Development Zone "West") with the use of the territory between the transit highway and the residential areas;
4. Increase of the coefficient of land use on the existing urbanized areas in order to compensate the lack of new development areas;

5. Delimitation of the historical site of the old city (where major historical, and architectural monuments are located);

6. Improving of the transportation scheme of the city by restoration of parallel links and re-direction of transport channels; construction of new roads, which will unite the city districts; building of a road between the city centre and district Lupoaica to reduce the pressure on the centre; construction of a new transit highway in the South-East part; adjustment of the transport scheme with the change/reducing of the alignments from 50 to 30 meters;

7. Allocation of additional territories for the industrial facilities;

8. In the area of water resources management: Finalization of the transition to the centralized water supply system; enlarging of the sewerage network to allow for connection of all urbanized areas; closure of old waste water treatment plant; greening the river protection zones;

9. For the soil protection: closure of the stone mines and re-cultivation; flooded territory protection; establishment of green zones on the degraded lands;

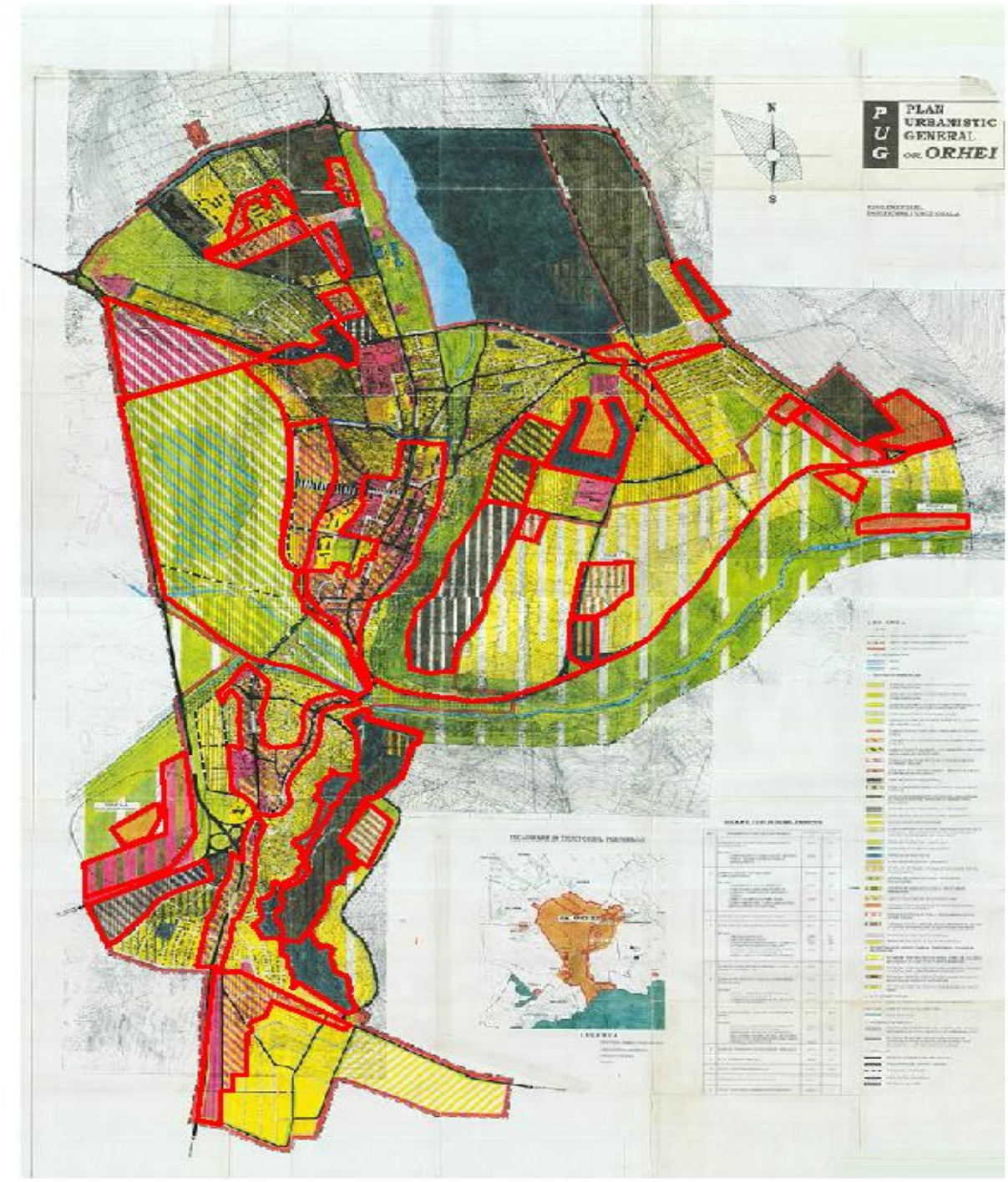
10. Uniting dispersed green areas into an single green zone of the city, with the goal to integrate into the National Park Orhei; creation of the recreational areas in the central and west part of the city; rehabilitation of the city park and of the Raut River valley; delimitation of the state protected natural areas (on the banks of the Raut River);

11. Closure and greening of the territory of the old municipal landfill: re-cultivation of the municipal waste landfill, in the context of planned regional planning of the waste management/collection, with the maintenance of the waste selection line as part of the regionalization approach;

12. Including of the newly developed infrastructure on the maps: waste supply and sanitation, gas and electricity supply lines

13. Building of the city rain water collector.

Map I.1. Draft of the General Map of the Master Plan (working version, March 2015)



Other relevant Plans or Programmes

In this section, information is provided on various plans and programmes prepared on the national and regional level that are forming the planning context for the Orhei Master Plan preparation process. Their objectives and provisions needs to be taken into consideration in the process of preparation of Orhei Master Plan and its SEA. The key identified strategic documents relevant for the Orhei Master Plan are listed below:

Program of mid term development of urban plans at the level of localities 2013-2016

The Program was approved by the Governmental decision Nr. 493 of 04.07.2013 in order to implement the provisions of the Law nr. 835-XIII of 17 May 1996 on the principles of urbanism and territorial development and of the Law nr. 68 of 5 April 2012 on the approval of the National Strategy of decentralization and of the Plan of Actions for the implementation of the National Strategy of decentralization for 2012-2015; According to the Plan of Actions (annex 2, item 4), the development of the Updated Master Plan Orhei was included and budgeted for the year 2014.

National Regional Development Strategy 2013-2015

The National Strategy for Regional Development 2013-2015 (hereinafter – Strategy) is the main strategic planning document of the regional development policy. This document outlines the prospects of regional development in the Republic of Moldova, as well as defines instruments and mechanisms to accomplish strategic objectives. At the same time, the Strategy is a logical continuation of the National Strategy for Regional Development approved by the Government's Decision No.158 dated 4 March 2010 and implemented within 2010-2012.

Regional Development Strategy Centre 2010-2016 (updated, 2012)

The Regional Development Strategy (RDS) for the Central Development Region (CDR) is a public policy document that targets the medium-term development phase of the Centre Development region, in which the Orhei Municipality is located.

National Environmental Strategy for the years 2014-2023 (GD nr. 301 of 24.04.2014)

The general objective of the Strategy is the creation of an efficient environmental management system, which would contribute to the increase in the environmental factors' quality and guarantee the right of the population for a clean, healthy and sustainable environment.

Strategy for wastes management in the Republic of Moldova for 2013-2027 (GD nr. 248 of 10.04.2013)

The Strategy has the major objective to set up the directions for the actions of development of infrastructure and services necessary for the adequate waste management with the goal to protect the environment and the public health.

Strategy for the social-economic development of Orhei city for 2014-2020 (2013)

The Strategy set up the strategic framework for the development of the city and the roles of the local public authorities, so that the municipality will achieve a level of European model of development with a favorable life conditions, sustainably developed economy and quality and accessible services, with the protection and rational, efficient use of resources.

More detailed list of policy documents with environmental goals are reflected in the Annex 2 and the evaluation of their relevance to the Master Plan are presented in the Annex 3.

CHAPTER 2. The relevant aspects of the current state of the environment, including health, and the likely evolution thereof should the Master plan not be implemented

Official data and statistics were used while analyzing and estimating the current state of the environment. Reports of the municipal institutions of Orhei (e.g. MC Apa-canal, MC „Heating power plants and networks") and the reports of the local ecological inspection were key sources of information for the analysis. Thus, the current state of air pollution from enterprises in Orhei was done by the Institute of Ecology and Geography of the Academy of Sciences in their report of 2013. Furthermore, the existing tendencies and likely future trends were estimated in order to establish the environmental baseline (i.e. likely evolution of the environmental conditions should the Master Plan not be implemented (zero alternative). The key environmental features of the concerned territory are described below:

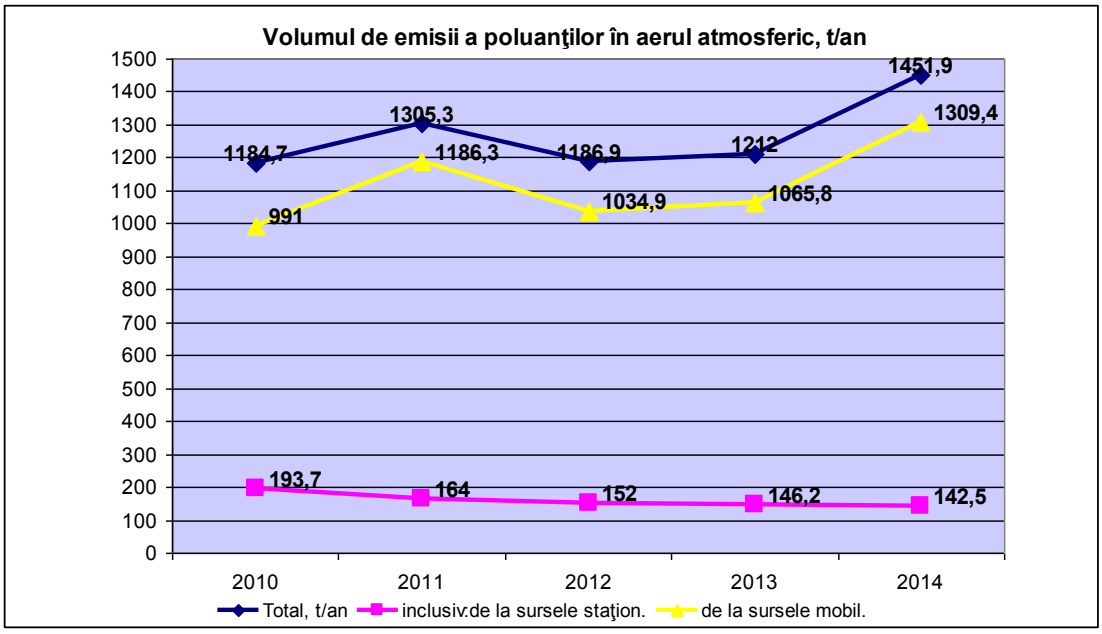
1. Atmospheric air

Orhei does not have any permanent air quality measuring stations, thus no systematic monitoring is available. The level of pollution is only estimated based on the situation in similar cities. It is considered to be satisfactory, since the limited allowed concentration (LAC) is not likely to exceed 0,5 LAC.

According to the statistical reports on emissions of pollutants, there is a growing tendency of total air emissions; while there is a parallel considerable decrease of pollutants coming from stationary sources and a growth of pollutants coming from the mobile sources. (See chart II.1).

In 2014 the stationary source emissions constitute 146,2 tons per year- 12 %, while the mobile resources emissions constitute 1065,8 tons per year- 88 %. The decrease of pollutants that come from the stationary sources is attributed to the decline of the economical operations and the quantity of the used fuel, as well as by the implementation of new eco-friendly technologies. The growth of emissions coming from mobile sources will keep increasing due to growing individual automobile use (which has potential for further grow).

Chart II.1 Air pollutants emitted from stationary and mobile sources

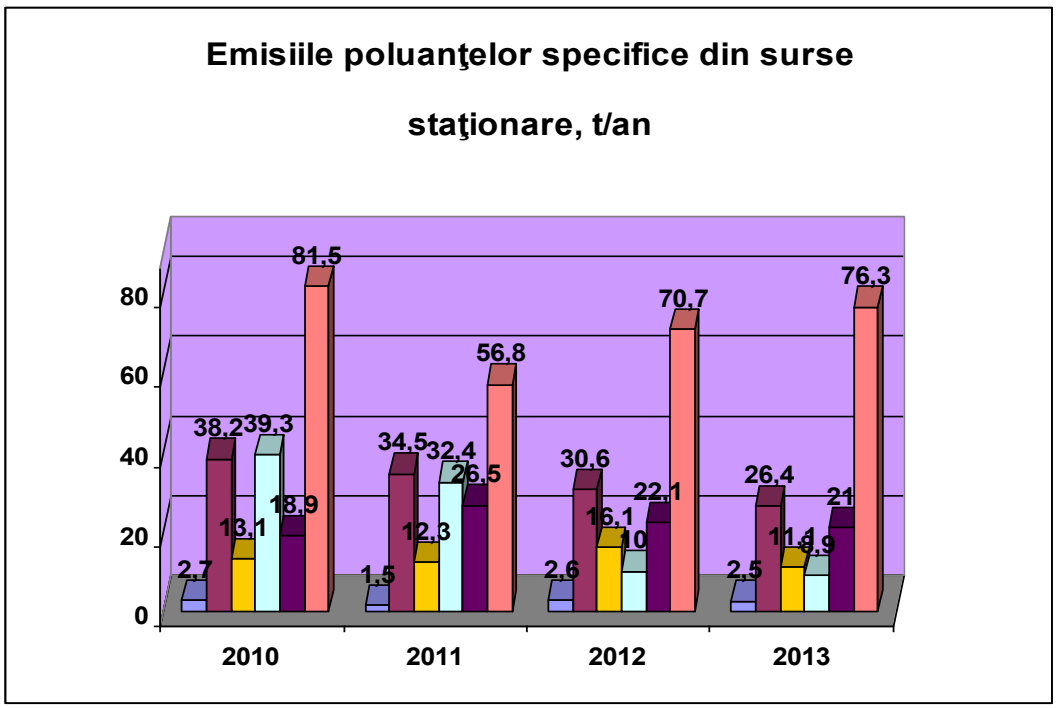


Source: Annual Report, Ecological Inspection Orhei, 2014

According to existing statistics there are 76 comercial subjects that have pollution sources. The total number of organized stationary sources of air pollution is of 438 with only 64 installations equipped for capturing solid substances. The actual volumes of pollution is likely to be higher the official statistics presents, as it is acknowledged that not all the companies present the required statistical reports about their emissions.

The basic toxic substances that come from the stationary sources (tons per year) are: Nitrogen Oxide (11,1), Carbon Oxide (26,4), Sulfur Dioxide (2,5), Hydrocarbon (8,9), volatile organic compounds (21,0), and others, including weighted substances (76,3). (Chart II.2)

Chart II.2. Emission of specific pollutants from stationary sources, tons per year



Source: Annual Report, Ecological Inspection Orhei, 2014

The main pollution sources of the atmospheric air

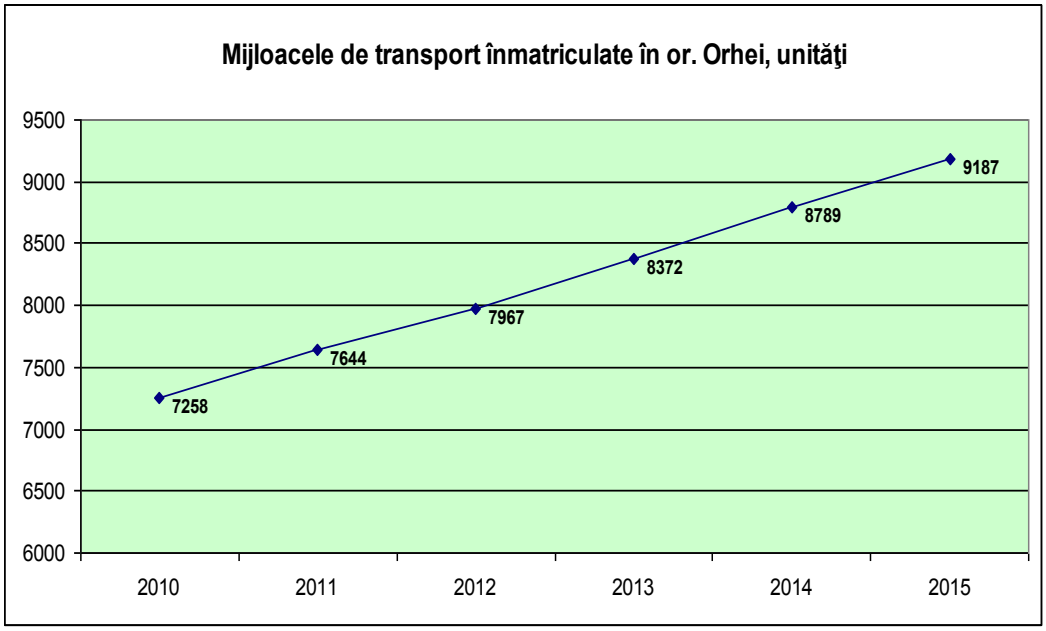
Then main sources of air pollution in the city of Orhei are the vehicles circulating on the street network, the heating plants and the industry. It is quite difficult to estimate the impacts of the individual sources of pollution on the local atmospheric air quality since this territory is not covered by any monitoring program..

Transport

The last years show a growing tendency concerning the number of cars and other transportation vehicles in the city (Chart II.3). This increase the quantity of sources of pollution and the volumes of emitted pollutants, too. The average annual growth of units of transportation is of 5 %.

Photo: Central Street of the city and parking. National highway crossing the city

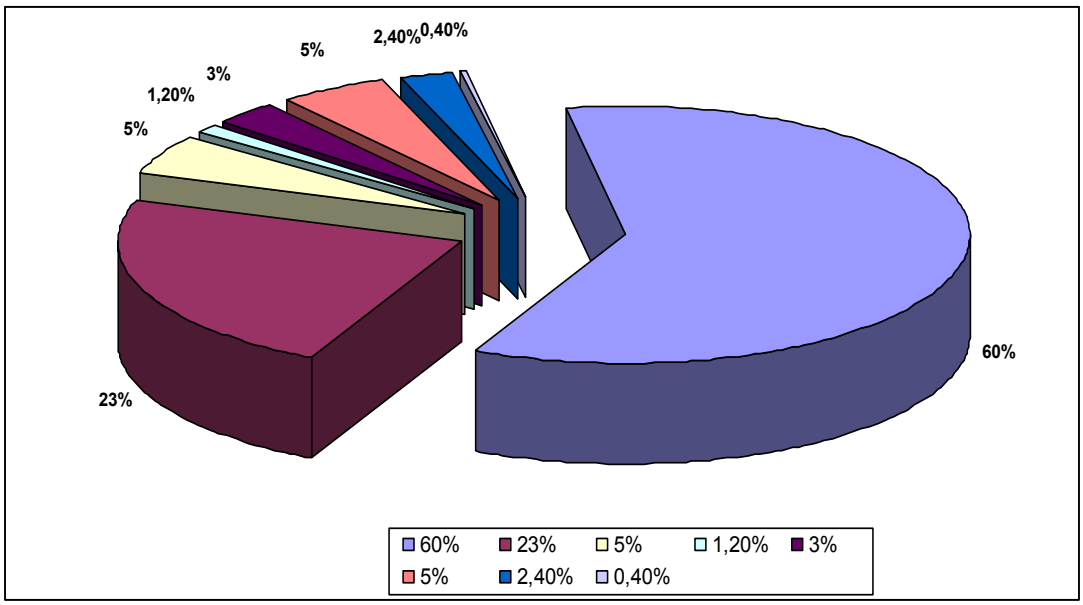
Chart II.3 Number of means of transportation registered in Orhei, units



Source: Ministry of information technologies and communications

In 2015, 9187 transportation units were registered in Orhei. The estimated emissions constitute 1065,8 tons per year. It should be taken into account that 80 % of these vehicles are older more than 10 years. Out of the total number of the registered vehicles- 60% are passenger cars, 23 % are lorries, 5 % are busses, 7 % are hind-carriages and semitrailers and 5 %- other vehicles. (Chart II.4).

Chart II.4 The means of transportation registered in Orhei



Source: Ministry of information technologies and communications

The vehicle emissions and the traffic create a much tensioned situation, especially in the centre of the city. Consequently, when the level of pollution from transport increases, the comfort of life of the neighborhood territories is affected. Furthermore, the absence of

parking lots, proper stops for public transport, the poor quality of the roads, the unsatisfactory traffic management and the lack of intersection safety regulation, further contribute to the negative impact on the environment.

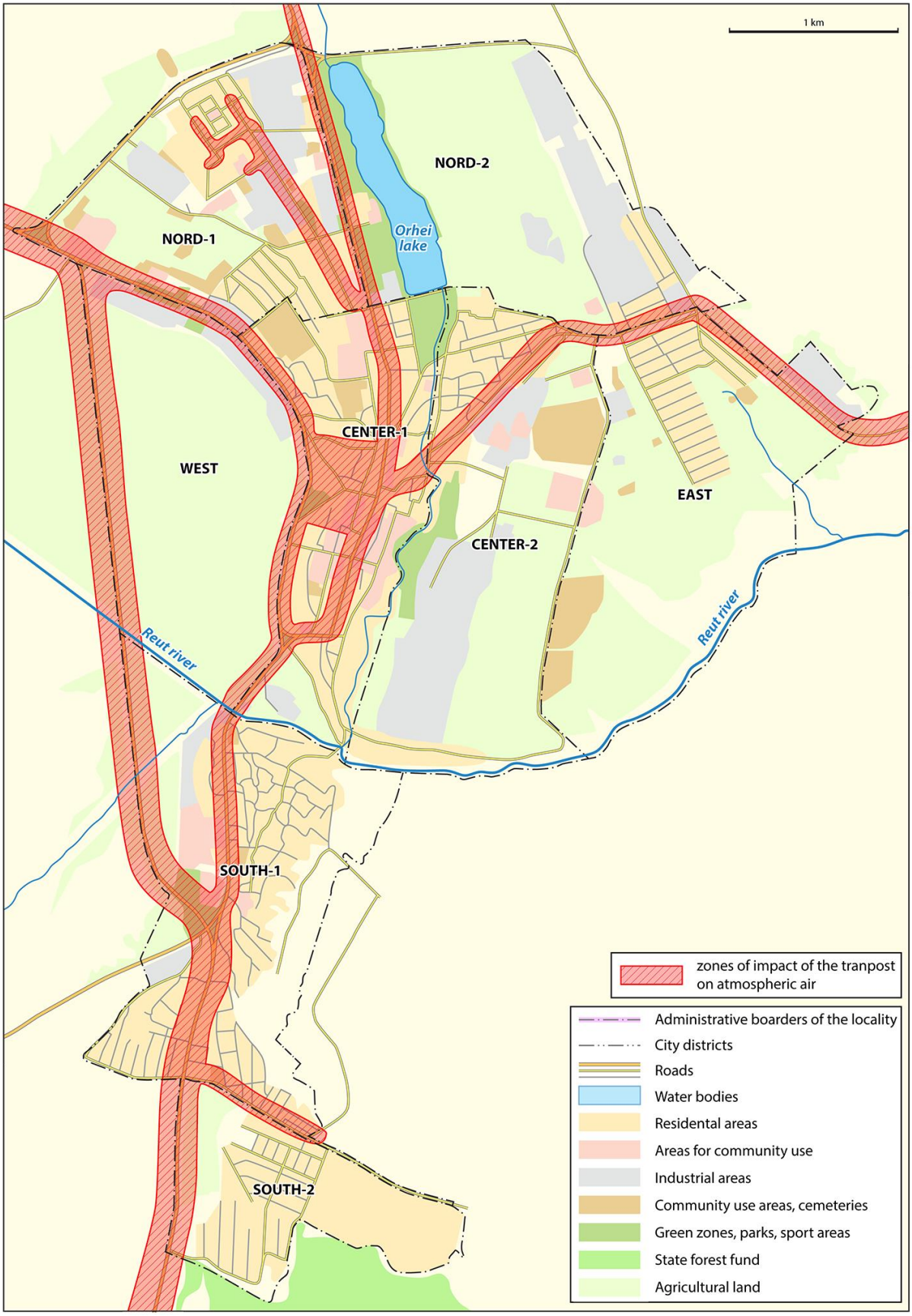
On the map II.1 are displayed the zones which are affected the most by the transport system of the city.

The most traffic-affected streets are - Vasile Lupu, Eliberarii, Unirii, Chisinaului, Mihail Sadoveanu, Chostache Negruzzi, 31 August, the central part of the city and the intersections at the entrance and exit of the bypass road. When the cars use low-quality roads (for instance, the bypass road from the intersection to Rezina and around the city to the industrial zones), a substantial increase of noise and vibration occurs, accompanied by approximately 20 % growth of fuel usage. This causes supplementary emissions of toxic substances into the atmosphere. Also the gravel roads of the city districts Bucuria and Slobozia, often cause big clouds of dust that affects people living in those zones.

The key emissions into the atmosphere from vehicles are: Nitrogen Oxide, Oxide of Carbon, Sulphur Dioxide, Hydrocarbon, Benzo[*a*] pyrene, aldehyde, lead and its compounds. Because of the lack of information it was impossible to perform the estimation of ground concentrations of pollutants from vehicles in Orhei. However, using the data from the highways with a similar level of agglomeration and concentration of pollutants can be estimated that during specific weather conditions the pollution can exceed the LAC more than 3 times.

The growth of emissions of toxic substances from the vehicles into the atmospheric air is a **very important** tendency and it will very likely to continue as the current level of car ownership and individual car use are in Moldova is still lower than that of other transition or developed countries, hence the potential for further grow exists. Its effects on the current situation in Orhei are considered negative, yet reversible. The air pollution thus will **continuously** affect the health of the population and the flora of the territory, because the traffic is at high levels during most of the week, with small decrease during weekends.

Map II.1 Zones of main impact of the city transport system on the atmospheric air



2. The Heating System

Currently, the city relies to a decentralized scheme of heating supply of the urban and industrial districts as well as the private houses in Orhei. The main sources of heating are the local (boiler houses). This system is characterized by a large number of chaotically located private heating units. These are placed regardless the ecological requirements and their cumulative effect on the environment.

The city has 64 functioning boiler houses on natural gas, 16 of which belong to a residential complexes and public buildings and the other 48 belong to commercial subjects. No data concerning the number of private boiler houses is available.

The public heating infrastructure – 16 boiler houses and 3,634 km of heating systems are maintained by "Heating plants and networks". The total capacity of these heating units is 11133 kWh (apartment boiler houses, boiler houses in schools Nr. 1, 3 and 4, gymnasiums, kindergartens and other public buildings).

In 2013 the total amount of pollutants from 64 boiler houses was estimated of 55 tons, the main emissions being – Carbon Oxide and Nitrogen Oxide.

The ecological requirements are usually not taken into account while locating the boiler houses. These are placed chaotically and there is no systematized information about their performance (dislocation, capacity, and other characteristics). Consequently, it is impossible to make a thorough analysis and assess the impact of the thermo-systems of the city on the environment.

The tendency of enlarging the number of autonomous boiler houses in the city will remain constant in the future and its importance is qualified as a **significant** one, namely due to the potential impact on the local air quality and by extension on public health. Estimation of such effects could not be done within the framework of this project due to the lack of data on air quality; however it is considered that an optimization and complex development of the heat-supply systems of the city would improve the air quality situation. Considering the continuous operation with the maximum performance during the winter time – the impact of the heating system of the city on public health and environment is considered as a permanent one.

There are no power stations in the city. The city is supplied with energy by the electric power transmission located along the West and South-east of the city. It crosses the territory of a residential complex and agricultural lands. The electrical grid of high voltage transmission is both hideous and its electro-magnetic waves can have a harmful impact on the environment.

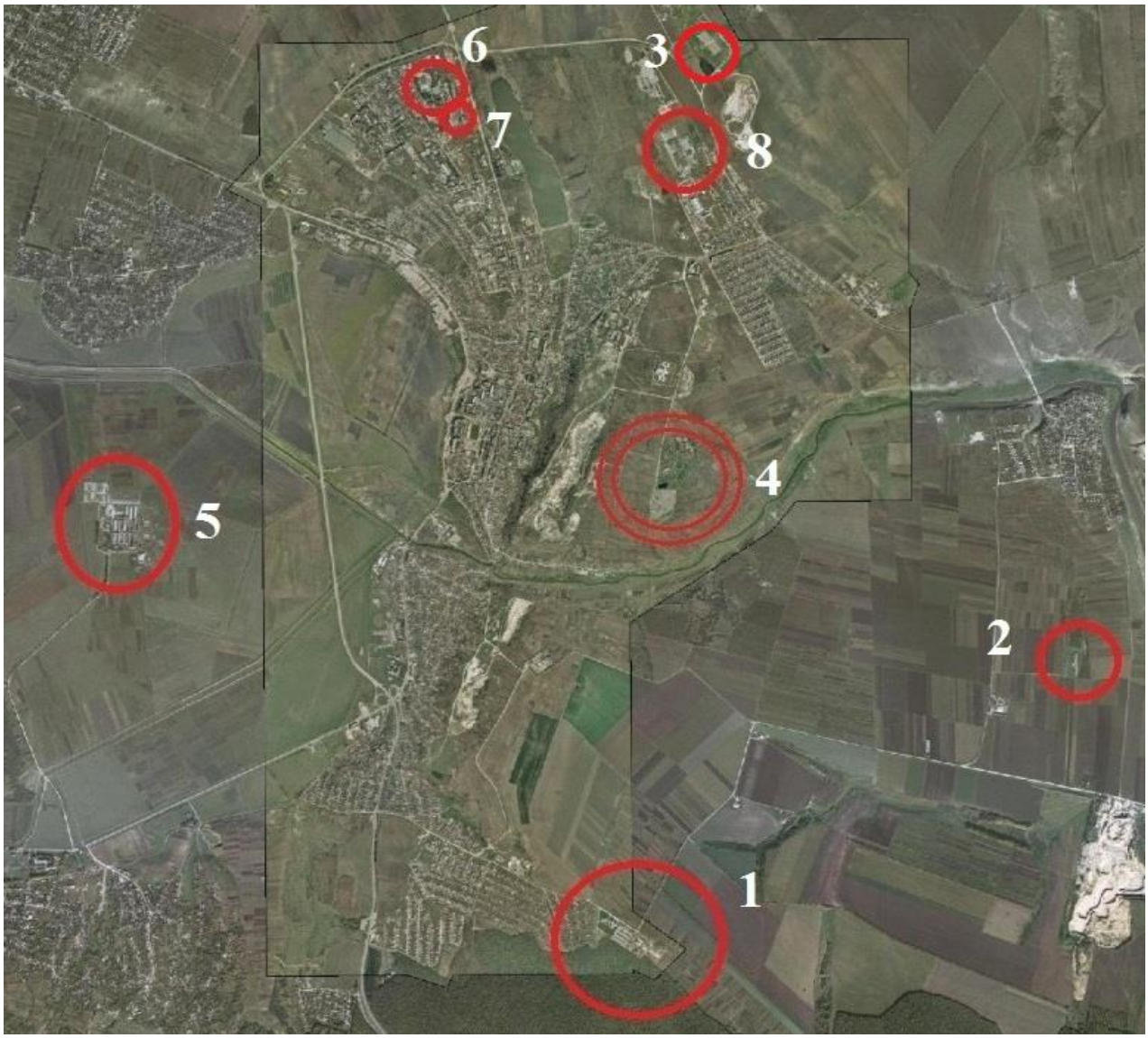
The Master Plan puts forward the idea of restructuring and replacement the electric power supply network in the city, because it impedes its development. Their placement in different areas will make it possible to use the land more efficient and place different types of constructions or living areas.

The industrial complex of the city is composed from five industrial areas, which account more than 70 industrial facilities from different economic sectors, completed by

commercial objects and other infrastructure. Presently, Orhei does not have enough potential to develop industrial capacities matching the level it reached in the 1970-1990s.

Due to the economic transition occurred in the last 15-20 years, an evident decrease of the industrial capacity can be observed. Also, structural changes of industries have happened. The number of small and medium-sized enterprises has grown. These are typically oriented to processing of the agricultural crops and other products. Consequently the number of trading and service companies has grown, too. The most popular companies and types of economic activities in Orhei are: winery, canned and processed fruits and vegetables, bread and bakery industry, brewing and cool beverages, meat and dairy products, textiles, extraction of mineral resources, transportation services, construction and household services.

Most of these companies are classified in the sanitary protection category IV and V, meaning having little harmful influence on the environment. Considering the constantly growing number of the registered companies, there is a potential for a cumulative impact on the environment of Orhei, and/or to the worsening of the quality of the atmospheric air in the vicinity of areas with concentrated industrial activity.



Map II.2 Location of the major industrial facilities - air pollution sources in in the city: 1. Î.S. „Moldsuinhibrid". 2. SRL "Orhcojdoi". 3. Î.I. "Grigore Guja". 4. Old waste water treatment plant and Municipal wastes landfill. 5. SC „Luna Clara". 6. S.A. „Orhei-Vin". 7. S.A. „Orlact". 8. S.A. S.A. „Orhei-Vit". Source: Institut of Geology and Ecology, 2013

The main individual sources of pollution in Orhei are: the company of hybridization and breeding pigs "Moldsuinhibrid", meat processing company- ÎI "Gorbotovschi", companies providing stone supplies SRL „Pietriș Com", SRL „Carier Ivanos", pavement making firm SRL "ReproconGrup", SA „Drum", juice producing company "Orhei-Vit" SA, dairy products factory SA "Orlact", winery production SA «Chateau Vartely", SA"Orhei-vin», SA "ARI" Orhei, bakeries- SA „Fabrica de pîine", SRL „Frazepan", SRL „Brodetchi", furniture factory ("Orhei Mobila" SA, transportation companies (SA CA 2811 and SA CA 2830), tobacco drying company SRL „Rogres" and others.

A special place in this situation has the old waste water treatment plant and the un-authorized municipal wastes landfill, which will be examined below in para 2 and 4.

There is necessary to mention, that the major concern for the population are the companies, which have specific emissions of substances with unpleasant smell, which create unfavorable conditions for living. Perhaps the most important in this specific category is the company for hybridization and breeding of pigs "Moldsuinhibrid", located just outside the Eastern part of the city.

An additional concern of the population is the noise and dust from the open stone mines (see also Land resources).

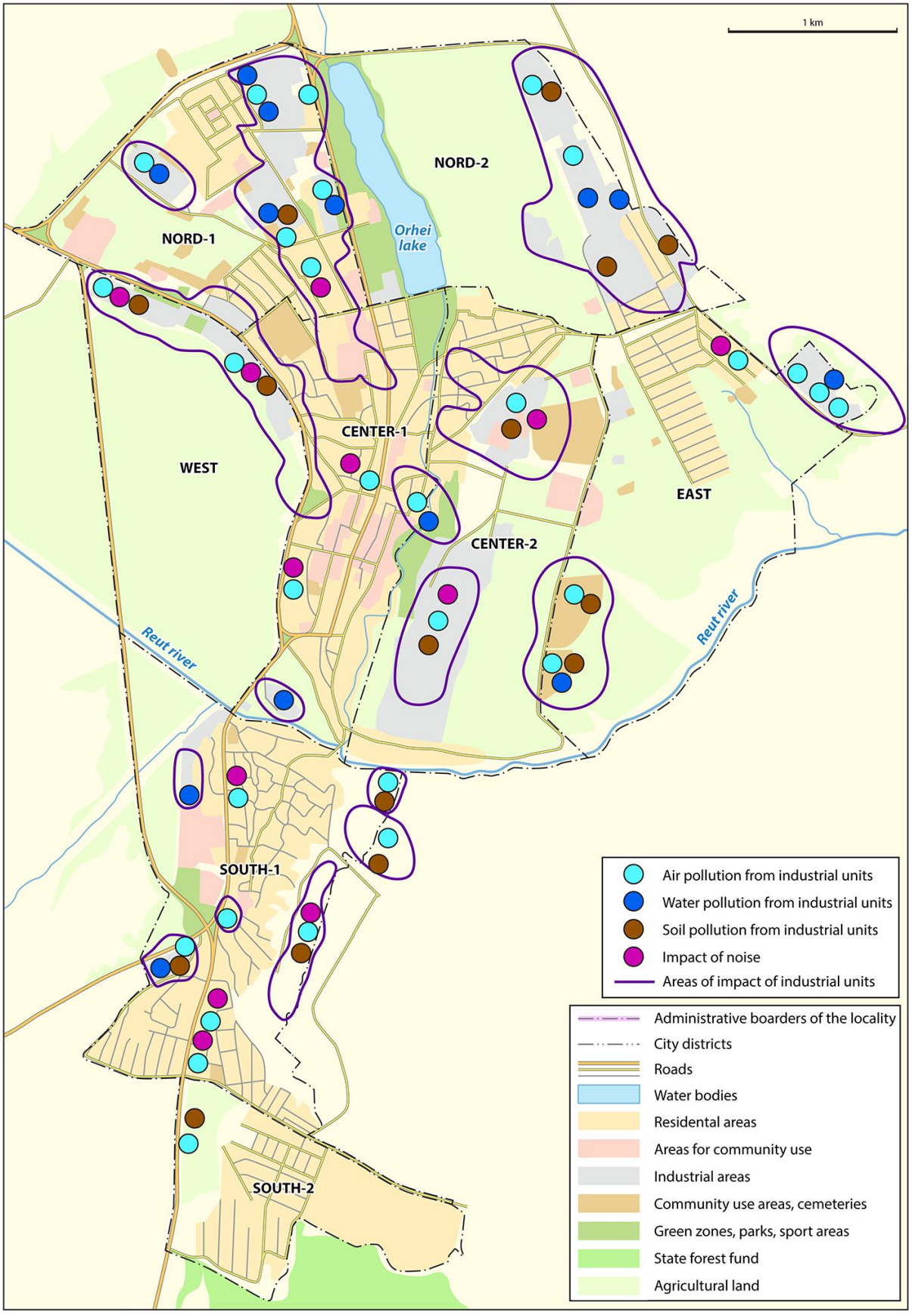
On the Map II.3 are presented the zones of impact of industrial units on the environment. From its spatial distribution we could conclude, that the Central and Northern part of the city are mainly affected by the industrial pollution. During the north-west winds the pollution is concentrated in the city centre and its lower parts.

The general past tendency towards the decreasing of the industrial pollution will not likely to continue in the future, as there is a prospect for the economic recovery and already indicated increase in the number and size of the industrial companies in the future.

In the mid-term period, according to the social-development strategy of the city and national policy documents, attraction of investments into the development of industrial sector will take place, which, in effect, will lead to the growth of industrial sector and acceleration of economic activities. This might bring about new jobs and increase of income of the population, and contribute to the improvement of the social-economic situation as such. On the other hand, new industrial units could have an impact on environment and public health, namely due to the air pollution in the area of their placement. At the same time for the placement of new industrial units new territories will be required and have to be allocated within the city area. Therefore, in order to minimize negative impact on the environment and public health and creation of a favorable environment in the city, it is proposed:

- To transfer the industrial units, which cause the biggest impact on environment, out of the city or living areas;
- Placement of new industrial units far from living areas, taking into consideration the major wind directions.

Map II.3 Zones of impact of industrial sector on the environment



Considering the impact of various economic sectors on the atmospheric air the general conclusion could be made, that the major impact on the air quality takes place within the urbanized area, whereas there is less impact on the surrounding territories, such as the natural monument “Defileul Orhei” and the National Park “Orhei”.

The tendency of increasing of the pollution from the transport is considered constant during the last 10-15 years. This is also due to the fact, that according to the national legislation it is allowed the import of old cars up to 10 years old. Due to that, the pollution of air from transport will continue to be a priority environmental problem of the city. In order to reduce the dispersed pollution from heating plants and individual boilers, which could not be properly assessed, there is a need to adopt a complex approach for the development of the heating system of the city.

Likely future development ifthe Master Plan will be not implemented

In the Strategy of social-economic development of the Orhei city for 2014-2020 one of the major goals is to ensure a sustainable development of the city. In case, if the Master plan will not be approved, with all adjustments and alternatives, these strategic objectives could not be achieved and this situation will lead to the decrease of the quality of environmental components.

In the future, with the increasing number of economic subjects and households, without a proper set up heating system, without optimization of the placement of new objects taking into account the environmental requirements, as well as industrial units or communal services utilities, the level of air pollution will likely significantly grow..

At the same time, in the absence of a master plan, and, consequently, without the new decisions on the city- and bypass roads to ensure additional capacity connections between city districts and easier transit, the impact of transport on atmospheric air and public health will be higher, especially in the central and lower parts of the city and will reduce the level of comfortable leaving in this areas.

3. Water resources

Water bodies

The main water bodies of the city are the Raut River, small rivers Ivanos and Vatici, and the city lake.

The Raut River is part of the main rivers of the country, with a length of 286 km. The river starts in 2 км upper the village Rediu-Mare of the Dondusani rayon. The river is a valley one, with small meanders and tributaries with insignificant water volume and speed of flow.

Photo: Raut river at entrance to Orhei, pollution sources and at exit from the city

The catchment area is 7760 km², the length of watercourse is 286 km with, an average slope of 0, 59 %. The width of the river valley in the district Orhei is 5-10 km, of which 20-60 m is the river channel, and floodplain from 1, 5 to 4,0 km. The river plains are ploughed, used for perennial crops, or forested. In the territory of the city the river is limited by dams. The estimated flow rate is of 625 m³ / s.

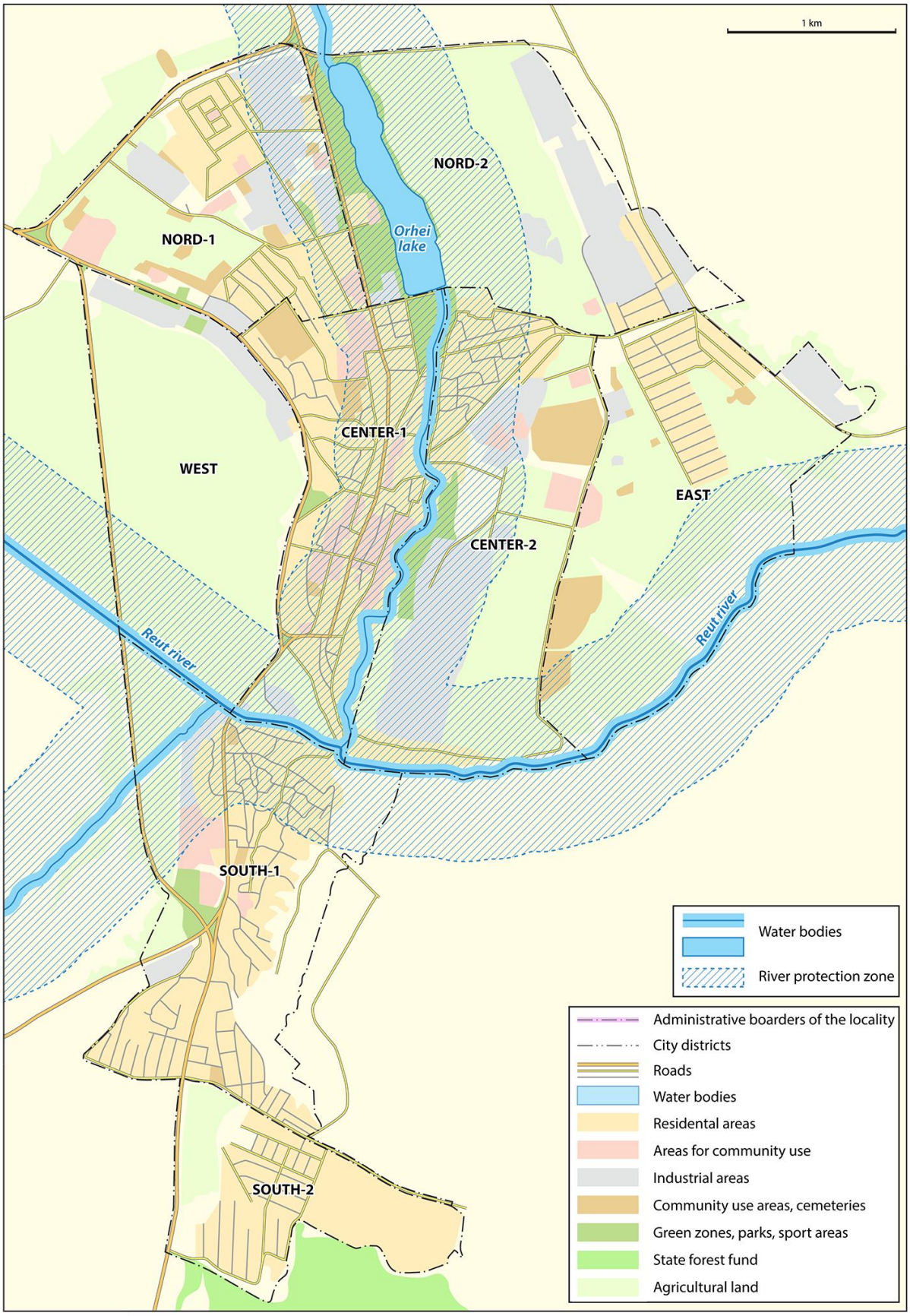
The Ivanos River starts in the Step-Soch village of Orhei rayon and its length is 20 km. The estimated flow rate is 75,6 м³/s, while in case of damage of the dam of the upstream lake the resulting wave is estimated to have flow rate as high as 692 м³/s. The depth of the stream is from 1, 75 to 3, 7 m, but can grow up to 4, 62 m during the emergency peak flow. Thus, the associated flooded area could be of 10, 5 ha, including 2,5 ha of urbanized areas and the number of flooded houses could be as many as 250.

Photo: Ivanos river in the city center; City lake and recreation area

The Vatici River is from the small rivers category and starts in the village of Seseni of the Calarasi rayon. Its length is of 22 km and the flow rate in of 138 m/s.

The Orhei city lake is situated in the Northern part of the city on the Ivanos stream. The surface is of 42 ha, average depth is of 2,3 m. The lake is used mainly for recreation of the population.

Map II.3 Water bodies with river basin protection zones



The quality of surface waters

The monitoring of the surface water pollution is carried out by the State Hydrometeorological Service on their observation points. The nearest points to Orhei are placed 2 km upstream and 7 km downstream from the city. According to their data the river is placed under the III class (moderately polluted). The main pollutants are nitrates, compounds of copper, and water also displays a reduced concentration of oxygen in water (both COD and BOD).

The monitoring of the quality of the water bodies, used for recreation purposes, is done by the Centre of Public Health, according to the data of which the city lake is considered highly polluted. The agents of intestinal infections (Vibrio cholera) were found in 100 % of cases, indicating the contamination of the reservoir with household waste waters and fecal waste. Parts of the lake are silted up, which also creates favorable conditions for the emergence of pathogenic organisms.

Water use

The major sources for the water supply are the underground waters, springs and wells. The Orhei city has the centralized water supply from 12 artesian wells and the natural spring Jeloboc with a capacity of 40 l/sec. The coverage of population by centralized water supply system is of 90 %, in 2014 the length of the network was of 210,204 km. According to the Regia Apă Canal Orhei:

Table 2.2.1 Length of the water supply networks

		2010	2011	2012	2013	2014
Water supply network	**km**	**201,442**	**203,772**	**305,475**	**207,008**	**210,204**

From the existing 256 artesian wells are in operation 158, including 25 at the balance of the Municipal Company Regia "Apă Canal" Orhei. The state of the water sources is satisfactory and the water quality corresponds to the drinking water quality standards. During 2013 the water intake from the centralized system was 1281,9 th м3, including for households needs - 743 th м3 (see chart II.5). Due to delays in payments from households, there are shortcuts in water supply.

A number of industrial units use shallow wells, placed on their territory, for their own water supply.

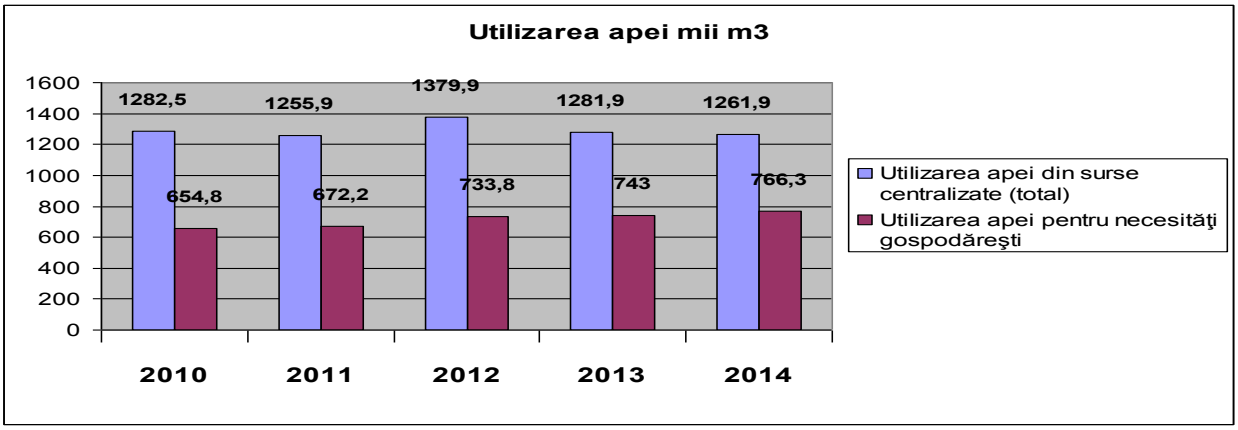


Chart II.5. Volume of water use (th м3).

According to the Apa Canal Company, the total number of beneficiaries, connected to the water supply network according to the state of 13.03.2015, composed 11 646, including block apartments – 6678, individual houses – 4968. The number of beneficiaries, connected to the sewerage is of 6799, including from apartments – 6216, from individual ones – 583. This data demonstrates that from the individual private houses only 12% are connected to sewerage, which means that it is a big reserve for the connection of this segment to the sewage network.

Waste water discharge

Currently in the city there is an uncompleted and fragmented system of waste water collection. Part of the municipal waste waters are discharged to the new waste water treatment plant (constructed wetland), part of the industrial waste waters are still discharged to the old improperly functioning waste water treatment plant, part of waste waters from households in collected in septic tanks.

In 2014 the length of the sewage network in the city was of 61,1 km. The coverage with the sewage network is of 48 %.

Table 2.2.2 Length of the sewage network

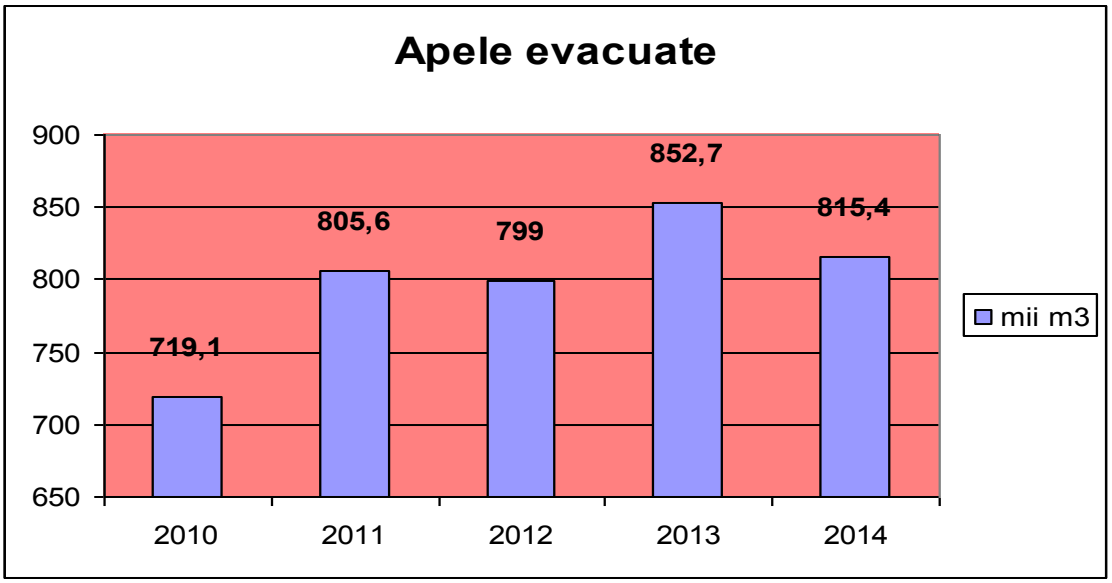
		2010	2011	2012	2013	2014
Sewage network	**km**	**60,829**	**60,829**	**61,069**	**61,069**	**61,069**

Source: Regia Apă Canal Orhei

Photo: old drinking water well. Old waste water treatment plant (in operation); new waste water treatment plant (constructed wetland)

The Municipal Company „Regia Apă Canal – Orhei" received for treatment the total volume of municipal and industrial waste waters of 852,7 th m3 in 2013 (Chart II.6) from the population and following major industrial companies: SA"CA 2811"; Psychiatric Hospital, SA „ASPA" , SA "Galanta", SA „API", SA „Orlact", SA Bread Factory, SA „Gheso", ÎM"Chateau Vartely", SRL"STCOMP" SA „Orhei Vit" SRL Ordonatcom", SRL Maestro Nut", ÎM" North side textile" etc. The company operates two waste water treatment facilities: The old plant located in the district Center 2, surrounded by the agricultural lands and green areas, in the Raut river protection zone, and a new plant located out of the city area, on the territory of Selește village, south-west of the city.

Chart II.6 Waste water volumes



Source: Regia Apă Canal Orhei

The system of rain water collectors in the city practically does not exist. The surface stream through ditches, gullies and roads ditches is getting to the water bodies without any treatment. At the same time a big volume of water accumulates on the surface of the streets and of built-up area, leading to deteriorating of the sanitary conditions of the area.

Since the city drainage system is poorly organized, the floodplain of the city is waterlogged during the rainy season and that contributes to the floods on the areas adjacent to rivers Raut and Ivanos.

The potential sources of water pollution

The surface and underground water pollution is caused namely by the discharges of industrial waste water, untreated waters from households, unauthorized landfills, and agricultural sector (animal wastes, pesticides and chemicals), and oil stations.

In 2013 were treated 853, 65м3 of waste waters. According to the monitoring data the concentration of the pollutants in the water, discharged from the waste water treatment plant was of (g/dм3): particulate matter -50, mineralization -864, BOD5 - 38; Cl - 180; NH4 - 19,2; NO2 - 0,88; NO3 - 6,57; P2O4 - 3,70; SO4 - 234; detergents - 0,41; oils - 0,78; fat - 8,4.

As industrial and municipal waste water streams are mixed and treated jointly, the capacities of the existing treatment plant are used inadequately and the water discharged into the Raut River has elevated concentrations of a number of pollutants. The industrial sources of pollution of water bodies are indicated on the Map II.3.

In addition to the anthropogenic pressure, the water bodies are also vulnerable to seasonal climate change effects. In particular, during summer both the volume and the quality of surface waters decrease significantly.

Based on the assessment of the surface water quality, state of water supply and sewerage, the following 4 major problems can be emphasized:

- surface water pollution
- lack of rain water collection system
- limited development of the sewerage system

- improper work of the old waste water treatment plant

In the future, without taking measures for the reduction of pollution, adaptation to the climate change, the tendency of decreasing of quality of rivers will continue. This has a negative impact on the environment, on the sanitary situation of the city and on public health.

The drinking water supply for the majority of population is of good quality and free of risks to public health. The water from decentralized water sources (wells) did not correspond to the norms and could cause health problems among population or animals, for which that wells are used as a drinking water source.

As a conclusion could be mentioned that the pollution of surface waters, absence of a rain water collection system, inefficient work of the old waste water treatment plant, limited coverage of households with sewerage lead to permanent environmental pollution and to the risks of water borne diseases. These problems are important for the city and need urgent solution.

Likely future development if the Master Plan is not implemented

Surface water quality - Taking into consideration that during the last period of time the quality of the water of the Raut River is of the III class, in the nearest future this state will remain, an even it is possible further deterioration of the situation. This will be caused by the following factors: lack of rain water collection system, not full coverage of the city with the sewerage system, discharge of untreated industrial waste waters, and discharge of waste water from landfill.

Water supply - In the short term period there will be an increase in water use. This is resulting from the potential increase of economic activities and population and household's growth. The water supply sources will remain stable. If the master plan provisions, related to water supply will not be implemented, part of households will continue to use water from wells, in which the quality of water did not correspond to the standards.

Waste water collection and treatment- The future development of the sewerage network is linked with the connection of private households to the system, increase of volumes of discharged water from economic activities, acceleration of economic growth in the city. Provided that the water supply will not be followed by waste water collection and treatment, the pollution of surface and ground waters as well as soils will continue.

3. Soil resources

The difficult engineering and geological conditions in the area of the city and the potential for landslides causes the major factors limiting the spatial development in the concerned area. The influence of the relief on the process of soil formation resulted in the creation of soils of different level of erosion vulnerability on the slopes, creation of meadow-*chernozem* soils in ravines and meadow-salty-bog soils in the micro hollows of slopes, forming middle powerful soils on gentle slopes of adjacent watersheds.

Soils are mainly of *chernozem* type, represented by the following subtypes: typical and podzolized chernozems of the Raut river valley. In typical chernozems and podzolized granulometric composition are dominated light clay and heavy clay soil types.

The humus content in the surface layer ranges from 1 to 3% with the capacity from 30 to 80 cm. Average soil fertility in the city is only 43 points, and due to economic situation of

the agriculture there has been almost no introduction of organic and mineral fertilizers into the soil to improve its quality in recent decades.

Based on the Land Cadastre as of 01 January 2013 the territory of Orhei is 2017,9 ha. The territory of the city has the following land distribution (see the general map, and also the map on zoning and living areas(maps VI.1-VI.3)): 226,5 ha are occupied by industrial companies; 52,8 ha is the public zone; 379,4 ha is the living/housing zone; 49,7 is the communal services zone; 240 ha is the space of green areas, parks, and sport objectives; 182 ha of land under the State Forest Fund; 200 ha under roads; 68,5 ha are the water bodies (rivers and lake); 98,6 ha of agricultural land; 520,4 ha land of other designation.

Table 2.3.1. The current territorial balance in the city (2014, Cadastre Agency):

N/o	**Name of the functional zone**	**surface, ha**	**%**
1	Zone of complex functions of public interest	46,0	2,3
2	Zone for living and complimentary functions	434,0	21,5
3	Zone of secondary living areas ((weekend houses))	30,5	1,5
4	Zone with industrial and agricultural units, from which: agricultural units industrial units lands for the extension of industrial areas	255,3 80,0 136,3 39,0	12,7 4,0 6,8 1,9
5	Zone for communal services(graveyard, waste water treatment plant, etc)	43,8	2,2
6	Zone of infrastructure: road infrastructure technical networks	116,7 104,0 12,7	5,8 5,2 0,6
7	Green Zones, parks, recreation and sport areas: parks and green areas forest land green protection belts	381,0 103,5 135,3 112,0	18,9 5,1 6,7 5,5
8	Zone with areas of special destination	3,1	0,2
9	Zone used by population for agricultural needs in the reserve of urban development	436,8	21,6
10	Zone of not productive, unused lands: former stone mines	210,6 56,3	10,4 2,8
11	Other territories (water bodies etc))	60,2	2,9
12	**Total on the existing administrative territory**	**2018.0**	**100,0**

As a result of enlarging of living areas for the individual households, construction of roads and of other objects, the area of agricultural land decreased from 98,6 ha in 2008 to 80,0 ha in 2013. It is necessary to mention, that due to several factors (landscape relief, infrastructure location) a large area is not suitable for urban development.

An increasing tendency for the degradation of the soil layer is observed in the city. Due to relief conditions, character of the land-use and deteriorated green coverage, as well as due to the dominating wind directions and speed, and mainly due to the strong shower character of rains, the wing and water erosion are strongly pronounced. The water erosion is observable at almost all surfaces; and according to the data of the Ecological Inspection– almost 100 % of agricultural lands are affected by water and wind erosion.

The washed out soil and sand contribute to the siltation of water bodies, causing a decrease in water flow and leading to flooding of wetlands. The vulnerable reliefs, as well as frequent and abundant rainfall result in the landslides, which affect large areas of slopes.

The map II.5 of the zoning –concerning geotechnical conditions, indicates the territories of the city, which are potentially affected by landslides, erosion and could not be used for construction or need protection. That situation, especially the sites with potential risks of landslides or exposed to active erosion processes are highlighted on the map on the state on the environment. Those are especially the Raut river banks and a number of hills in the city.

Photo: Land slides areas

Due to climate change effects (drought, floods) the erosion processes and landslides increase. The total surface of unproductive lands in the city composes up to 10% from the total area.

A specific problem of Orhei city, which create barriers for the development of the city and has an environmental and health impact, is the presence of the open stone mines within the city limits.

According to the data of the State Fund of Underground Resources of the Agency for Geology and Mineral Resources, on the territory of Orhei city are placed 3 stone reserves, which currently are under exploitation. According to the data of the State Balance of the reserves of mineral resources and taking into consideration the volumes of extraction, the data on the mentioned 3 mines is presented in the table below:

Table 2.3.2: List of open stone mines (quarries) in Orhei

Economic Agent	Name of the mine	Mineral resource	Localization	Reserves, th m^3	The period of exploitation until the complete finalisation of mineral resources, years
SRL"Cariera Ivanos"	Orhei I (Ivanos)	Stones for construction	periphery SE Orhei	12234,4	109
SRL"PIETRIŞCOM	Slobodca	-//-	periphery S Orhei	5411,5	97
SRL ORDONATCOM	Slobodca II	-//-	2 km S Orhei	1261,6	143

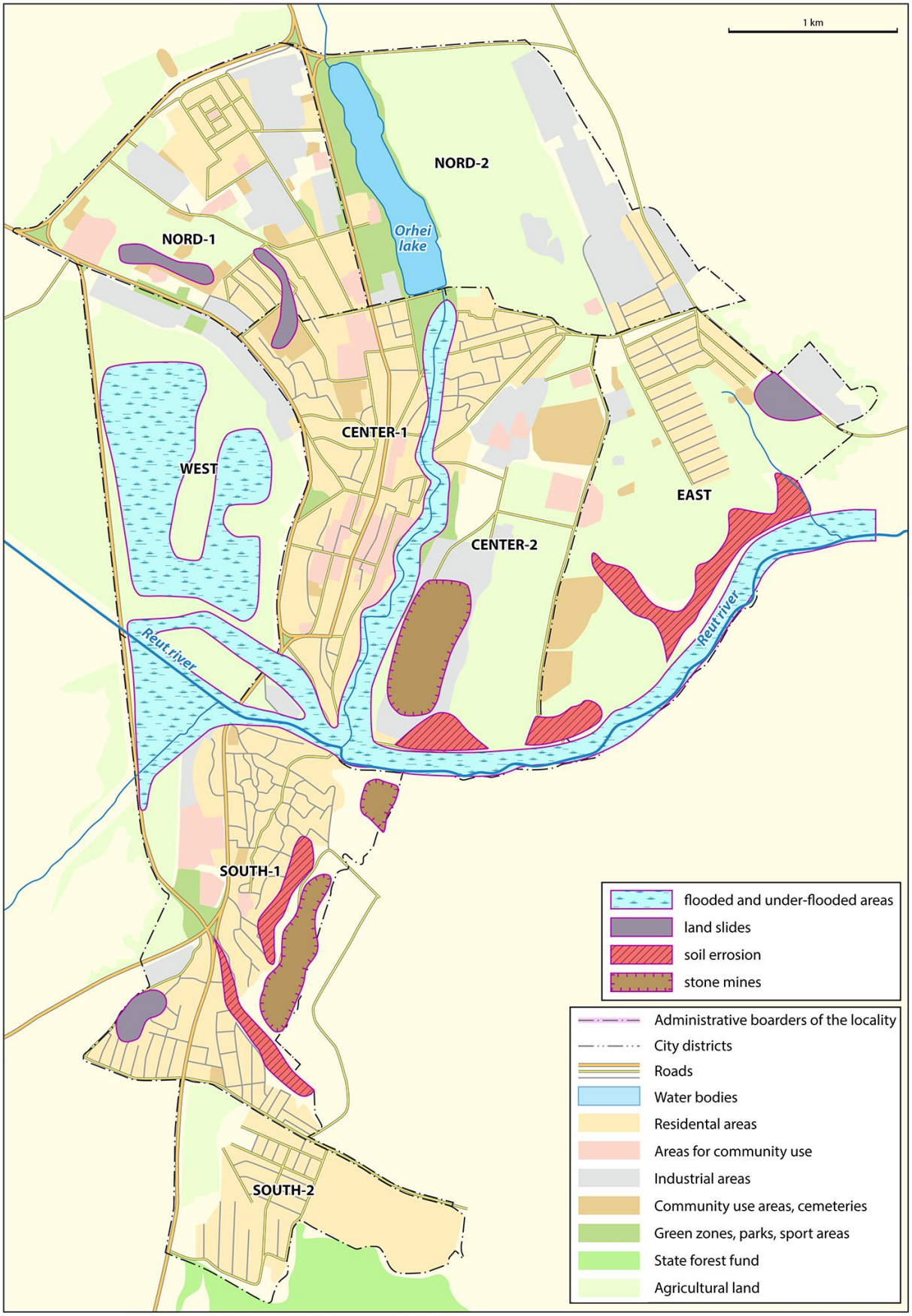
Source: Agency for Geology and Mineral Resources

These mines, where extraction activities are taking place without restriction (without day-time limitations) create noise and dust emissions with impact to the adjacent living areas.

Photo: Old open stone mine Orhei I (Ivanos) (under exploitation)

Photo: ***Open stone mines at Slobodca***

Map II.5 Zones with exogenous processes and degraded territory



Based on the assessment of the current situation of the soil coverage, we could highlight the following key problems of the city in this field:

- Landslides and erosion
- Flooded territories
- Territories affected by economic activities

The problem of land degradation is caused both by natural (landscape, floods, storm rains)) an anthropogenic factors (economic activities, lack of preventive measures). This tendency will remain in the case, if proper measures will be not taken. This is especially important, because the territory of the city is limited and has limited space for development. This problem is considered a priority one and its impact on the city development is considered as a negative one.

Likely future development if the Master Plan is not implemented Absence of an updated master plan with a proper functional zoning of the territory will lead to the inefficient use of lands with a negative impact on the state of environment. The level of degradation and affected area will continue to increase, erosion and landslides will continue. At the same time it is a high risk of reduction of green areas, due to the chaotic placement of industrial or living areas, or of transport network. In the future the problem of degradation of territory resulting from the open mining will continue.

4. Wastes

Waste management in the city is ensured by the municipal enterprise «Communal-Locative Services». Common basic waste collection approach is applied, with very limited separate collection (mainly of PET) at the source and sorting at the landfill.

Photo: Waste collection in the city. General view on the landfill; Illegal waste dump

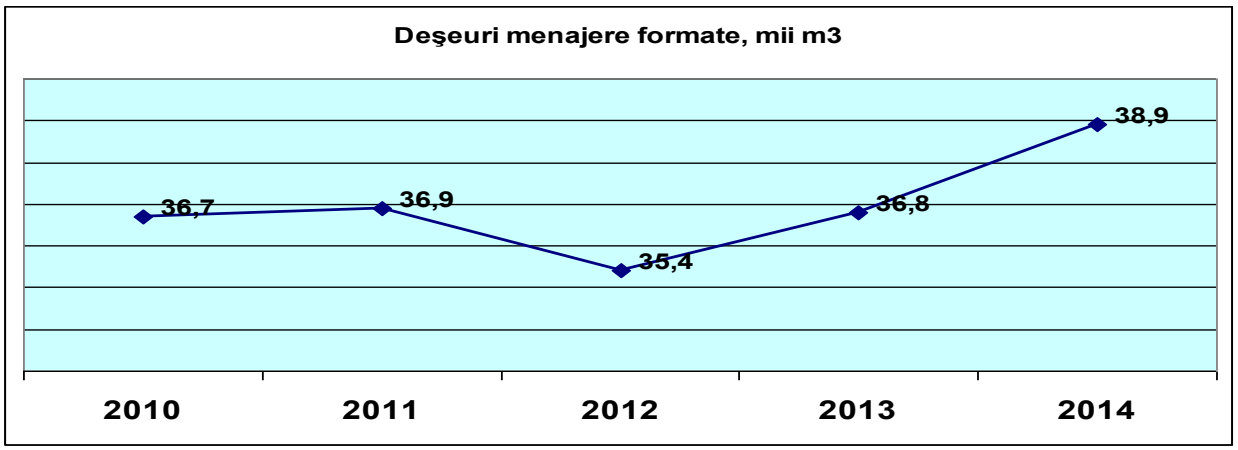
The city landfill in Orhei occupies 8,7 ha, and is in operation since 1968. The accumulated wastes amount 58 740 m3, which is already exceeding the projected capacity, and the layer of waste in many places higher than 20 m. The territory of the landfill is not fenced, nearby territories are covered by wastes, carried away by wind, and wastes washed out during strong showers, especially in the summer. The landfill in Orhei is managed by the Municipal Company „Communal-Locative Services". The city landfill is placed in the Raut river basin protection zone and is a source of undocumented surface and underground water

pollution. Air pollution and soil pollution due to the transportation of pollutants or wastes by wind and rain is also present.

On the Map II.3 the waste landfill is indicated, with the demonstration of impact on environment.

During the last years there is an increase in waste volumes, characteristic for Orhei and for the entire country as such. The tendency of generation of solid municipal wastes is presented below:

Chart 4.1 Generation of municipal wastes (th.м3). Source: Municipal Company

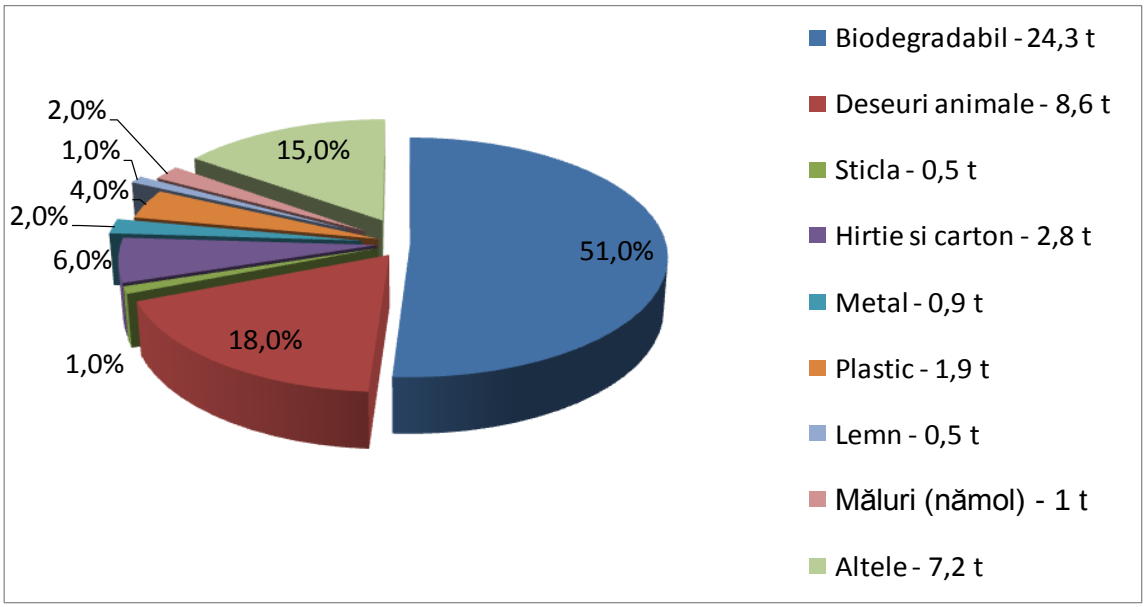


Two economic subjects deal with the collection and recycling of waste in Orhei. The first one operates the selection line at the landfill (separate of wastes by categories: paper, plastic, glass, metal etc.) with purpose of further recycling, the second one is the ABS company, which collect the PETs for recycling (in 2013 were collected 2 000 tones and recycled 300 t of plastic wastes). Currently the status of this station (its efficiency or performance characteristics) is not clear, due to the contract conditions, not requiring any public reporting from the company.

Photo: Waste separation station (placed close to the municipal landfill, currently not in operation)

According to the data of the Ecological Inspection Orhei the municipal solid wastes account for 70 %, industrial wastes for 21 %, and other types of wastes for 9 % of the total volume of wastes produced on the city territory. The composition of the wastes by category is presented on the figure below. This evaluation indicated that more than 70% of the wastes are biodegradable or could be recycled.

Chart 4.2 Wastes composition



Based on the evaluation of the waste management system, the following major problems could be mentioned:

- Lack of an overall system of evidence of the generation, recycling and elimination of wastes
- Absence of a modern landfill and of an operational system of separation of municipal wastes for recycling, based on regional principles
- Presence of small illegal dump sites and pollution of green areas and rivers with wastes
- Limited implementation of technologies for industrial, agricultural and animal wastes collection and treatment.

The existing tendency for increasing of the volumes of the generated wastes will likely remain stable for the nearest future that is why it is necessary to implement an efficient waste management system in the city. The growing volume of wastes causes a negative impact on the environment and health. Due to this the waste management problem is considered of high priority.

Improvement of the waste management is one of the priority issues at the level of the national environmental and regional development authorities. Strategic policy documents were developed for the national and regional level and it is expected, that their practical implementation will reach the regional, rayon and city levels. The process of identification of a territory for the regional landfill started in 2013-2014, but due to technical, financial and political problems was not finalized yet.

Likely future development if the Master Plan is not implemented The evaluation of the situation suggests that the volumes of waste will likely increase. If the Master Plan is not approved and proposed measures for waste management not implemented – there will not be possible to solve the problem of closing and remediation of the old waste landfill, plan spatial conditions for a full coverage of the city with separate wastes collection. This will lead to the

negative impact on the environment, deterioration of ecological state of the territories around the old landfill, with likely impact on sanitary situation and public health.

5. Biodiversity

Characteristics of the flora and fauna of the city

Diverse topography and geological history of the area led to the formation of forest and steppe vegetation in the area. In addition, the meadows are present namely in the valley of the river Raut. The natural vegetation is still present on some of the hills, while secondary vegetation cover is typical for the majority of the territory.

The area of green vegetation is composed by the forests, managed by the State Forest Agency "Moldsilva", and by the parks and public gardens, sporting grounds, gardens adjacent to private buildings. In total it occupies 422 hectares or 20.9 % of the city.

Photo: City forest (under the management of the State Forest Agency Moldsilva)

The forest areas have important water protection, erosion reduction and soil protection functions. The main species found in the forests are ash, maple, acacia, birch, pine and spruce. Of herbaceous plants grow immortelle, wheat grass, plantain, rarely feather grass and other wild grasses. In floodplain wetlands and lower sections of the river and its tributaries grow bulrush, cattail, bent grass, orchard grass, fescue, and bluegrass. The biodiversity of the city is represented mostly by common species of plants, animals and birds, which are characteristic for the central part of Moldova. There are no specific protected species reported in the city area. The fauna in green areas is represented by several species of insectivorous mammals and birds, hedgehogs, woodpeckers, chickadees; rodents, squirrels, mouse-like; reptiles, snakes, lizards; amphibians, toads, frogs and many species of insects. In rivers and other water bodies: carp, and bream fish species can be found, and waterfowl birds like ducks and goose.

The availability of green space per inhabitant of the city is 0,012 hectares / person, which is lower than the average for the country - of 0.07 ha / person.

Green areas of the city

At present, the green spaces of the city are represented by the lake park with the surface of 5.6 hectare, park at the Ivanos of 3.86 hectares, the park near the hotel and book store of 0.9 hectares, a park near the lake area of 10.2 hectares. Parks have a wide range of trees and shrubs, corresponding to the climatic conditions, but there are permanent difficulties with the maintenance of these areas. There are trees on some of the city streets as well,

however due to their different age and species composition their aesthetic or ecological value is not high.

Part of the green coverage of the city is composed from the trees and plants from the private yards of the individual households.

All urban green spaces occupy an area of 240 hectares.

Photo: Green areas (square in one of the city districts). Central city Park

Currently, the green areas of the city are located mostly out of the recreational zones or attraction points for population, and did not play an active role in the urban development. The available information indicates that the city have a rich natural diversity with a potential of development of the parks and recreation zones. It is also necessary to mention, that the city is placed close to the recreation areas in the Codri Forests in the National Park Orhei, which however does not include the territory of the city.

From the urban point of view, the green zones, parks and recreation areas are placed without presenting a major attraction to the population of the city. At the same time, the drying (amelioration) of the Raut River wetlands on the upper stream to the city during soviet times and channeling of the river caused the disappearance of the flora and fauna characteristic for such natural areas.

Generally the green areas (parks and state protected forest zones) in the territory of the city are indicated on the map II.6. But there is no up-to-date information about the actual state of these areas (in terms of quality of vegetation, soils, etc.).

State of the natural protected areas

The Nature and Paleontological Monument „Defile Orhei" is a natural area protected by state with a surface of 100 ha, near the Orhei city centre, but its protection status is not respected in reality, and there are no funds allocated for the management or maintenance of this site.

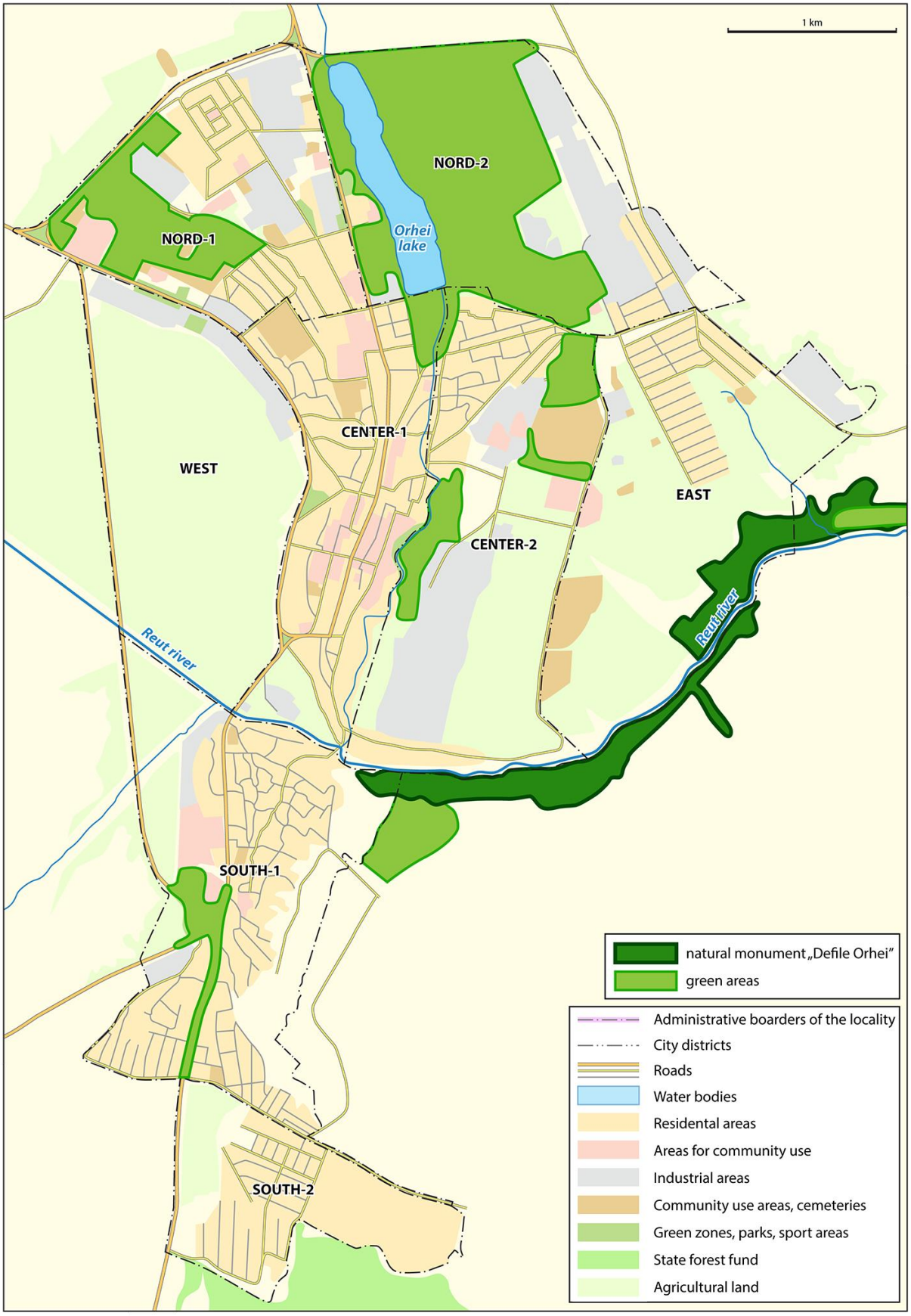
Photo. Natural monument "Defileul Orhei"

In conclusion, the maintenance, protection and enlargement of the green areas are an important issue for the city. As a reserve for a future increase of the green areas can serve the degraded and less valuable land (not suitable for agriculture).

The Master plan foresee the establishment of corridors between the separate green areas trough the establishment of a single green areas system of the city, integrating the green areas of the city with the natural monument in the National Park Orhei. This plan includes the enlargement of the existing green areas, creation of new recreation spaces.

Likely future development if the Master Plan is not implemented In the absence of the Master Plan the further enlargement and improvement of the city green areas become questionable and there is a big risk of the degradation of the existing ones due to illegal logging, chaotic use for recreation, and unregulated enlargement of some of industrial facilities. The lack of management of green areas and forest cover could also lead to further erosion and landslide processes exacerbation, and as a result – lowering environmental quality of the territory.

Map II.6. Green areas and the protected landscape of the city



6. Socio-economic situation and trends

As a host of the Rayon authorities, the Orhei city has a favorable geographical position. It is located in the centre of the country, 45 km from the capital city, on the major road from Chisinau to the North (Balti, Edinet), at the intersection of the roads to Soroca, Rezina, Râbnița, Strășeni, Călărași, Ungheni. As of 01.01.2014 the population of the Orhei city is 33,6th citizens, (i.e. 4th place out of the 51 cities of the republic of Moldova). In the period of 2000-2013 the population growth was negative with a decrease of 10,4 %, which place the municipality among the localities with an intense population decrease. The population trend in the city is characterized by demographic ageing – the share of old population of the pension age, being of about 15 %.

In the year 2011 in the Orhei city was registered 14,8th persons economic active, while there were 28,8th persons at the employment age. These figures are very similar with average values of the indicators for the country. At the same time, the general rate of economic activity in Orhei was of 44,1 %, which is higher that the country´s average (41,1 %), but less than average economic activity in the urban areas, which was in Moldova of 47,2 %. The occupation rate was of 42,1 %, which indicate the maintenance of economic activity (industry, services). The decline of the number of children is reflected by reduction of the number of kindergartens (currently operate only 7 with a total number of kids of 997) and the lower numbers of children in schools.

Table 2.7.1: The population of the city by ethnic groups

Ethnic Group	Population	%
Moldovans &	17,775	69.32%
Romanians	5,089	19.85%
Russians	1,398	5.45%
Ukrainians	920	3.59%
Gipsy (Tigani)	151	0.59%
Bulgarians	47	0.18%
Jewish	37	0.14%
Găgăuzi	32	0.12%
Other	192	
Total	**25,641**	**100%**

Source: NBS, 2004

The educational system in the city comprises of 3 gymnasiums (Rom) and 4 lyceums (3 Romanian and 1 Russian). In the city there are also two colleges (professional). In total there are around 3461 school children in Orhei.

The economic sector of the city in 2012 was represented by 609 economic subjects. Generally, the number of enterprises in the locality is increasing (by 15, 1 % in 2012 in comparison with 2009).

The economic sector of the city is represented by the following spheres, important for the local economy: industrial sector, trade and services, transport and public services

(telecommunications, energy supply, water supply, sewerage, waste management, heating etc).

The industrial sector is the priority segment in the city's economy, with19 big industrial companies, among which the key role is played by: „Orhei-Vit" S.A., "Chateau Vartely", SRL, „Fabrica de pâine", S.A., Fabrica de fermentare a tutunului, „Orlact" S.R.L., „Orhei-Vin" S.A., „Galanta" S.A. Currently the industrial sector produce food products, drinks, wine, juices, mils products, canned fruits and vegetables, households goods, and shoes. The construction industry is gradually rehabilitated from its previous decline.

The commerce and services are an important section of the local economy. The number of services providers increased twofold during the last 10 years and reached the number of 132 units, namely communication services, markets, drug stores, educational centers etc. At the same time there are new developments in services like transportation, banking, tourism, legal support etc.

In addition, on the territory of the city there are 14 oil supply stations, 64 heating plants, two waste water plants (one out of the city limits, but serving the city) and two open mines.

Roads network: The total length of the roads in the city is of 94 km, from which 82 km are with pavement. The quality of the roads is decreasing due to lack of maintenance and investment. Within the last 5 years only 14 km of roads were restored, while there are large segments of important roads in poor conditions and in urgent need of rehabilitation.

Housing fund: The total surface of the resident housing fund at 01.01.2013 was of 699 020 m2, including in block apartments – 293 300 m2, and in private houses – 405 720 m2. There are 5 796 houses and 11 662 apartments registered. As a result, for one person the total space of 18,4 m2, from which - 11,9 m2 is living area.

Technical capacities of Local Public Authorities in the city are sufficient. The office of the mayor have an institutional development plan, have its own office building with 3 floors, with offices with the total surface of 2070 m2. The equipment and access to services (telephone, internet) for the employees is of acceptable level.

The public budget: The budget of the city in 2012 was 56 156th MDL. From the 56,2 mil executed, 30,8 represented the planned transfers (54,8 %). The budgetary situation of the city during the last years was a favorable one, having a yearly increase of an average of 8 %.

Table 2.7.2 Balance of the labor force

Nr.	**Structural Group**	**1989 (persons)**	**1993 (persons)**	**1997 (persons)**
	Population of employment age	22451	22630	23157
	Active Population	21671	21870	22407
	Population employed	19281	19629	20403
	Population, which work in the production spheres, as well as self-employment	15060	12689	9785
	Population from other localities, which work in Orhei	3465	-	640

Source: NBS

During the last 10 years there are significant changes in the labor force of the city. The number of persons of the employment age increased, achieving 61,3 %, but only 42 % of

them are really involved in economic activities. Thus, to one working person there are 3, 3 inactive persons. A number of active persons have their job in other localities, especially in Chisinau, at the same time up to 6 % of workers in Orhei are living out of the city. The registered unemployment is 1, 7th persons and 6, 5th carry out their activities at home.

The distribution of the labor force in the economic sectors (table below) presents the picture of the occupation profile of the population. From the active persons more than 30 % are involved in industrial production.

Table 2.7.3 Structure of employees in the economic sector

nr. /o	Economic sector	1989		1997	
		persons	%	persons	%
	Agriculture, forestry	1328	7,2	454	4,4
	Industry	8126	43,9	3147	30,2
	Constructions	968	5,2	621	5,9
	Transports	1274	6,9	435	4,2
	Communal services	670	3,6	617	5,9
	Services for the population	130	0,7	82	0,8
	Commerce and public alimentation	1142	6,2	1212	11,7
	Health, health care and sport institutions	978	5,3	886	8,5
	Education and cultural institutions	138	0,7	125	1,2
	Schools	1446	7,8	1348	12,9
	Financial institutions	68	0,4	87	0,8
	Administrative institutions	468	2,5	436	4,2
	Other sectors	1789	9,6	975	9,3
	TOTAL	**18525**	**100,0**	**10425**	**100,0**

Source: NBS

There is an increase in employment in services and banking services during the last 10 years. The current state of employment reflects various social and demographic problems associated with the systemic social and economic transition, which are experienced not only in the city, but at the national level as well.

7. Cultural heritage and infrastructure

Orhei city is a locality with rich cultural values and traditions. The municipality has 63 historical and memorial monuments of art and architecture, from which 14 are of national importance, and 49 of local importance, 2 houses of culture, 7 libraries, 2 institutions of arts (painting and music). In the city there are 9 artistic collectives with more than 180 participants, forming a centre of conservation and promotion of cultural traditions and values. The popular artists (e.g. carving on stone, wood, etc.) are very famous and active in passing on their knowledge and popular art to the young generation.

The Cathedral "St.Dumitru": The oldest religious place in Orhei, the Cathedral of St.Dumitru, is a medieval monument, built between 1632 and 1636. The supervisor of the Cathedral was Vasile Lupu (1634 – 1653), Governor of Moldova. The cathedral has a historical and artistic value, being one of the most important ecclesiastic buildings, which was maintained till present time.

Monument of Vasile Lupu: The monument was placed in the centre of the Orhei city in 1938 and it is the piece of art of one of the famous Romanian popular sculptors - Oscar Han (1891-1976). It is the one of the few similar monuments, remained on the territory of Bassarabia from the last century, which was moved to different places for 8 times. Vasile Lupu was the governor of Moldova in the period of 1634 – 1653.

The Cathedral „St. Nicolae". The Cathedral St. Nicolae was built at the beginning of the XX. century. It is situated in the centre of the city and represents a significant and imposing construction. It was partially destroyed during the Second World War, then transferred into a warehouse and re-opened only in 1990. **The Church „St. Hierarch Nicolae"** was built in the first part of the XIX-th century, being reconstructed at the end of the same century in the architecture churches.

Other historical monuments are the **Orthodox Church "The Icon of Kazan Mother of God"**, built at the middle of the XIX. century and the **Romano-Catholic Curchi** (below), constructed in 1904-1915 by the Polish community. In 2005 the church was returned to the catholic community and opened in 2008.

The Museum of Natural History: It is placed in Orhei city. The collection of museum has more than 20 th items, the most valuable being the collection of old coins and books. The permanent exhibition is dedicated to the Old Orhei site.

The building of the Upravei Zemstvei Orhei: It is an architectural and historical monument from the XIX-th century. Currently the building is used by the Theoretical Lyceum **„**Ioan Luca Caragiale".

The building of the former boy's lyceum „Vasile Lupu" from Orhei: It is a monument of architecture of the XX century. Currently that is the Pedagogic College **„**Vasile Lupu" from Orhei.

The building of the **Orhei Court:** It is a monument of architecture of the XX. century**.** It was the house of Dr Mihai Coteanu, after the Second World War the building was handed over to the Executive Council of the popular deputies and in 90-th transferred to the Rayon Court.

The Historical and Archeologically Monument"Orheiul Vechi" (Old Orhei): It is anopen air museum, between the villages Butuceni and Trebujeni, Orhei rayon, with a total surface of 220 ha. The monument has a significant importance because it preserves remains of the life from ancient times till middle ages and later. The layers of culture of this monument demonstrate the full history of the people and country. It is part of the National Park Orhei and UNESCO heritage site.

Butuceni Schit was built in the Century and in the church there are icons and inscriptions from the XVIII century. During the soviet times the historical complex was transformed in an open air museum, designated for tourists. In 1996 the *schit* was re-opened.

Curchi Monastery is placed at 12 km from Orhei and 55 km from Chisinau. An old schit, built during the rule of Alexandru Ghica, built by peasant Iordache Curchiu, in 1809 became a monastery. During soviet times the buildings were used for different purposes, including for a hospital, but in 1992 the monastery was re-opened. The monastery was included in the UNESCO list of architectural monuments.

Nature and Paleontological Monument „Defileu Orhei": Natural area protected by state with a surface of 100 ha, near the Orhei city.

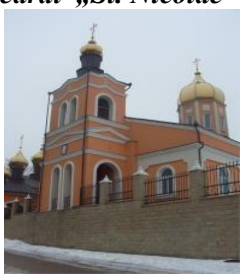
Major historical, architectural and natural monuments:

The Cathedral "St.Dumitru"

The Museum of Natural History

Monument of Vasile Lupu

The Cathedral „St. Nicolae"



Romano-Catholic Curchi

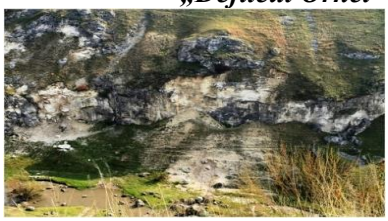
The building of the Upravei Zemstvei Orhei

The building of the former boy's lyceum

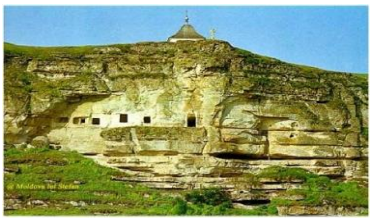
Orhei Court

The Historical and Archeologically Monument "Orheiul Vechi"

Nature and Paleontological Monument „Defileul Orhei"



Butuceni Schit

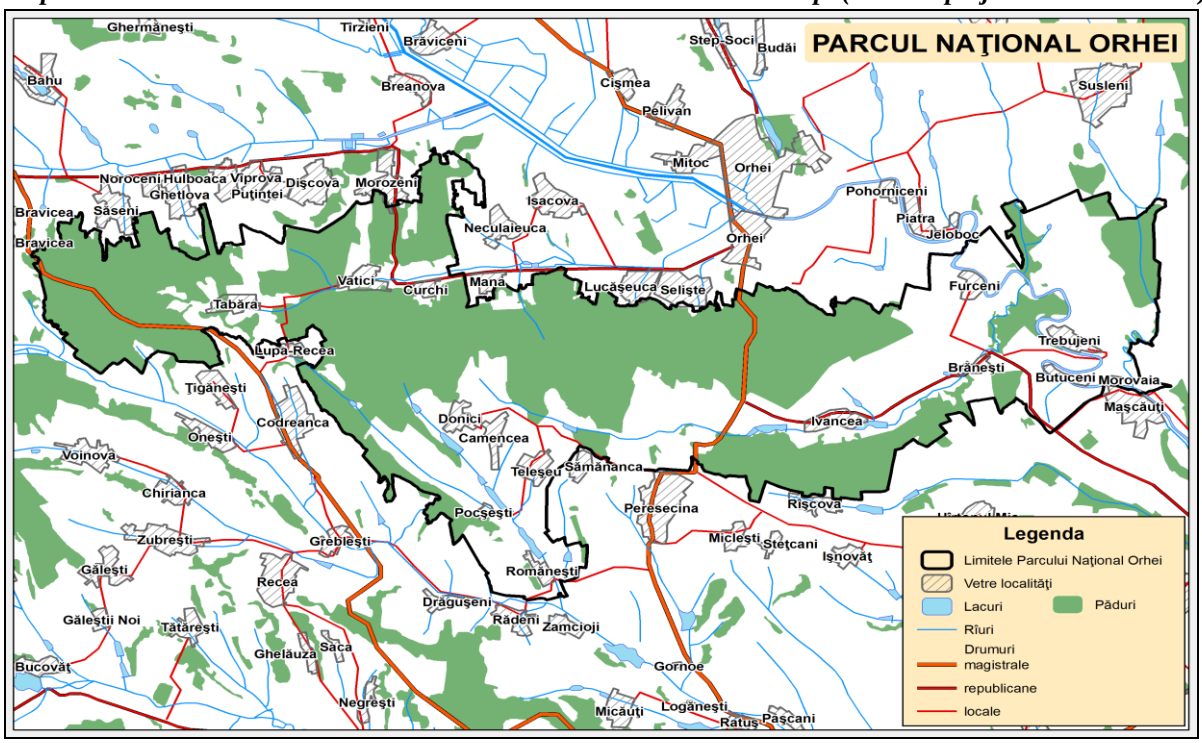


Curchi Monastery

National Park Orhei: The National Park Orhei was established by the decision of Parliament of Moldova nr. 201 on 12.07.2013. In October 2014 the Government approved the Regulation of the National Park and decided on the creation of its administration. The Park has the status of a public institution. The Park it is placed in the central zone of the country, at 46 km to the North from Chisinau. The total surface of the National Park is of 33792,09 ha, including lands in the state property – 19509,51 ha (18551,4 ha – state forest fund), of the local public administration - 4404,87 and in private property – 9877,71 ha.

The Orhei city is not located on the territory of the park**,** but the park area is an important touristic and recreation place for the local population and tourists. Provided that the city of Orhei will obtain a status of Municipality, it will include the Pohorniceni village, in which territory the Raut River protected areas (part of the National Park) is located. The draft law concerning the administration change was voted by Parliament in the first hearings, but the second ones are expected only after the elections, in 2015. Thus the territory of the National Park is not a subject of the Orhei Master Plan preparation analyses.

Map II.8.1 National Park Orhei Boundaries and Main Features Map (source: project documentation)




PARCUL
NAȚIONAL
ORHEI

CHAPTER 3. The characteristics of the environment, including health, in areas likely to be significantly affected

The territory of the Orhey city contains a number of zones with unfavorable environmental conditions, which reduce the quality of life of local inhabitants and constitute risks to public health. At the same time, these areas create barriers for the development of the city. The key areas of concern are presented in this section.

3.1 The territories affected by exogenous processes, landslides, erosion and floods.

Landslides and erosion

The land and soils in the city are characterized by high vulnerability to degradation. The fragmented relief, structure of soils, their humidity and reduction of green cover are key factors of erosion, triggered by both wind and water effects. The surface of eroded agricultural lands covers approximately 40 ha, namely affected are the lower parts of he city, the banks of the Raut River.

The land slides are mainly experienced in the eastern hilly part of the city, in the districts Slobozia Doamnei and Bucuria. As a total in the city are identified 172 ha of territories, affected by landslides.

The total amount of unproductive lands is more than 210 ha or 10% of the total city surface.

Floods

Flooded areas are registered on the banks of the Raut and Ivanos Rivers. In the potentially flooded areas are placed living areas as well as public buildings. The potentially flooded area amounts approximately of 87 ha, from which 2,5 ha are the living areas.

3.2 Territories affected by economic activities

Open stone mines are placed in the South part of the city and occupy a territory of 80,7 ha.

On the territory of the city are functioning three open stone mines:

- "Cariera Ivanos", placed in the central part of the city with the territory of 44 ha, between living areas (central part), and agricultural lands, waste treatment plant and city landfill);
- “Slobodca 2”, which is place in the South-east of the city, on top of a hill above individual households living area, with the surface of 9,2 ha;
- “Slobodca”, placed in the South-east part, between living areas and agricultural lands, with a territory of 11,6 ha.

The excavation of stones is accompanied by the production of a lot of dust, mining wastes, vibration, noise from technologic equipment and transport, and leads to the changes in the landscape, to air and soil pollution and related general environmental and (potentially health) problems, creating uncomfortable living conditions for the population of the surrounding living areas.

The Master plan foresees the functional zoning of the city with the closure of the mines with their rehabilitation and planting trees on the degraded territories. The territory of former mines could be considered for storages of industrial companies of the V category of sanitary risks.

3.3 Basins of the Raut, Ivanos and Vatici Rivers and of the city lake.

The water bodies of the city, Raut River, small rivers Ivanos and Vatici and the city lake have a low water quality, affected by the pollution upstream or by the discharge of waste waters, ground and rain waters from the city, illegal waste dumps etc. The level of pollution of this water bodies did not allow using them as drinking water sources, and only partially the city lake could be used for recreation.

The intensive land-use (including land uptake for urbanization and industrial developments) in the territories of small watersheds and capture of springs are among the causes of decreasing water quality.

According to the national legislation for the Raut River it is set up the river protection zone of 500 m for each bank, and the protection belt of 100 m on the banks of the river. For the Rivers Ivanos and Vatici the protection zone is also of 500m, but the protection belt for the banks is of 20 m.

The borders of the protection zones in the city have to be placed based on the current city planning and in coordination with the local authorities. Currently the protection status of the banks is not respected and the protection belts are not established. On these territories are placed storages, industrial facilities, car parking, living areas and other objects, which did not have an organized surface water collection system. Thus, in the limits of the Raut River protection zone are placed a Number of industrial sites, waste water treatment plant, municipal landfill, and oil stations Are currently placed within the limits of the Raut River protection zone.

Within the limits of the protection zone of the Ivanos River are placed facilities of wine making, construction,, and beer companies, a petrol station, and other objects. The banks of the rivers, due to hilly and rocky relief, are exposed to the erosion.

The recreation area of the city lake has a limited recreation value due to lack of planned spatial organization and generally does not correspond with the requirements for the objects of recreation.

The Master Plan envisages measures for the improvement of the quality of the water bodies: finalization of the drinking water network, extension and full coverage with sewerage system, greening of the river banks protection zones. In the area of the city lake there are planned measures for the cleaning of the river and building of recreation objects.

3.4 The territory of the municipal waste landfill and the old waste water treatment plant.

The municipal wastes landfill is placed in the central part of the city, in the Raut River protection zone and has a surface of 8.7 ha. The landfill is in a critical condition. There is no leachate collection; wastes are not covered by soil layer, there is no proper fencing, etc. This leads to the pollution of the River Raut with drainage waters after rains and of the surrounding areas with plastic and paper wastes during windy weather.

The old waste water treatment plant is located upper on the hill above the landfill. The plant occupies a territory of 11 ha, from which 10 ha are the sludge deposition fields. This waste water treatment plant was built in 1976, with the capacity of 10 th m3 per day, but the real capacity now is of 2,4 th m3 per day. The equipment is old, the treatment processes are not efficient any more, and the incompletely treated waters are discharged into the Raut River.

There is a need to mention that the waste water treatment plant and the landfill are also sources or air pollution due to the emissions of various pollutants with specific smell into the air. During specific weather conditions, during summer, when the wind direction is oriented towards the city, this pollution creates uncomfortable living conditions to the population.

The Master Plan foresees the closure of the old waste treatment plant, recovery and the greening of the territory.

According to the new regional strategy for waste management, separate collection and recycling of wastes, the Master Plan foresee the closure and conservation of the landfill, and the territory will be used for planting of a green area. The place of the new regional landfill is under consideration at the regional level, but in the city could remain a transfer or waste sorting station.

3.5 Territories, exposed to pollution form transport.

As indicated in the baseline description in chapter 2 above, the most problematic in terms of air pollution is the central part of the city, streets Vasile Lupu, Eliberarii, Unirii, Chisinaului, Mihail Sadoveanu, Chostache Negruzzi, 31 August, part of the national highway at the entrance from Chisinau and the part at the exit to the bypass road.

On the indicated segments (Map II. 1) there is noted a higher level of noise, air pollution, dust and, as a result, along this roads the level of life comfort is considered very low. This is also due to a stable increase of number of cars and tracks, mainly old ones, with cars older than 10 years being over 80%. Due to poor technical conditions of most vehicles, environmental impacts of transport are more intensive. At the same time, in the city center are placed main crossroads as well as economic and social objects, which attract the major traffic flows within the city

The state of the roads is also very poor, especially of some of the internal streets and of the bypass road towards the industrial areas. The city center has narrow streets, which, in combination with lack of parking palaces, create additional barriers for a proper traffic flow.

For the improvement of this situation the **Master plan** foresees the optimization of the transport scheme of the city, with the construction of a bypass road in the south of the city and of a new city road between central districts. At the same time, in order to reduce the transport load on the city center the restoration of parallel connections, construction of new roads for the links between of the living areas Bucuria-Nord, Lupoaica-Nord, Slobozia Doamnei, Lupoaica is planned.

3.6 Territories, affected by industrial pollution

The industrial complex of the city is composed by the 5 industrial zones, with a total area of 175 ha or 8,7% of total and is including the following major economic agents (with their total surface, ha):

I - „Nord-1" – wine factory «Orhei-vin» SA (7 haa); Bread factory (1,5 ha); milk proceeding factory SA "Orlact" (1,5га); tobacco fermentation factory (1,75 ha); non-alcoholic drinks factory (1,67 ha); factory for agricultural equipment «Agroteh" SA (3 ha), transport company „2830"SA (2,8), heating plants №.6,7,9,23,24; oil stations and others.

II - "Nord-2", "EST" – agriculture prducts proceeding factory "Orhei-vit" SA (11,6 ha); metal works factory "ASPA" SA (9,8); mine "OrdonatCom" SRL (4 ha), pavement production factory "Drum-2"SA (1,2 ha); enterprice for electric networks „Electrocom" SRL (0,9), telecommunication company "Moldelecom", oil stations, heating plants №4, 11.

III -"Ctntru-1", "Centru-2" – wine company and resort "Chateau Vartely" (2,3 ha); Bread factory "Armicom"(0,35 га); open stone mine Ivanos (44 ha); pumping station (0,12 ha); waste after treatment plant (11 ha), oil stations, heating plants №.1,2,3,22.

IV- "Sud" – textile factory "SALVE" (0,3);"Mateco-Impex" (0,36), factory for proceeding of wine products "ARI" SA(3,6); stone mine (15 ha).

V -"Vest" – transport company 2811 SA (2,9 ha); construction material company "Bolgar" (0,63 ha); car service (0,24 ha), furniture factory "Orhei Mobila" (0,3 ha); oil stations, heating plants №12,13.

Most of the industrial units are of IV of V class, with the exception of "DRUM-2", SRL"ReproconGrup", "Cariera Ivanos" (III class) and SRL "Navelina (II class), pig growing company „Moldsuinhibrit". Each individual company did not cause significant impact on the environment, but their cumulative effect has a negative impact on the city areas.

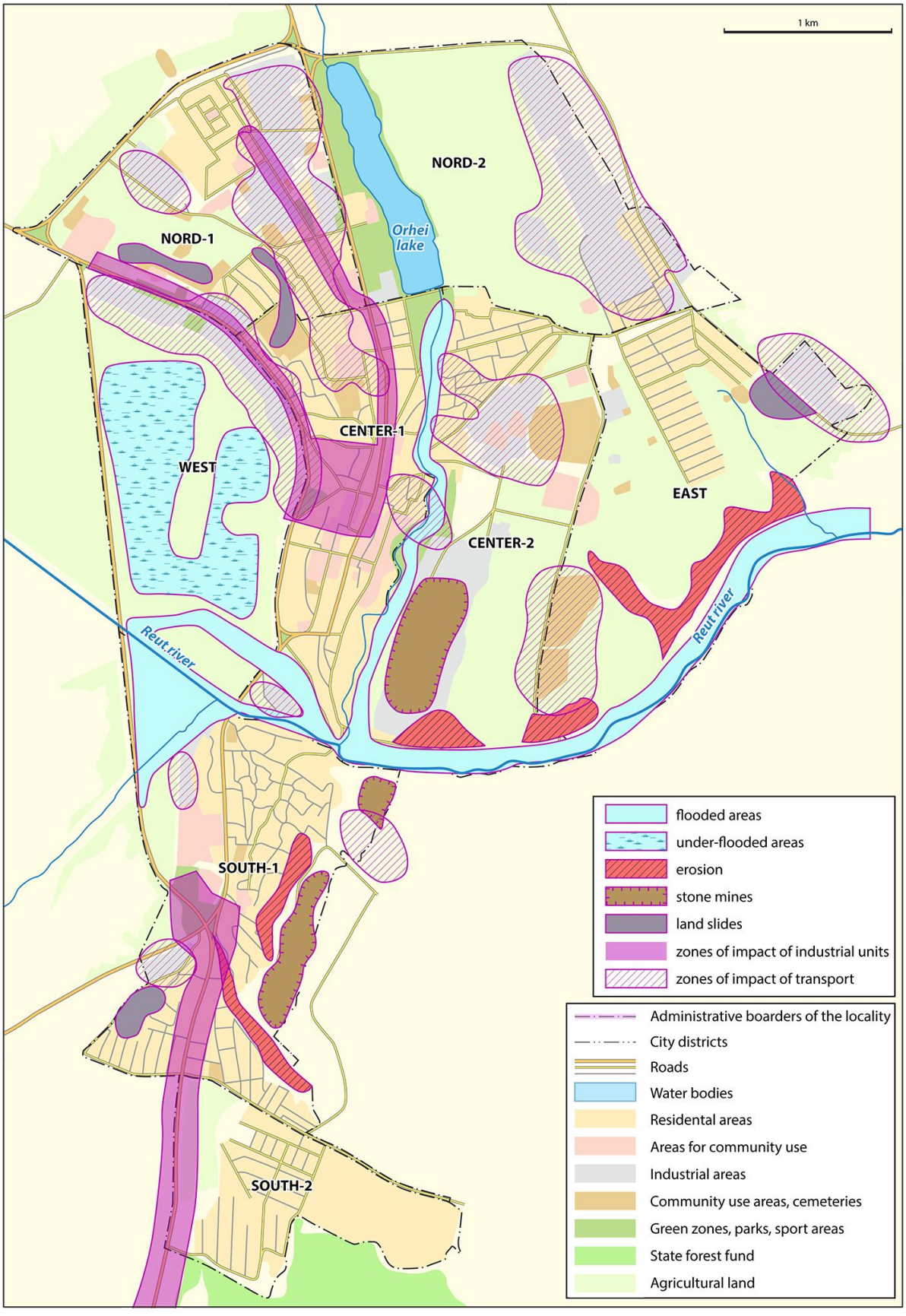
The tendency for the reduction of the environmental impacts from industry observed in the recent decades will not likely to continue, as there is intention to develop the industrial potential of the city, supported also by the national social-economic development strategies. This is reflected by the Master Plan through a allocation of additional areas for the industrial sector developments. Specifically it is proposed by the Master Plan:

- Relocation:

- Transfer of the brick factory out of the city centre to the new territory in the western part of the city;
- Transfer of the part of the industrial facilities located in the valley of Raut River to the industrial areas in the North;

- Restructuring and change the profile of the area of furniture factory "Orhei Mobila" SA with using the territory for smaller service, industrial or commercial units;
- Allocation of additional territories for industrial purposes in the districts Lupoaiaca – Nord and Slobodzia-Doamnei;

Map III.1 Major zones with impact on environment



3.7 Key, environmentally significant areas potentially affected by the decisions of the Master plan.

The Master Plan foresees the change of land-use/function of land for a number of territories, which could have an impact on the state of the environment of the area. The locations of below described localities are visualized in the Map III.2.

1. The territory of the floodplain of Raut, located between the bypass road and the edge of development in the western part of the city.

The area covers a surface of 1,8 km2, subject to flooding and free from development. The Master Plan is supposed to use this area for recreation and green spaces, with the organization of surface water bodies.

2. The territory of the floodplain of Raut, located in the north - western part of the city.

The area covers a surface of 33 hectares, partly free from building partly occupied by industrial facilities. The Master Plan foresees to use this area for the commercial and industrial zone, with the placement of objects of trade and industry of V class health danger.

3. The area, located between the floodplain of Raut and urbanized areas in the western part of the city.

The area covers a surface of 16 ha partly free from buildings and partly occupied by industrial facilities. The Master Plan envisages multi-story residential buildings with facilities of trade and services in this area.

4. The area, located in the central part of the city.

The area covers a surface of 15 ha and is occupied by industrial facilities. The Master Plan earmarks this area as a zone for relaxation and recreation.

5. The territory of the floodplain of river Vatici, located in the western part of the city.

The area covers a surface of 16 ha and there are mainly unused lands. The Master Plan reserves this area for residential development with accommodation facilities of trade and services (with limited construction height).

6. The territory of the floodplain of river Vatici located in the south-western part of the city.

The area covers a surface of 43 ha and there are mainly unused lands. The Master Plan proposes to use this area for industrial and warehouse area, allowing location of industrial facilities of IV-V class health danger.

7. The area, located in the northeastern part of the city.

The area covers a surface of 5,6 ha, occupied by industrial facilities (brick factory). The Master Plan indicates transfer of the factory and use the area for green space.

8. The territory located in the water protection zone River Raut in the southeastern part of the city.

The area covers a surface of 114 hectares, occupied by objects for municipal purposes (a landfill, the old waste water treatment plant). The Master Plan foresees the closure of these sites and assumes restoration and development of green area.

9. The territory of the floodplain of the River Raut, located in the eastern part of the city.

The area covers a surface of 25 hectares, mainly unused lands. The Master Plan envisages this area for planting and forestation.

10. The area located in the central part of the city.

The area covers a surface of 36,8 hectares, occupied by a stone mine. The Master Plan proposes the closure of the mine and restoration and use of the area for the warehousing facilities, and industrial facilities of V class health danger.

11. The area located in the southern part of the city.

The area covers a surface of 32 hectares, occupied by a stone mine. The Master Plan proposes the closure of the mine and restoration and use of the area for the warehousing facilities, and industrial facilities of V class health danger.

12. The area located in the southern part of the city.

The area covers a surface of 33,5 hectares, mainly unused lands. The Master Plan reserves this area for residential development with accommodation facilities of social and cultural purpose.

13. The area located in the northern part of the city.

The area covers a surface of 43 hectares, mainly unused lands. The Master Plan envisages this area for the industrial zone.

14. The area located in the eastern part of the city.

The area covers a surface of 30 hectares, occupied by farmland. The Master Plan allows forfor a residential development of this area.

15. The territory located in the northeastern part of the city.

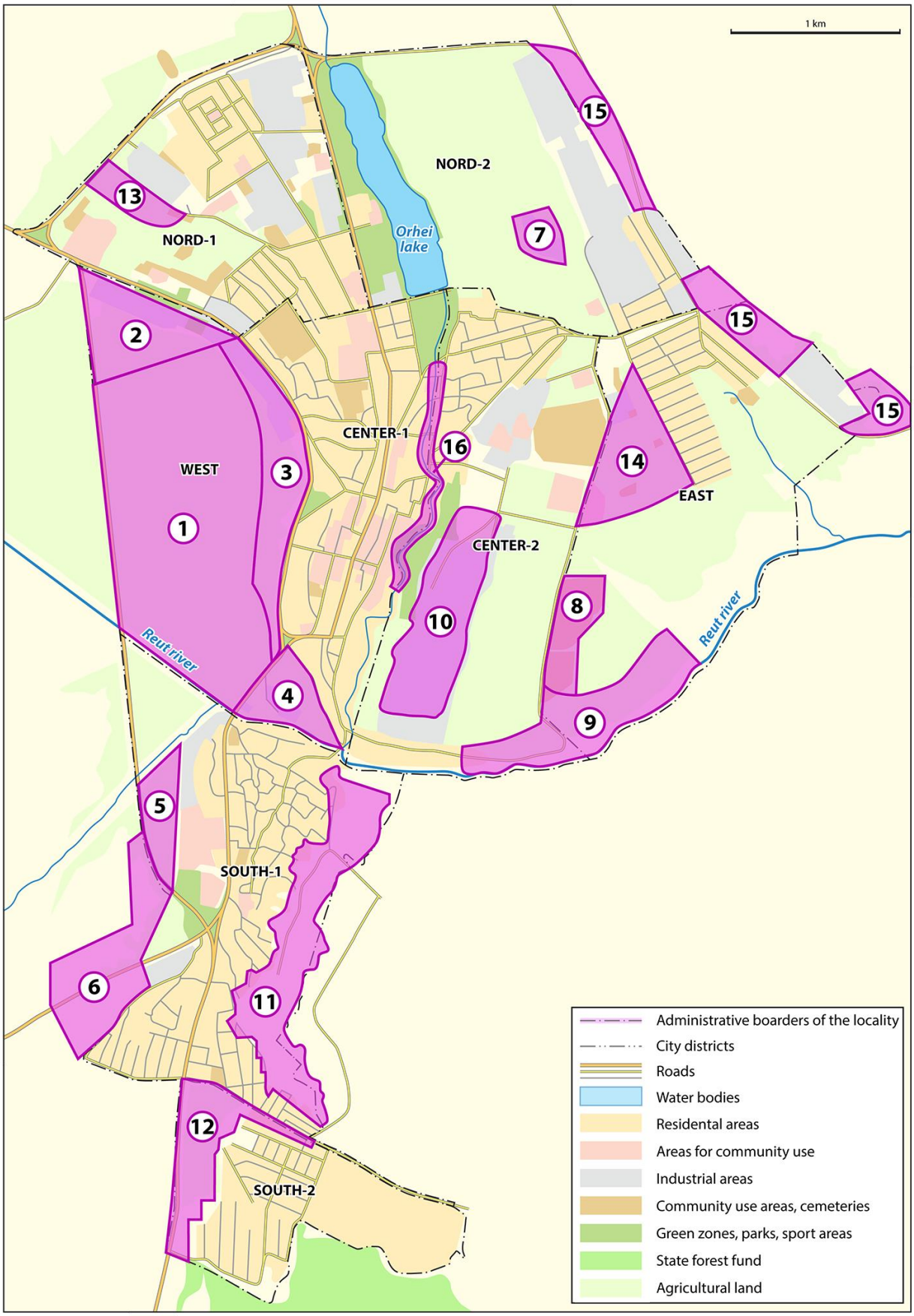
The area covers a surface of 36 hectares, occupied by farmland. The Master Plan allocates this area for the industrial zone.

16. The territory of the banks of the river Ivanos located in the central part of the city.

The area covers a surface of 3,5 hectares, with various unauthorized land-use. The Master Plan envisages this area for establishment of a green space.

The numbering of the territories corresponds with the numbers on the map (below).

Map III.2 Areas with proposed changes of their land-use designation



CHAPTER 4. The environmental, including health, problems which are relevant to the Master plan

During the development of the SEA Environmental Report, the major problems for the environment and public health were identified and a detailed description of them was prepared, with the specific link the problem to the part/district of the city, where these problems are most relevant.

The identification of key environmental issues relevant to the Master Plan was assisted by the consultations conducted within the Scoping stage of the SEA process, where a complex overview of environmental problems in Orhei and potential planning responses was prepared (see Scoping Matrix in Annex 3) Based on the analyses of the environmental situation and expected localization of developments envisaged by the draft Orhei Master Plan (see chapters 2 and 3) the key relevant issues were identified in order to focus the assessment.

The Table IV.1 below outlines the key potential environmental problems and risks (and their linkages to the Master Plan) to which particular considerations were given during the assessment (see chapter 6).

Table IV.1. Environmental, including those related to public health issues related to the Master Plan

Main issues	Specific concerns and problems	Linkages to the spatial plan	Proposals of the Master Plan
Impact on the health of the population	Pollution of water in wells with utility fluids	Individual private buildings - from the south Slobozia Doamnei - in the central part of the town residential constructions that date back to 1950-60-s; - residential constructions in the eastern and northern parts	Transition to the centralized water supply system, expansion of the sewage network to achieve full coverage,
	Chemical and microbiological pollution of surface and ground waters	Catchment areas of the rivers Raut, Ivanos, Vatich and of the city lake	Construction of the storm-water system, shutdown of old treatment facilities and of the landfill site, 100% coverage with the sanitary sewer system, planting of trees and shrubs at shore lands of water bodies
	Pollution of air (mostly with emissions from transport, and also with dust emissions from soil erosion and exploitation of quarries and)	Territories subjected to pollution from transport - the central part of the town, the part of the national highway within the city limits, crossroads at entry and exit to the bypass road	Optimization and arrangement of the street and road network, relocation of truck transport to the bypass highway, construction of the south-western

		Territories subjected to erosion – banks of the Raut river, the lower part of the town Territories with human-induced perturbations (quarries) in the central and southern parts of the town.	part of the bypass road, restoration of parallel connections for the purpose of decongestion of traffic flows, construction of new roads connecting residential areas Bucuria-Nord, Lupoaica-Nord, Slobozia Doamnei, Lupoaica. Protective measures (planting of trees and shrubs, and) Closure of quarries within the city limits
	Noise, vibration	Territories with human-induced perturbations (quarries) in the central and southern parts of the city.	Closure of quarries within the city limits
Degradation of top soil	Development of erosion and landslide processes, reduction of land dedicated to socio-economic development, Loss of biodiversity	Territories subjected to exogenic processes - **landslides** (in the north-western and south-western parts of the town), **erosion** (alongside the bank of the Raut river, the lower part of the town	Shutdown of old treatment facilities, quarries, and their rehabilitation, development of wetland areas, creation of green zones at degraded plots, forestation of water conservation zones
	Alteration of use of land plots at the expense of agricultural lands	In the eastern part In the eastern part	For residential allotment. For tree and shrub planting
Existence of floodable and wetland areas	Damage caused to households, restrictions for city development, deterioration of the sanitary state of the town, of water resources	Floodable territories (alongside of the banks of the Raut river, the Ivanos river and flood plain of the Raut river in the western part of the town - wetlands (in the western part of the town between the bypass road and urban built-up area)	Construction of the storm-water system**,** measures (land elevation for prospective construction, etc.), forestation of water conservation zones
Waste	The state of the landfill does not comply with environmental requirements	Territory of the municipal waste landfill	Shutdown and rehabilitation of the landfill, shutdown and rehabilitation of the landfill. Location for

			the new regional landfill of solid municipal waste to be determined in accordance with the regional strategy on waste.
	Low level of sorting and processing of waste	Territory of the municipal waste landfill	Development of the system of transportation and sorting of waste, arrangements of temporary waste storage
	Unutilized waste of the mining industry	Territories in the area of quarries	Utilization as secondary raw material
Pollution of atmospheric air	Pollution discharges from stationary and moving sources	Territories subjected to pollution from transport –the central part of the town, part of the national highway within the city limits, crossroads at entry and exit to the bypass highway. Territories subjected to industrial pollution – the central and the northern parts of the town	Optimization and arrangement of the street and road network and traffic flows, relocation of truck transport to the bypass highway, etc. Relocation of some enterprises out of city boundaries,
	Pollution with particulates in the course of opencast mining of building-stone	Territories with human-induced perturbations (quarries)	Closure of quarries within the city limits and their rehabilitation
	Pollution with dust from erosion processes	Territories subjected to erosion – banks of the Raut river, the lower part of the town	Protective measures (planting of trees and shrubs, etc.)
Pollution of water resources	Discharge of insufficiently treated and polluted waste water into town water bodies, discharge of storm run-off into surface water bodies	Catchment areas of the rivers Raut, Ivanos, Vatici and the town lake	Construction of the storm-water system**,** shutdown of old treatment facilities and of the landfill, 100% coverage with the system of sanitary sewage, planting of trees and shrubs at shorelands of water bodies
	Inefficiency of operation of old treatment facilities	The territory of the old treatment facilities	Shutdown of old treatment facilities after putting into operation of local treatment facilities of industrial enterprises

	Incomplete coverage of the town territory with the sanitary sewage system	Individual private buildings : - from the south of Slobozia Doamnei - in the central part of the town residential constructions of 1950-60-s; - residential constructions in the eastern and northern parts	Expansion of the sanitary sewage system for 100% coverage of the urban territory.
	Lack of the storm-water system	Catchment areas of the rivers Raut, Ivanos, Vatich and the town lake	Construction of the storm-water system
Biodiversity	Lack of a common urban green planting system	The territory of the town: central and western	Unification of segmented plots of land into a common urban green planting system taking into consideration integration into the Orhei national park, expansion of green zones,
	Lack of well-developed recreational areas, while the potential exists	The territory of the town,: the floodplain of the river Raut, the town lake, the central park	Creation of recreational areas and water bodies in the central and western parts of the town, development of territories of the town lake, the floodplain area of the Raut river
	Vulnerability of the landscape (plowing, drainage, unauthorized cutting of trees, geomorphologisal processes)	The floodplain of the river Raut	Development of territories, the floodplain of the Raut river in the course of construction of the motor highways in the western part, engineering protection against landslides
Historical and cultural sites	Lack of a selected, recognized and protected historical part of the city	The central part of the old town	Distinction of the historical part of the town and granting the status of a historical protected zone, cultural sites in the eastern part of the town. Facilitation of tourism.

As indicated in the table above, several complexly interconnected environmental issues are present in the concerned territory, which have also impact on (spatial) development opportunities of Orhei town. Among the prominent problems are the following:

Degradation of soil limits the area of land available for social and economic development, as well as it contributes to the loss of biodiversity (either directly through deterioration of natural habitats or by extension, when the development takes place on virgin areas as the deteriorated land become less suitable for certain types of activities). Significant erosion and landslide processes are observed namely in the north-western and south-western part of the city, along the banks of the Raut River in the lower part of the city.

Existence of the flooding areas (during the heavy rains damage to urbanized areas are experienced) creates limitations for the development of the city, worsens the sanitary condition of the city as well as reduces the quality of water resources.

Air pollution takes place due to of the emissions from stationary and mobile sources, and the emissions of dust from the extraction of building stones from open mines. The pollution from transport is the most critical in the central part of the city, and on the segment of the national highway, on the crossroads at the entrance and exit of the by-pass road. Industrial pollution affects the central and northern parts of the city.

Water pollution is caused by the discharges of insufficiently-treated and contaminated wastewater into water bodies. A direct discharge of the rain waters into surface water bodies, the inefficiency of the existing old waste water treatment plant are the main sources of pollution in the basins of the Raut, Ivanos, Vatici Rivers and in the city lake.

Pollution from the disposal of municipal wastes took place due to the poor state of the existing landfill and its improper management, which does not meet the legal requirements. It is not affecting directly the residential areas due to placement of the landfill downhill, but the site have a general impact on environment state of the city and surrounding areas. The level of sorting and recycling of wastes is low.

A separate problem is caused by the storage of unused mining waste (stored directly on the extraction sites), which also leads to the contamination of land in the vicinity of mining sites.

The loss of biodiversity takes place due to several reasons, including the vulnerability of the landscape (to plowing, drainage, unauthorized land-use and also natural geomorphological processes – e.g. landslides), and due to the lack of a unified system of green area management of the city. The most vulnerable areas are the central and western part of the city, the floodplain of the river Raut, and the city lake area.

The environmental factors with potential impacts on public health are namely the poor quality water from wells, contamination of ground water resources on the territory of the whole city, air pollution, especially from limestone dust, noise and vibration in the agglomerated transport and industrial areas.

CHAPTER 5. The environmental, including health, objectives established at international, national and other levels which are relevant to the Master plan, and the ways in which these objectives and other environmental, including health, considerations have been taken into account during its preparation

This section is based on an analysis of the objectives of national policy documents that are relevant to the goals of development at the local level and have to be included in the provisions and implemented trough the Master Plan of Orhei. The conducted review of the relevant environmental policy objectives provides general benchmarks against which the Master Plan goals and measures are evaluated.

A considerable number of policy documents containing environmental objectives (as well as other objectives such as for the field of public health, tourism and socio-economic development) were examined. It should be noted that similar (though not always identic) environmental objectives are contained within different policy documents. For example, the main goals and objectives in the field of air protection are defined in the Strategy of the environment on the years 2014-2023 (2014), and also in the Strategies for Adaptation to Climate Change (2014), the Energy Strategy (2013), the National Energy Program for 2011-2020 years (2011), the National Strategy for Regional Development for 2013-2015 (2013), Strategy of transport and logistics in the 2013-2022 (2013), etc. Identified environmental objectives and a list of examined policy documents are presented in Table 5 in the Annex 4.

In Table 5 below are presented key relevant policy objectives for environmental protection (as well as relevant objectives in the field of public health, tourism and socio-economic development) that have been identified in various policy documents, both at the national and sectorial levels. The analysis includes objectives that are relevant to the Master Plan, and objectives that can be addressed at a different level of planning. Based on the analysis of the content of the Master Plan, the SEA experts evaluated the level of compliance of the objectives stated in the draft of the Master Plan, with the environmental objectives established at the national level, and the key relevant objectives of the Strategy of socio-economic development for 2014-2020 Orhei (Table 5.1).

It should be noted that the process of SEA and the development of the Master Plan were carried out in parallel, and during the consultations of the working group on SEA with the Master Plan developers and local authorities, number of environmental objectives have been included in the draft Master Plan.

Evaluation of compliance of the Master Plan with the policy objectives

The level of compliance of the objectives of the Master Plan to the environmental goals, set up at the national and local levels, are indicated in the Table 5.1 .

Table 5.1 Compliance of the Master Plan with environmental policy objectives

Objectives of the national strategic documents	**Objectives of the Strategy for the social-economic development of the Orhei city for 2014-2020 (nr 13.20 from 27.12.2013) and other documents**	**Objectives, stated in the draft Orhei Master Plan**	**Level of formal compliance** (+) full (+/-) partial (-) Non-compliance
Air Reduction of emissions of pollutants by 30% by 2023 and of greenhouse gases by at least 20% by 2020	Ensuring protection of natural environment. Reduction of pollution of environment. Promotion of advanced technologies related to extraction of mineral resources	Reduction of discharges of pollutants by means by closure of a number of enterprises, optimization of the transport schemes, development of territories and planning of trees and shrubs, and other measures	+
Enhancement of energy efficiency for the purpose of reducing by 2020 of energy consumption by 20%, achievement by 2020 of 20% of generation of energy from renewable energy sources, and 10% – from biofuel	Reduction of consumption of energy for heating and use of buildings (thermal insulation, installation of solar panels). Reduction of losses of electricity at the expense of replacement of spiral tungsten filament lamps with light LED strip lamps. Capacity building for obtaining energy from alternative sources: - use of wind potential; - acquisition and installation of solar panels	These goals are not envisioned in the Master plan.	**(-)**
Construction, repair of public local motor highways -4900 km	Ensuring development of the infrastructure (repair of streets, pavements)	Reduction of pollution of environment, of noise emissions	+
Water resources			

Enhancement of the quality of at least 50% of surface waters	Measures related to cleaning-up and protection of the Raut river Cleaning-up of the Orhei town lake	Reduction of impact on water resources by means of development of sewage networks, liquidation of sources of pollution and other measures	+
Ensuring by 2023 of access to about 80% of the population of the republic to water supply systems and services, and to about 65% – to sewage systems and services;		Expansion of access of the population to systems of water supply and sewage	+
Construction and expansion of water supply and sewage systems in the city of Orhei	Modernization and expansion of water supply and sewage systems	Expansion of access of the population to systems of water supply and sewage	+
Reduction of risks and adjustment to climate changes in the sphere of water resources.		Reduction of risks of floods and under-floods in construction planning	+/-
Land resources Improvement of the state of eroded lands and of lands subjected to landslides;		Improvement of the state of urban land resources by means of engineering protection and development.	+
- determining by 2016, criteria for spatial planning;			+/-
Waste Reduction of the quantity of waste stored at landfills by	Proper solid and liquid waste management and ensuring order in the	Reduction of impact from appearance of	+

30% and increase of the share of processing by 20% by 2023;	sphere of protection of health of the population. Setting parameters for authorized landfills, setting indicators for their placement	waste by means of shutdown of the old landfill.	
Promotion and implementation of the separate waste collection systems in all localities, both in the household and industrial sector, of the installations for waste separation	Organization of separate waste collection in the city	Ensuring separate waste collection by means of choosing locations for sorting of waste.	+/-
Improvement of the system of transportation of waste and development of transfer stations (4-7 stations in each district);	Organization of separate collection of waste in the city	Ensuring separate collection of waste by means of allocation of areas for temporary storage of waste.	+/-
Biodiversity -creation of 2 thousand ha of green zones in cities and villages by 2020.	Sustainable green plantation management with involvement of tenants.	Creation of favorable environment by means of creating a common urban green areas	+
- expansion of natural territories protected by the state by at least 1% of the total area of the country by 2018, and by 8% - by 2023;	Providing for functioning of the natural paleontological monument "Defileul Orhei", which represents a natural territory protected by the state with the area of 100 ha Development of the landscape of the city of Orhei	Preservation of territories protected by the state, development of the unutilized part of the floodplain area of the Raut River in the western direction (e.g. avoiding the protected area)	+

- forestation of shoreland areas of water conservation zones of rivers and water bodies in the area of up to 30.400 ha by the end of 2018.		Improvement of the quality of water resources by means of creation of green zones in protected water shoreland areas	+
Historical monuments Ensuring accounting, regulation and preservation of historical monuments	Restoration of protected areas in development of the historical part of the city. Taking physical inventory, evaluation and regulation of historical monuments	Providing for conferring a special status to the historical part of the city	+
Tourism Absorbing the national tourist potential and promotion of the image of the Republic of Moldova as a tourist destination country ; - regional tourism development;	Expansion and modernization of the infrastructure for accommodation and servicing tourists (hotels, restaurants, recreation places). Expansion of tourist walking routes, urban recreation places and creation / development of specific services.	Development of the touristic infrastructure of the city based on the existing historical and cultural sites	+/-
Health of the population Minimization of negative impact on human health of risks and emergency situations in the sphere of public health caused by natural, technology-	Providing for reduction of environment pollution	Enlargement of the recreation and sport areas; Change and reduce the impact of the transport; Reduce pollution from households by	+

related, man-induced, biological, radiological and social factors.		improving the access to sewage and waste collection networks	
	- Creation of pedestrian zones; - creation of cycle lanes; - installation of ramps for access to transport for people with disabilities; - rehabilitation / construction / improvement of pedestrian crossings - Construction of the sports center "Avtodrom"; Construction of sports and fitness center and training grounds, and a football club “Milsami”. Development of the park “Ivanos” with „mounting bike” lanes	Providing for development of recreation and pedestrian zones, placement of the cultural and health institutions	+
Socio-economic development Provision for sustainable economic development and, as a consequence, reduction of the poverty level.	Development of the sustainable economy; - promotion and support of small and medium businesses; Creation of an industrial park; Creation of a business incubator; Reconstruction / modernization of the agricultural market; Building capacity for innovations and technological modernization	Provision for placement of new enterprises	+
Increase of public	Creation of favorable	Provision for	+

investments in the national and local road infrastructure for the purpose of reducing transport costs and acceleration of access;	investment climate Provision for development of the infrastructure (repairs of streets, pavements)	development of the urban infrastructure	

As indicated in the table above, the Orhei Master Plan displays high level of formal compliance with the environmental policy objectives established on national and regional levels. The Master Plan takes into account most of them and presents measures aiming at their implementation.

Based on the analysis of these objectives, it may be noted that the goals in the field of atmospheric air protection, set up nationally, will be only partially implemented in the Master Plan of Orhei. The reduction of the emissions might be achieved due to the closure of stone mines that are located in the city and their operation release into the atmosphere large amounts of suspended solids; and by reducing emissions from freight transport, the movement of which will be organized on the bypass road. A slight decrease in emissions from urban road transport could be also achieved as a result of the construction and repairing of highways and intra-urban roads.

For the realization of the Energy Efficiency (EE) objectives and obtaining energy from renewable sources, certain actions will be undertaken at the level of the city through to a new support program in the field of EE, but these are not be reflected in the Master Plan, as the Program does not involve any construction and location of new facilities in this area.

In the area of water resources, a construction of water supply networks and sewage systems are specified in two national-level policy documents, with specific reference to Orhei among the priority cities, which should realize these goals in the short term. Improving the quality of surface waters could be achieved by preventing the discharge of contaminated water into the river Raut and the city lake, due to the construction of drainage system for rain water collection, expansion of sewerage network, construction of local industrial waste water treatment facilities, establishment and greening of protection zones for all water bodies. The master plan foresees a partial realization of the goals of reducing of risks and adaptation to climate change. Namely are envisaged measures to raise the level of the ground floor during the construction on flooded areas, the development of storm water collector etc.

In the area of land and soil resources the Master Plan provides for the creation of green zones in areas affected by erosion and landslides, and on the flooded areas, which fully complies with the national policy. Waste disposal is one of the most critical problems for Orhei. Construction of a new landfill for waste disposal could be addressed only at the regional level. At present time, the regional waste management strategy for the development region "Centre", which includes the town of Orhei has been developed and approved. However, its realization (including necessary investments) is questionable in the near future. The Master Plan however takes it into the consideration and provides for the selection of the

area and placement of waste sorting and temporary storage of the remained waste, which will be shipped in the future to the regional landfill. These activities of the Master Plan will only partially solve the problem, and there is a need for a comprehensive approach at the regional level for the final solution.

In the field of biodiversity the Master Plan foresees the development of the schemes of green areas of the city and their enlarging and gradual integration in the National Park Orhei. The Plan includes forestation schemes for protection zones of water bodies. In the city area it is placed a natural, paleontological monument "Defileul Orhei", which is a natural area protected by the state, with an area of 100 hectares. The Master Plan does not indicate actions for further increase in the area of natural areas protected by the state.

In the field of historic monuments at the city level it is planned to carry out an inventory and assessment of historical sites. The Master Plan foresees the demarcation of the historical part of the city and granting to it of the status of a historically protected zone. In accordance with the Strategy of socio-economic development of the city the Master Plan included measures for the deployment of sites of socio-cultural significance for a tourism promotion.

In the field of public health, a number of measures towards minimizing the existing negative impacts on human health including a reduction of environmental pollution is planned. The Master Plan included development of the schemes of centralized water supply and sewerage, development of schemes of collection of rain waters and their cleaning, construction of bypass roads, city roads, expanding green areas of the city, all of which have potential to reduce existing environmental risks to public health. In addition, the Master Plan displays significant potential for the promotion of a healthy lifestyle by creation of the scheme of pedestrian paths, bicycle lanes, and construction of a sports complex.

In the area of economic development the objectives formulated in the Orhei Strategy of socio-economic development comply with the goals of economic development of the country and, basically, will be addressed by regulatory and administrative measures. The Master Plan contributes to their materialization through the optimization of transport network, municipal infrastructure, creating favorable spatial conditions for the economic development of city. The master plan included provisions for the extension of the existing industrial zone, which are sufficient for the further development of industrial potential.

In conclusion, the examination of the provisions of relevant policy documents and the content and maps of the Master Plan, indicates that objectives and activities stated in the Master Plan generally correspond to national and local environmental objectives. At the same time, it have to be emphasized, that a number identified environmental issues (e.g. sound waste management, transport-related impacts on air) have to be addressed at the regional or national level, as the Orhei city alone will not have enough technical or financial potential or decision making power to ensure achieving of all environmental objectives stipulated at regional/national level.

CHAPTER 6. The likely significant environmental, including health, effects

A summary of the evaluation of risks and potential impacts on the environment is presented in this chapter. Individual components of the Master Plan were analyzed by the team of environmental specialists in order to identify **potentially significant** environmental effects relevant to the Orhei Master Plan implementation. The spatial developments presented by the draft Master Plan were evaluated in groups representing standard spatial planning categories (e.g. Industrial zones, transport network, multi-purpose living areas, etc.) In order to identify key impacts associated with specific types of planned developments (see subsection 6.1). Subsequently, the evaluation of potential cumulative impacts was conducted through analyzing the combined effects of various developments on individual environmental components (see subsection 6.2).

6.1 Evaluation of key environmental, including health, effects

The results of the evaluation of the master plan of Orhei taking into account the urban planning decisions made in the relevant sections of the Master Plan are presented in this section. The evaluation takes into consideration the environmental objectives related to the development at the local level in order to ensure the effective and sustainable socio-economic development of the city and improve the quality of life of the population (for the analysis of the environmental policy objectives see the chapter 5 above).

The evaluation primarily focuses on potential environmental effects or consequences linked to the proposed changes/revisions of land use designation and major planned development proposals envisaged by the Master Plan.

As part of the assessment, activities are proposed that are designed to mitigate the potential negative effects, and which will enable more efficient use of the territory of the city, its natural resources and preserve the monuments of nature, history and culture.

The results of the assessment are presented in the form of matrix comprising semi-quantitative evaluation based on a simple ranking of potential effects accompanied with explanatory comments. Based on this assessment of individual measures of by the Master Plan, an analysis of the potential cumulative impacts and risks was conducted in order to formulate alternative solutions and measures to mitigate and prevent any identified negative environmental consequences of the Orhei Master Plan implementation. The overview of potential cumulative impacts and mitigation measures is presented in Table 6.2 further below.

Among the key effects of the new Master Plan could be mentioned:

- Air: likely worsening the traffic along the new and bypass roads, but improvement in the city centre; closure of the stone mines will reduce the impact of pollution with dust.
- Water: improvement of the situation with the increasing of the number of people connected to the sewerage, which will reduce the level of pollution of ground waters; in case of closure of the old waste water treatment plant there will be reduction in the level of pollution of the Raut River.

- Soil: identification and highlighting the landslides and erosion areas will help implementing targeted actions to reduce and eliminate them. Change of destination of green areas – into areas for industry or commerce could reduce the surface of the natural areas.
- Wastes: continuation of the problems with the old landfill – it can be considered as missed opportunity (the problem needs intervention from higher strategic level).
- Biodiversity: improvement of the state of the existing areas (forest, park, green spaces) and enlarging of their surface and connecting into a single system will improve the state of biodiversity; proper mapping and management of the natural monument on the banks of the Raut River will improve its quality and contribute to the integration of the city in the National Park Orhei.
- Health: enlargement of the green areas and areas designated for sports will positively impact the general life conditions; proper water supply and sanitation measures will contribute to the reduction of public health risks.

Table 6.1 below presents the main identified effects.

Note: Evaluation scale:
-2 significantly negative effect
-1 moderate negative effect
0 no effect expected
+1 moderate positive effect
+2 significantly positive effects
? High uncertainty

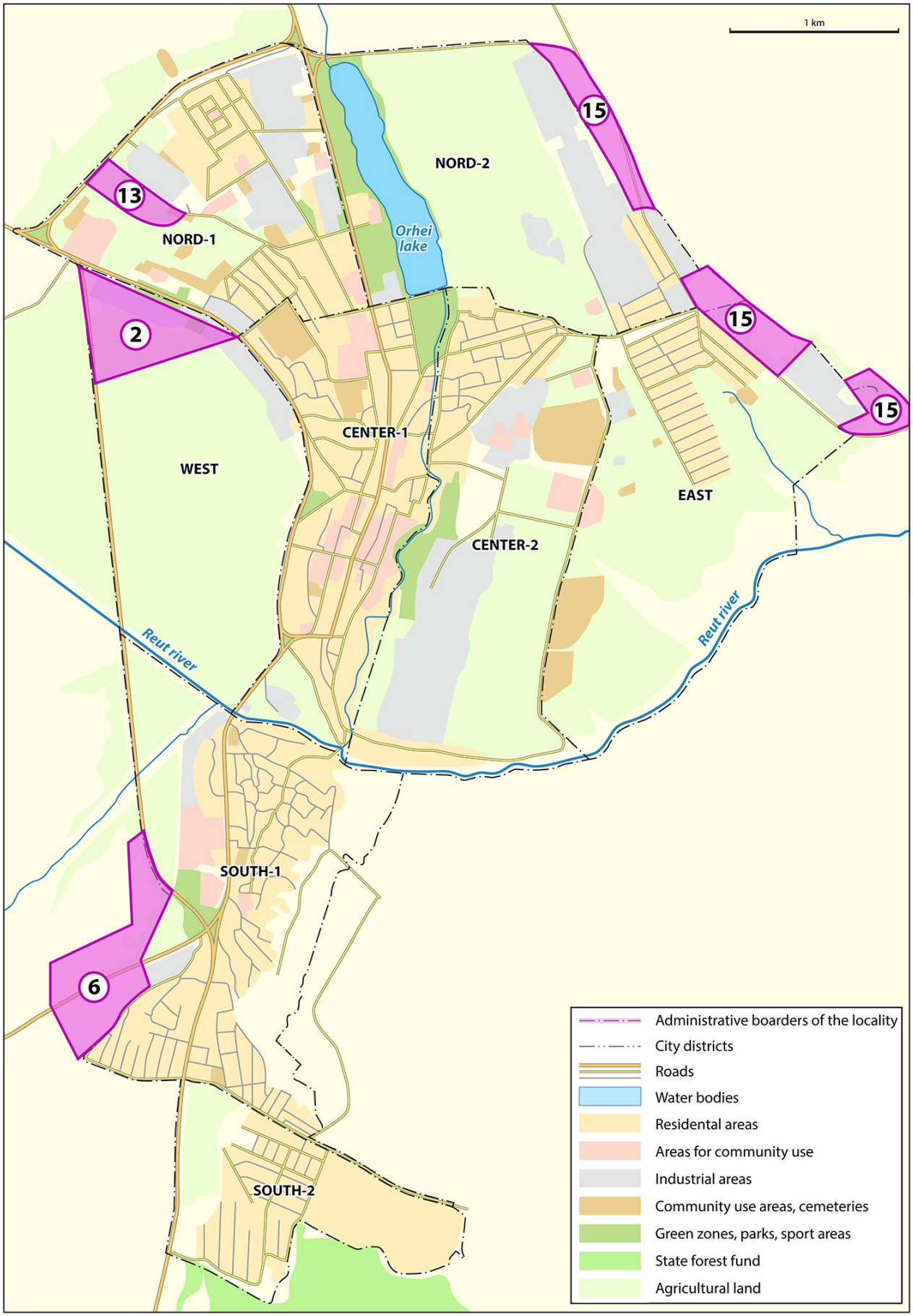
Table 6.1 Likely effects of the proposed changes in the designation of land use

Number and designation purpose of the territory	Name, designation purpose according to the Master Plan	Geographical location	Area, ha, m2	The share of agricultural lands	Potential Impact on key environmental components				Comments (for detailed justification of the assessment, see table 6.3 in Annex 5) (-2,-1,0,+1,+2,?))
					Air	Water	Soils	Biodiversity	
1 Reserved area used for agricultural purposes See Map VI.3 (below the table)	Complex zone for recreation, sport and tourism, including water bodies	The western part of the city	190	No	+1	+1	0	+1	**0,+1** RECREATION ZONE
2 Partially industry, partially reserved area used for agricultural purposes Map VI.1	Mix zones for commercial, services and economic activities Non-polluting	The north-western part of the city	32	No	-1	0,-1	-1	0,-1	**-1** INDUSTRY
3 Partially industry, partially reserved area used for agricultural purposes Map VI.2	Mix zones for living areas with commercial units and public services	The western part of the city	16	No	-1	0	0,-1	?	**0,-1** RESIDENTIAL MULTISTOREY BUILDINGS
4 Industry and public utilities Map VI.3	Complex zone for recreation, sport and tourism, including water bodies	Center	15	No	+1	+1	+1	+1	**+1** RECREATION ZONE
5 Non-productive lands Map VI.2	Zone of individual households with complimentary functions	The western part of the city	16	No	0,-1	0,-1	0,-1	0,+1	**0,-1** PRIVATE RESIDENTIAL CONSTRUCTION

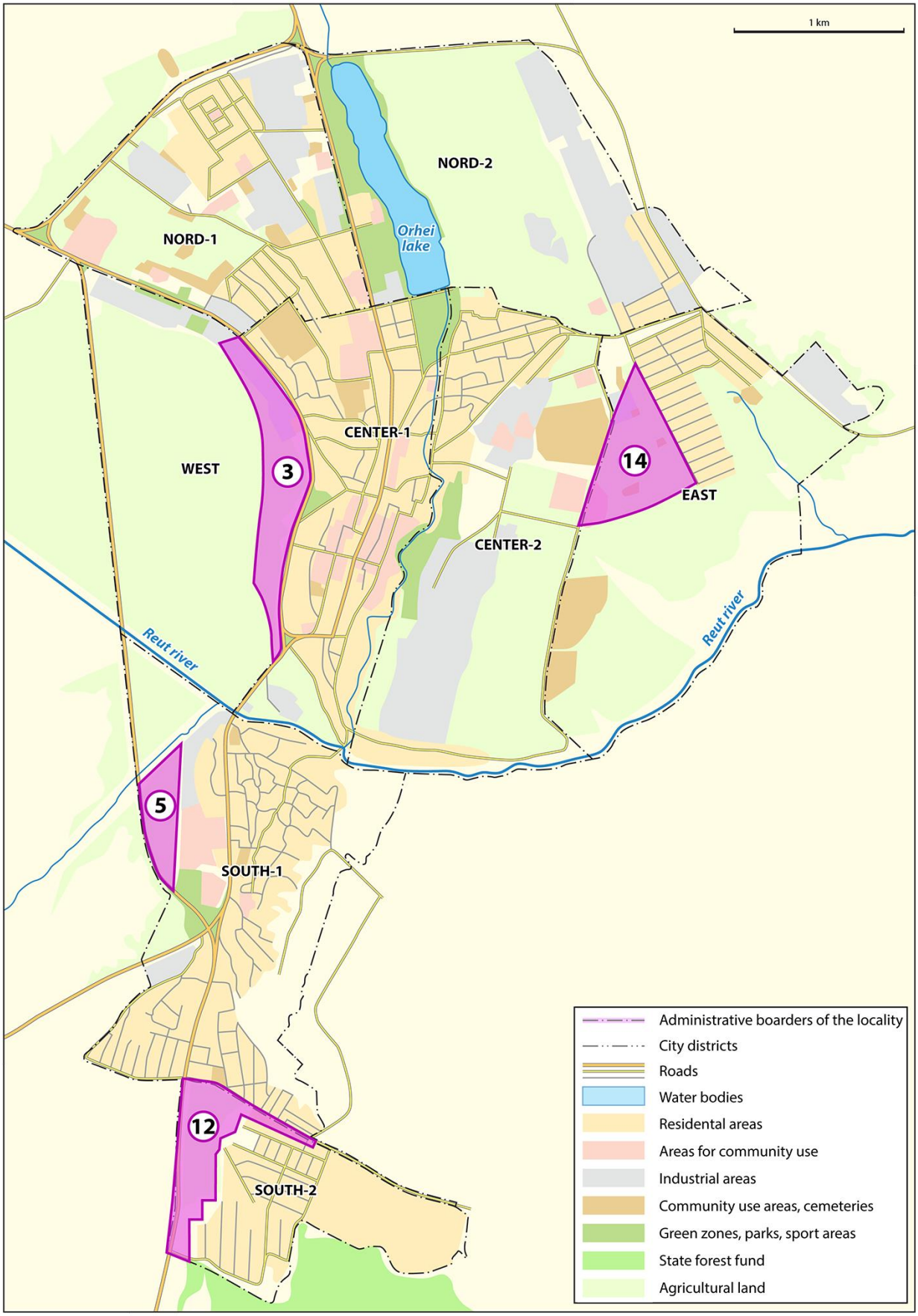
6 Non-productive lands Map VI.1	Zone of commerce (angro), industry and storages	The south-western part	43	No	-2	?	-2	-1	**-1,-2** INDUSTRY
7 Industry – brick-making plant Map VI.3	Zone exposed to greening and ecological restoration	The north-eastern part	5,6	No	+2	+1	+2	+2	**+2** TREE AND SHRUB PLANTING
8 Public utilities - treatment facilities, landfill Map VI.3	Zone of ecological restoration and planting of trees/forest	The south-eastern part	14	No	+2	+2	+2	+2	**+2** RECULTIVATION TREE AND SHRUB PLANTING
9 Non-productive lands Map VI.3	Zone of developed green areas	The south-western part	25	No	+1	+1	+2	+2	**+1,+2** TREE AND SHRUB PLANTING
10 Quarry, industrial dumping site Map VI.3	The territory of the former stone mine for use for economic purposes	The central part	36,8	No	+1	+1	+2	+1	**+1** RECULTIVATION INDUSTRY
11 Quarry (stone mine) Map VI.3	Zone with the restoration of industrial activities to be exposed to ecological recovery and planting forest	The southern part	32	No	+2	+1	+2	+2	**+2** RECULTIVATION TREE AND SHRUB PLANTING
12 Reserved area used for agricultural purposes Map VI.2	Zone of public interest with donations, Mixed of commerce units and services	The southern part	33,5	No	0,-1	0,-1	0,-1	0,+1	**0,-1** PRIVATE RESIDENTIAL CONSTRUCTION with elements of community infrastructure and facilities

13 Non-productive land Map VI.1	Industrial units zone	The northern part	43	No	-2	?	-1	-2	**-1,-2** INDUSTRY
14 Agricultural lands Map VI.2	Zone of individual households with complimentary functions	The eastern part	30	+	0,-1	0,-1	0,-1	0,+1	**0,-1** PRIVATE RESIDENTIAL CONSTRUCTION with elements of community infrastructure and facilities
15 (agricultural lands) Map VI.1	Zone of industrial units	The north-eastern part	36	+	-2	?	-2	-2	**-2** INDUSTRY
16 Individual residential construction, squatting Map VI.3	Zone of forest and established green areas	The central part	3,5	No	+1	+1	+1	+1	+1 PLANTING TREES AND SHRUBS
17 Agricultural lands Map VIII.2	Bypass road	The northern part		+	-2	?	-1	-2	**-1,-2** TRANSPORT
18	Storm-water system				0	+2	0,-1	0	**+1** STORM-WATER SYSTEM
19	Sanitary sewage				0	+2	0,-1	0	**+1** SANITARY SEWAGE

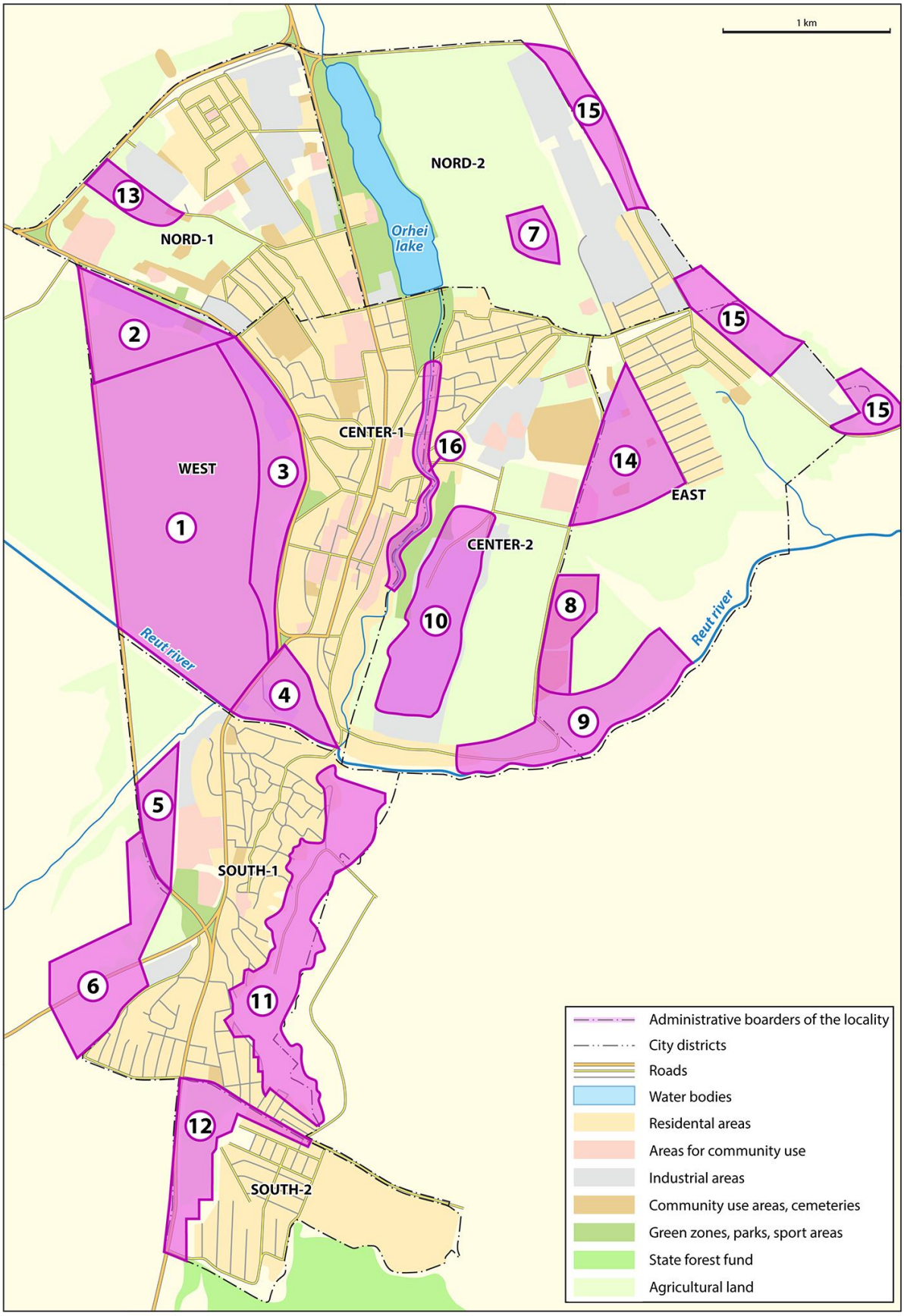
Map VI.1 Industrial areas



Map VI.2 Living areas with elements of social and commercial infrastructure



Map VI.3 Recreation areas, green and forested areas



6.2. The potential for negative cumulative effects

In this sub-section a summary of the assessment of risks of cumulative effects is presented. For each key environmental component (e.g. Air, Soil, etc.) key components of the Master Plan with potential negative impacts (as identified in Table 6.1 above) are presented and potential for cumulative impacts is explained, along with proposals for their mitigation.

Table 6.2 : Evaluation of the environmental risks of cumulative effects and potential for mitigation measures

Environmental factors	**Air**	
Components of the Master Plan with potential negative impacts (-1,-2)	**Potential cumulative impact (short description)**	**Proposed mitigation measures**
Territory № 2 Mixed zones for commercial, services and economic activities Non-polluting **(-1)**	Combined emission of pollutants from transport and industrial units	Creation of a buffer green zone between the area 2 and the residential areas Placement of the objects of the lowest category of sanitary risks only with BAT (Best Available Technology) pollution abatement technologies and equipment
Territory № 3 Mixed zones for living areas with commercial units and public services **(-1)**	Combined pollution from heating plants and transport	The new individual heating systems to be designed based on the results of the project-level environmental assessment (choice of technology and technical design – e.g. individual, block or district heating plant)
Territory № 6 Zone of commerce (agro), industry and storages **(-2)**	Emission of pollutants from transport and industrial units Noise from transport and technological processes	Creation of a buffer green zone between the area 6 and the living areas . Placement of the objects of the lowest category of of the sanitary risks only with modern technologies and equipment
Territory № 13 **Zone of industrial units** **(-2)**	Emission of pollutants from transport and industrial units Noise from transport and technological processes	Placement of the objects of the lowest category of the sanitary risks only with modern technologies and equipment
Territory № 15 **Zone of industrial units** **(-2)**	Emission of pollutants from industrial units, transport (big trucks)	Creation of a buffer green zone between the area 15 and the living areas Placement of the industrial units only with modern environmentally friendly technologies and equipment
Position № 17 Bypass road **(-2)**	Emission of pollutants from transit transport	Consider alternative routing – reduce the transit traffic in the territory of the city through the planned construction of city circuit. Construction of new city roads to link the city districts

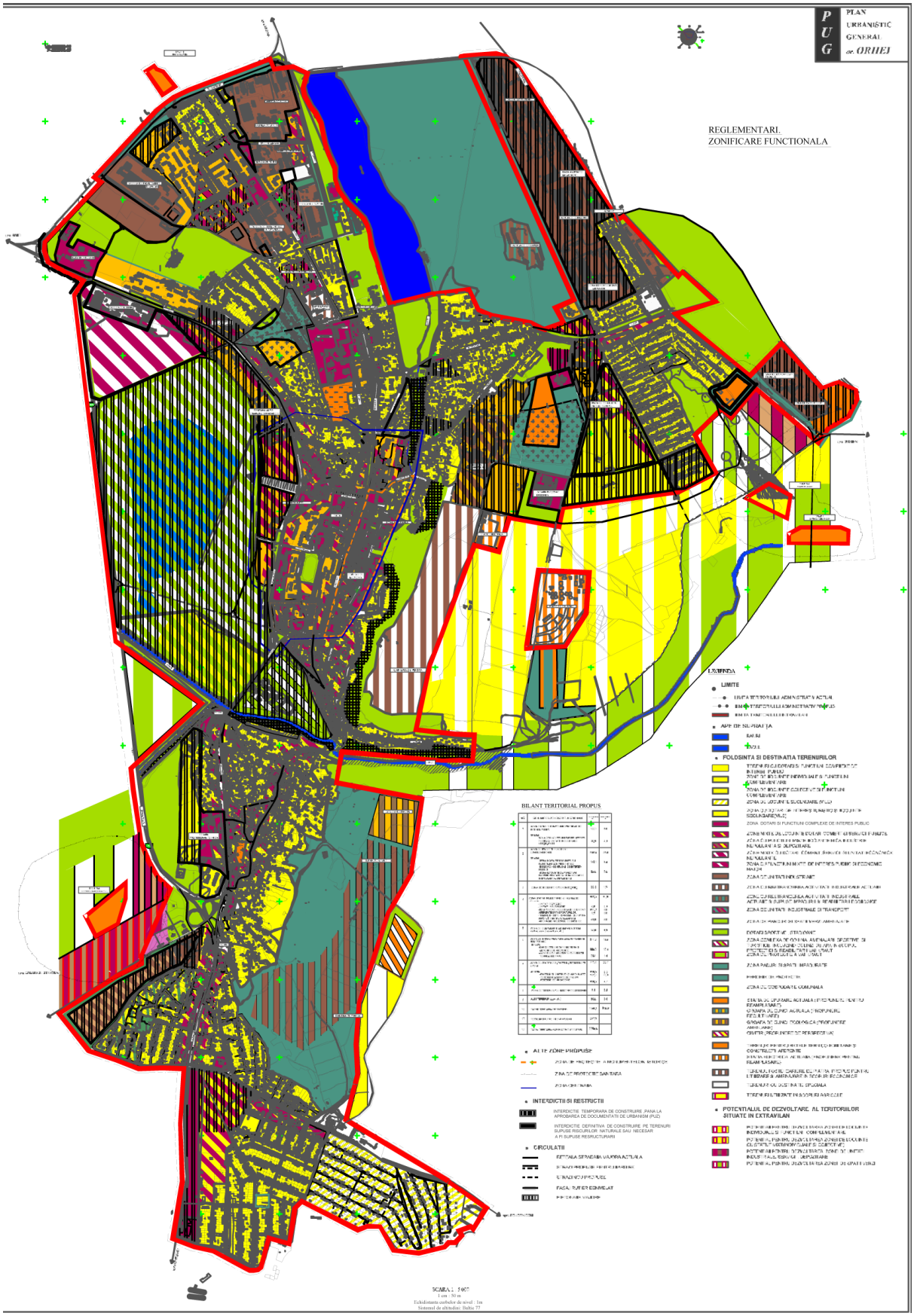
Environmental factors	**Water**	
Components of the Master Plan with significant impact (-1,-2)	**Potential cumulative impact (short description)**	**Proposed mitigation measures**
Territory № 2 Mixed zones for commercial, services and economic activities **(0,-1)**	Combination of pollution with discharges from industry and transport	Placement of the objects of the lowest category of of the sanitary risks only with modern technologies and equipment
Territory № 5 Zone of individual households with complimentary functions **(0,-1)**	Risk of ground waters pollution from households	According to the law there is prohibited the growing of agricultural animals in the city area. Unfortunately in the private households this mainly takes place. The wastes and waste waters from animals have to be collected in special tanks and transported for treatment.
Territory № 12 Zone of public interest with mixed commerce units and services **(0,-1)**	Risk of ground waters pollution from households	According to the law there is prohibited the growing of agricultural animals in the city area. Unfortunately in the private households this mainly takes place. The wastes and waste waters from animals have to be collected in special tanks and transported for treatment.
Territory № 14 Zone of individual households with complimentary functions **(0.-1)**	Risk of ground waters pollution from households	According to the law there is prohibited the growing of agricultural animals in the city area. Unfortunately in the private households this mainly takes place. The wastes and waste waters from animals have to be collected in special tanks and transported for treatment.
Position № 17 Bypass road **(-2)**	Risk of ground waters pollution from transport and related activities	Consider alternative routing – relocate the transit road out of the territory of the city Construction of new city roads to link the city districts

Environmental factors	**Soil**	
Components of the Master Plan with significant impact (-1,-2)	**Potential summary impact (short description)**	**Alternative, reduction of consequences, measures (arguments for the needs of the decision of the Master Plan, the alternative, cancellation, stopping and recommendations)**
Territory № 2 Mixed zones for commercial, services and economic activities **(-1)**	Land uptake as a result of construction of commercial and services facilities	During the selection of territory and construction of the object have to be ensured compliance with the environmental and soil protection legislation Measures for protection and rational use of soil resources during the construction and exploitation of the commercial or services units
Territory № 6 Zone of commerce (agro), industry and storages **(-2)**	Land uptake as a result of construction of commercial and services facilities	During the selection of territory and construction of the object have to be ensured compliance with the environmental and soil protection legislation Measures for protection and rational use of soil resources during the construction and exploitation of the commercial or services units
Territory № 13 **Zone of industrial units (-1)**	Land uptake as a result of construction of commercial and services facilities; Degradation of the upper soil layers	During the selection of territory and construction of the object have to be ensured compliance with the environmental and soil protection legislation Measures for protection and rational use of soil resources during the construction and exploitation of the commercial or services units
Territory № 15 **Zone of industrial units (-2)**	Pollution with wastes, contamination	During the selection of territory and construction of the object have to be ensured compliance with the environmental and soil protection legislation Measures for protection and rational use of soil resources during the construction and exploitation of the commercial or services units
Position № 17 Bypass road **(-2)**	Taking lands out of agricultural use Pollution of soil from transport and related activities, impact on natural soil composition	Alternative version – take off the transit road from the territory of the city out of the city and natural monument area Construction of new city roads to link the city districts

Environmental factors	**Biodiversity**	
Components of the Master Plan with significant impact (-1,-2)	**Potential summary impact (short description)**	**Alternative, reduction of consequences, measures (arguments for the needs of the decision of the Master Plan, the alternative, cancellation, stopping and recommendations)**
Territory № 6 Zone of commerce (angro), industry and storages **(-1)**	Pollution from industrial units and transport	During the selection of territory and construction the control on biodiversity protection have to be ensured Measures for protection of biodiversity to be implemented
Territory № 13 **Zone of industrial units (-2)**	Impact on natural environment and degradation of green cover Emission of pollutants	During the selection of territory and construction the control on biodiversity protection have to be ensured Measures for protection of biodiversity to be implemented

Environmental factors	Biodiversity	
Territory № 15 **Zone of industrial units (-2)**	Impact on natural environment and degradation of green cover Emission of pollutants	During the selection of territory and construction the control on biodiversity protection have to be ensured Measures for protection of biodiversity to be implemented
Position № 17 Bypass road**(-2)**	Intervention in a natural state protected area with the damage of the ecosystems, natural landscape of the site and its buffer zone	Alternative version – take off the transit road from the territory of the city out of the city and natural monument area Construction of new city roads to link the city districts

Map VI.4 Draft Master Plan Orhei (version of May 2015, provided during public consultations (adjusted for SEA report))



6.3. Summary of the evaluation results

The conducted analyses have identified large potential for positive impacts of the Master Plan on the environment and public health. At the same time however, a number of risks and potential negative effects associated with the major planning decisions taken by the Master Plan have been identified. The key findings are summarized below in this section. The main proposals for the prevention, minimization and mitigation of the potential negative effects are presented further in the section 7 of this report.

Atmospheric air:

The main concerns (risks):

The proposed change of designation of several areas for industrial facilities, premises for trade, service, and warehouse installations (positions - 2,6,13 as indicated in the maps above), as well as conversion of certain areas from agricultural purposes to industrial zones (position 15) will likely to allow for the developments (activities) associated with risks of increased noise and air pollution emissions from road transport, from technology processes of industrial enterprises on the adjacent territories.

Expected key positive effects:

Several major envisaged measures have a potential for positive impact on the air quality, These are namely the displacement of the industrial enterprises (positions 4,7), reclamation of mines (positions 10,11), re-cultivation of the old waste water treatment plants and landfills (position 8), , optimization of transport schemes and improvement of the road network, and the shifting of cargo transport on the highway bypass. Those measures (if implemented as planned) will lead to the reduction of the impact of noise and air pollution from transport and industrial enterprises on the urban areas, as well as to the elimination of emissions of dust and noise from the quarries, landfills and old waste-water treatment plant.

Water resources

The main concerns (risks):

The planned change of the functional category of several territories towards the industrial zones (positions 2,15), or to an individual private housing (positions 5,12,14) it is possible that the pollution from production processes and transport, as well as household and farm effluents and wastes will increase the risk of groundwater contamination. Similar risks (but with much less certainity) can be estimated for the localities with planned functional changes direclty adjacent to the local water bodies (positions 6,13)

Expected key positive effects:

In connection with the proposed construction of drainage (rain water collector), full coverage of the territory with sewage system, closure and reclamation of old landfill and waste water treatment plant (position 8) by greening of these areas, it can be expected that the water pollution from discharges of storm water and household sewage will be reduced, while the pollution discharges from the landfill and old treatment plant will be eliminated.

Land resources, soil

The main concerns (risks):

In case of development of territories newly designated for industrial facilities, objects of trade, services, and warehouse operations (positions 2,6,13,15) the physical impact on the soil (upper layers removal, sealing the surface, etc.) will take place, as a result on the construction of facilities and associated infrastructure.

Due to the allocation of additional land from agricultural use to industrial zones (position 15) it is expected that the agricultural land will be removed from the production and effectively lost for further cultivation.

Expected key positive effects:

Closure the old waste-water treatment plant and city landfill and their remediation, closure and remediation of open mines, reconstruction of flooded areas, the creation of green areas in degraded areas, forestation of water protection zones will in effect reduce the anthropogenic impact and risks of contamination of soil and land resources and improve their condition.

Biodiversity

The main concerns (risks):

The planned changes of designated land-use of certain territories towards industrial facilities, objects of trade, services, warehouse operations (positions 6,13,15) are associated with the increased risks of contamination from emissions from technological processes and motor vehicles, as well as risk of disturbance of the natural condition and the degradation of the vegetation cover of the concerned localities, which still retain certain biodiversity value.

Despite the declared concerns for the protection of the environment presented in the Master Plan the risks and vulnerability of the landscape will continue to be an important problem of he city.

Expected key positive effects:

Envisaged uniting of the fragmented green localities in a single system of green area of the city, and the prospective integration of this area into the National Park Orhei have a potential to improve the conditions for the biodiversity. Expansion of green areas, creation of recreational areas and water bodies in the central and western part of the city, in the residential area close to the city of lake and in the floodplain of the River Raut - will improve the state of green areas and landscape and as well as living conditions of the population.

The main socio-economic risks

In implementing the decisions of the Master plan for the development of city infrastructure (development of networks of water supply and sewerage, drainage system, collection, sorting and recycling of wastes, construction of new roads, etc.) there are inherent socio-economic risks present that are caused by a number of reasons. For example, due to the low capacity of the population to pay for the provided utility services, there is a high probability that households refuse to connect to new networks of water supply and sanitation, thus refuse to benefit from centralized management of services.

This situation might contribute to the formation of illegal waste dumps, uncontrolled wastewater discharge, the use of water from decentralized water sources (wells) that do not meet sanitary requirements, and eventually might lead to the increased pollution of the environment of the city and consequently to worsening of health among population and vulnerable groups (e.g. children, elderly, socially disadvantaged).

From a more general perspective, it is necessary to acknowledge, that due to the lack of financial resources in the local budget and low capacity for the attraction of investments, polarization of distribution of funds at the national level, the risks for the timely, proper or consistent implementation of the decisions adopted in the Master Plan remain very high, especially in the case of infrastructure projects associated with large investment (e.g. the by-pass road construction) or where the decision making process is placed higher in the national institutions (e.g. termination of mining permits).

Public health risks

The protection of the public health is one of the major objectives of the human and social development of the city according to the Master Plan. In the regional context, the numbers of beds in the hospital of rayon type are 510. An average for 1000 citizens there are 15,1 beds. In addition, in the city the republican psychiatric hospital is placed with 480 beds. The total number of personnel involved in the health care sector is of 1679, including 196 professional doctors. In the Family Medical Centre there are provided services of professional family doctors and laboratory examinations, physiotherapy and functional diagnostic. The capacity of the health care facilities meets the minimal requirements, but there is a limited supply of medical equipment, including specialized emergency cars. The major problem is the physical degradation of the equipment. During the last years, there is a graduals improvement, but still, due to luck of financial resources, the hospitals face problems with material and equipment supply.

The main concerns (risks):

The indicators of public health in the city does not show favorable picture. There is a big mortality rate and reduced birth rate and as a result there is a negative natural growth rate of the population. There is an increased rate of mortality of population at the ages capable for work and elevated rate of death of children under 1 year.

There is no data available relevant for the analysis of a direct impact of the quality of the environment (ambient air, drinking water) on the health of the population. There is no data available relevant for the analysis of a direct impact of the quality of the environment (ambient air, drinking water) on the health of the population. But during SEA consultations with the local public health authority, has been acknowledged that water borne diseases or respiratory illnesses are prevalent (although in less pronounced manner in comparison with other localities in Moldova where exists huge transport or industry activities).

Expected key positive effects:

Positive impacts on public health are expected from Master Plan envisaged measures such as the relocation of traffic from city center – less people exposed to air pollution, improvement of sanitary condition for those newly connected to safe water resources an sanitation systems, improvement of opportunities for the healthy lifestyle and

the like. Importantly, the effects of the Master Plan on the improved social conditions (e.g. increase of employment opportunities, reduction of economic insecurity, etc.) have potential to deliver positive impact on human health.

Enlargement of the green areas and of the sport facilities will create additional opportunities to the population of the city to improve the living conditions. Reduction of the pollution of the surface and underground water will decrease the risk of water borne diseases and might improve the general health situation, especially of the children. Closure of the old waste water treatment plant, transfer of the waste landfill, transfer of old and creation of new environmentally friendly economic activities in the city will also add to the general efforts to improve environmental conditions and public health.

CHAPTER 7. Measures to prevent, reduce or mitigate any significant adverse effects on the environment, including health, which may result from the implementation of the Master plan of Orhei

Based on the analyses presented in the previous sections and in order to contribute to achieving environmental policy objectives established at national and local levels, the SEA have put forth a number of measures to prevent, reduce or mitigate identified potential negative consequences for the environment and public health resulting from the implementation of the Master Plan. These measures are composed from the recommendations for the Master Plan implementation, as well as from the proposals to be elaborated and included in the Master Plan document. Thus the municipality of Orhei shall plan and ensure realization (e.g. secure investment) of the following actions:

- Development a system of drainage, which will reduce water pollution, improve environmental and sanitary conditions of the city;
- Expansion of water and sanitation systems to increase the population's access to quality water sources that will help to improve public health, increase the access of the population and enterprises of different economic sectors to sewerage systems, enabling connection to the new wastewater treatment plant. These measures will help to reduce pollution from households and industry, and improve the prevention of pollution of groundwater and surface water resources;
- Closure and reclamation of existing landfills and old waste-water treatment plant to achieve positive effect on all components of the environment, including human health, improvement the overall environmental and aesthetic condition of the city;
- Closure of stone quarries in the city center - including employment of legal and administrative measures taken by the local authorities, as well as enforcing the land reclamation, which should be carried out by the owner of concerned quarries. This action will significantly reduce emissions of pollutants into the air, and reduce the noise;
- Modernization of waste management infrastructure (provision of platforms and containers for separate waste collection, etc.) in order to help to reduce pollution, increase of utilization of secondary resources, and the implementation of environmentally sound approaches in the field of waste management;
- Modernization of road infrastructure (development of road junctions, the new urban development schemes, intra-roads, bypass) in order to reduce emissions from vehicles in certain problem areas of roads, to lower impact of traffic on the city center and to redirect transit traffic to the bypass road. These measures will contribute to the capacity of the network and reduce accidents on the roads. It is necessary to provide for the creation of parking areas for motor vehicles, especially in the central part of the city;
- Creation of a single scheme of green areas including the expansion of green areas, forestation of water protection belts of rivers Raut, Ivanos, Vatici, and city lake area, development of recreation areas. Significant proportion of the green zone to be dedicated for pedestrian and bicycle paths, and playgrounds. This action will help to improve the quality of

the components of the environment, including health, improve the urban landscape of the city. It is necessary to clearly delineate and respect the boundaries of green zones.

A number of measures of an administrative nature, which cannot be included within the framework of the Master Plan but will contribute to its implementation, is also proposed. The need for the following measures was identified during the process of SEA in the phase of data collection and analysis of the current situation:

- Ensure basic monitoring of air quality in the city center and on the highway of national significance and the monitoring of water quality (environmental and health indicators). Monitoring on these components is necessary in order to ensure a proper implementation of the Master Plan as well as for the effective work of local authorities, environmental and health authorities in order to produce informed decisions to improve the situation in these areas.
- The development of a management plan for the natural monument "Defileul Orhei" and delimitation of its boundaries in the territory will improve the safety and protection of the monument;
- Strengthening control of compliance with environmental requirements for new facilities and during construction. This measure is critical for avoiding the above identified risks of negative impacts, as the environmental authorities shall respect the functional zoning provided by the Master Plan, but at the same time define and enforce conditions ensuring that the individual or cumulative impacts from economic activities will not trigger worsening of the overall environmental situation;
- To introduce changes in statistical reporting in the field of environment to obtain data not only in the district as a whole, but also for the city level. The problem of the absence of specific statistical data is common for cities across the republic. Ideally for each level of standardly conducted planning processes shall be a corresponding level of the official environmental reporting, so that the planning authorities (and other relevant stakeholders) have adequate detailed information from official sources.
- Active exploration of funding resources for the investment in environmental protection measures. The implementation of the decisions of the Master Plan and implementation of recommended environmental protection measures will require substantial investments. This can be achieved by mobilizing the local budget, local environmental fund, the participation of business, by attracting funds from the National Environmental Fund, the investment of national and international financial institutions.

Measures examined during the planning process.

Based on the examined information, documents, meetings with stakeholders and identification of key development, social and environmental issues conducted in the initial phases of the SEA process, the following issues were raised by the SEA team in consultations with the Planning team in order to explore opportunities for addressing these issues within the planning process:

1. Delimitation of the strictly protection zones for the rivers (Raut, Ivanos and of the city lake);

2. Inclusion the boundaries of the green zones, of the parks and green belts of the city in the Master Plan

3. Mining zones inventory and mapping

4. Indication of the identified degraded lands (landslides, etc.) for the forest planting

5. Modernization of the waste management infrastructure (placement of platforms and bins for the separate waste collection etc) and integration of the city waste collection and recycling into the regional/national schemes

6. Re-cultivation of the old municipal wastes landfill and planting of trees

7. Placement of the air quality monitoring stations (in the city centre and on the highway)

8. Placement of the Raut River water monitoring points

9. Extension of the green zones and recreation areas (on the Raut river banks) and plant or restore the green belts on the river banks/river protection zones

10. Development of the road links and junctions for the traffic, which will be able to go around the city centre

11. Review of options to improve conditions for the parking of cars, especially in the old city centre

12. Application of public-private principle for industry and services development

13. Promote the proposal for the construction of the pre-treatment waste water treatment plant at the Orhei-Vit Company

14. Cover all households with the extension of the sewerage system for waste water collection

15. Establish a platform for the sustainable development and environmental protection in the city

16. Development of the management Plan for the Monument of the Nature „Defileul Orhei" (geological and paleontological), fix its borders in the territory and ensure the implementation of protection measures, propose to integrate the territory of the city, natural monument and forest into the National Part "Orhei"

17. Establishment of the rain water collectors system in the city and link it to the waste water treatment network

18. Reducing the traffic problems on the main roads and creation of distribution networks

19. Elaboration and integration of the information on planned investments and current expenditures for the environmental protection activities and environmental infrastructure into the planning process at the city/rayon/national level

20. Indicate in the Master Plan documents, that the draft document and the procedure of its development was subject of Strategic Environmental Assessment, carried out in August-December 2014 within the Pilot Project of UN ECE, EU EaP GREEN Program.

21. Facilitation of the development of the local/city environmental action plan

22. Promote the proposals and recommendations for the modification of the system of statistical and departmental data collection at the city level (to separate it from the rayon one) to ensure the monitoring of the implementation of the Master Plan actions and performances.

CHAPTER 8. Outline of the reasons for selecting the alternatives dealt with and a description of how the assessment was undertaken including difficulties encountered in providing the information to be included such as technical deficiencies or lack of knowledge

8.1 Evaluation of alternatives

In the context of the strategic environmental assessment of the Orhei Master Plan the following three perspectives were adopted to examine available alternatives and their environmental implications.

1. "Zero/ no-development option";
2. Comparison of the Master Plan Orhei 2015 and Master Plan of 2008;
3. Alternative proposals for the bypass road in the framework of 2015 Master Plan.

Description

1. In the "zero option", the situation was examined under the hypothetical scenario under which neither the new Master Plan is developed and approved, nor the original 2008 Master Plan is implemented beyond the already realized developments. This scenario can be understood as a continuation of the current (often unfavorable) environmental trends described in the sections 2, 3 and 4 of this report. Consequently, the SEA experts believe that within the "zero option" scenario the further sustainable development of the city is clearly problematic and this alternative leads to a worsening of the ecological situation of the city, inefficient use of land resources, chaotic construction and deterioration of the overall landscape of the city.

2. Comparison of the Master Plan 2015 and of the Master Plan of 2008

Since the newly proposed 2015 Master Plan in many aspects deviate from the old Master Plan adopted in 2008, the comparison of the two concepts for the further development of the concerned territory was conducted in order to compare these two complex alternatives. The evaluation focused namely on identified differences in the functional zoning of some urban areas (see. Map VIII. 1 below).

Consideration of this alternative is based on a comparison of estimated environmental effects resulting from the change of the functional designation of the concerned territories. The comparison of alternatives has demonstrated the superiority of draft Master Plan of 2015 in most of the environment–related parameters (See. Table VIII.1).

Map VIII. 1 Alternative decisions of the Master Plan Orhei 2015 in comparison with Master Plan 2008

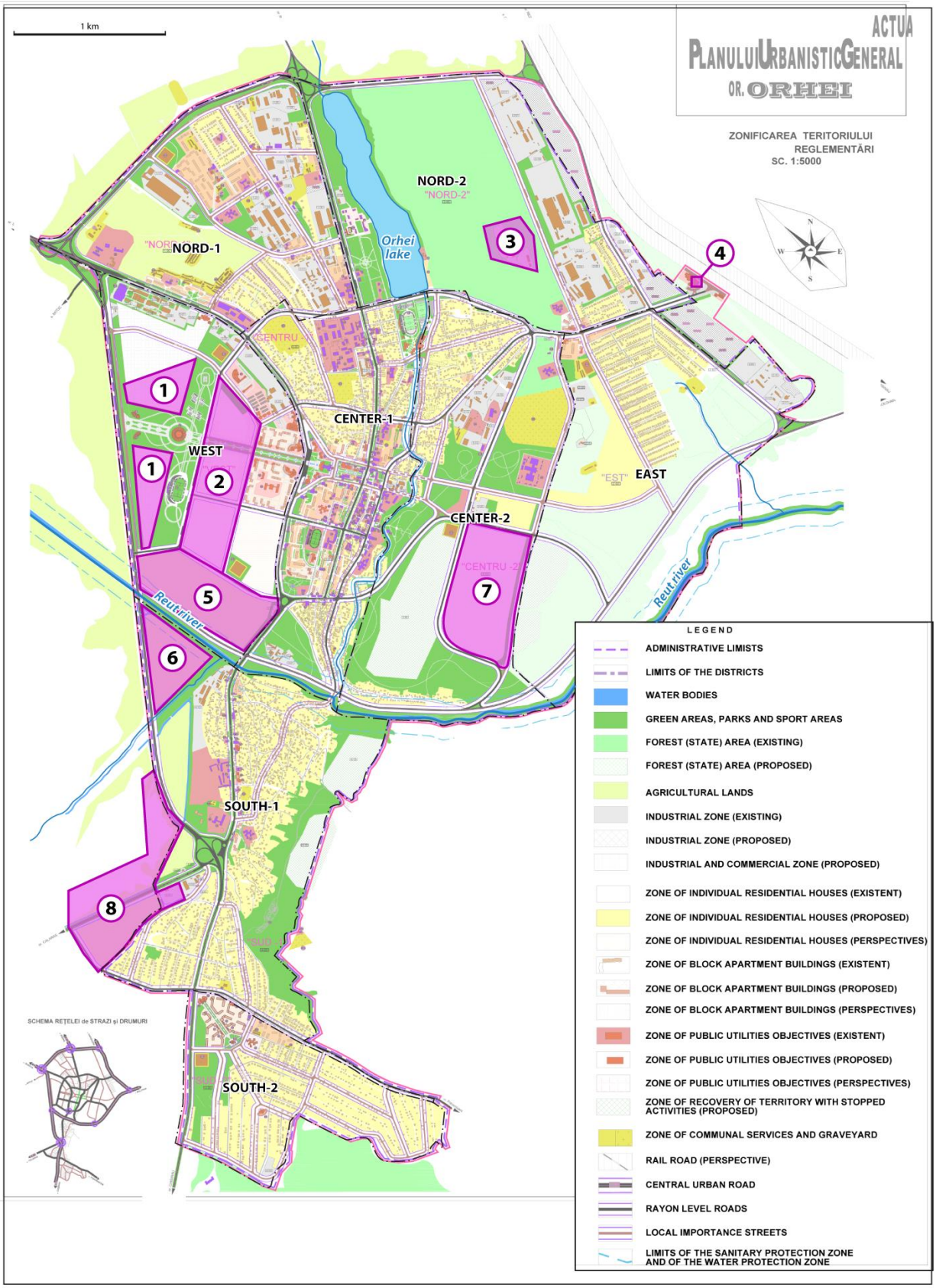


Table VIII.1. Comparison of Alternatives: Master Plan Orhei 2015 compared to the Master Plan of 2008

Nr. of the zone/territory	Functional designation of land of the previous Master Plan 2008	Functional designation of land of the current Master Plan 2015	Impact on the environmental components				Comments (arguments for the selected level of impact (-2,-1,0,+1,+2,?))
			Air	Water	Soil	Biodiversity	
1	2	3	4	5	6	7	8
1	Industrial production zone	Complex recreation zone with sport and touristic elements and water bodies	**+2**	**+1**	**+1**	**+2**	**+1,+2** Elimination of the impact of the pollution from the industrial units on the atmospheric air, reduction of floods, reduction of pollution of water bodies. Due to the collection of funds from the recreation sites improvement of landscape and of recreational functions of the area
2	Zone of living areas with block apartments buildings	Complex recreation zone with sport and touristic elements and water bodies	**+1**	**+1**	**+1**	**+1**	**+1** Elimination of the impact of the pollution from the industrial units on the atmospheric air, reduction of floods, reduction of pollution of water bodies. Due to the collection of funds from the recreation sites improvement of landscape and of recreational functions of the area
3	Industrial Zone North 2, East	Zone exposed to the ecological restoration and planting forests	**+2**	**+1**	**+1**	**+2**	**+2** Elimination of the impact of the pollution from the industrial units on the atmospheric air, improvement of the landscape, merging this zone with the existing green areas
4	Railway station	Green zone	**+2**	**+2**	**+2**	**+2**	**+2** Elimination of potential impact of the rail road transport (diesel) on the atmosphere air, soil and water resources. Improvement of the landscape and recreation functions

5	Agricultural lands	Complex recreation zone with sport and touristic elements and water bodies	**?**	**?**	**-2**	**+1**	**-1** Taking agricultural lands out of the agricultural activities At the same time will take place the improvement of the landscape and of the recreation functions
6	Agricultural lands	Zone of protection of the Raut River	**0**	**+1**	**-2**	**+1**	**-1,+1** Taking agricultural lands out of the agricultural activities Elimination of impact of agricultural soil erosion, contamination with pesticides and fertilizers
7	Living areas	Agricultural areas	**-1,+1**	**0,-1**	**+2**	**?**	**0,+1** Re-allocation of lands for agricultural use: reduction of the potential impact of housing development, but increase of the risks of impact of agricultural practices, use of chemicals etc.
8	Green areas	Zone of the commercial units, small industry and storages	**-1**	**?**	**-1**	**-1**	**-1** Reduction of the green area surface, impact of emissions and pollution of soil and water

On the photos below there is a general presentation of the sites, which according to the decisions of the Master plan will change their land use destination.

Photos: Sites, where combined industrial and commercial units will be developed

Photo: Pasture and flooded land to be transformed into recreation area with water bodies

Photo: Agricultural lands to be transferred in the protection zone of the Raut River

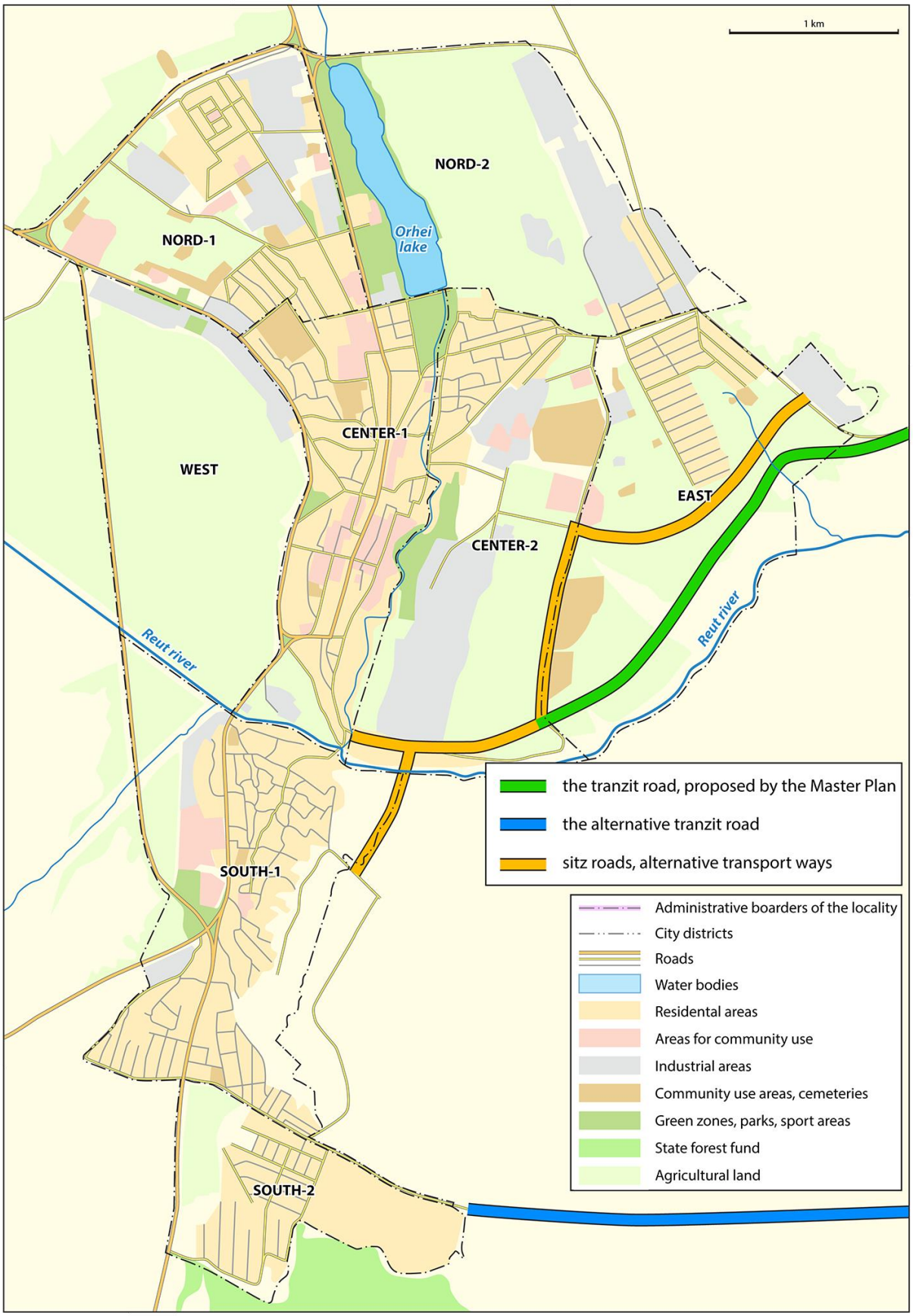
Photo: Area for the planned rail road and station (2008) to be transferred into green areas

Photo: Green areas to be transformed in commercial and storage units

3. Alternative proposals on the bypass road in the framework of the developed Master Plan.

During the development of the SEA it has appeared necessary to consider alternatives regarding the placement of a bypass road, proposed by the developers of the new Master Plan. The evaluation of the potential environmental impact of the planned road construction indicated risk of spatial conflict and potentially significant impact on the paleontological monument protected by the state "Defileul Orhei." Therefore, the SEA has established a requirement - to change the scheme to avoid conflict with the protection zone of the paleontological monument. As a result, the proposal was taken into consideration and the alternative routing of the bypass was introduced. For the comparison of these two alternatives see the Map VIII. 2, as well as the more detailed description of the decision rationale that can be found below.

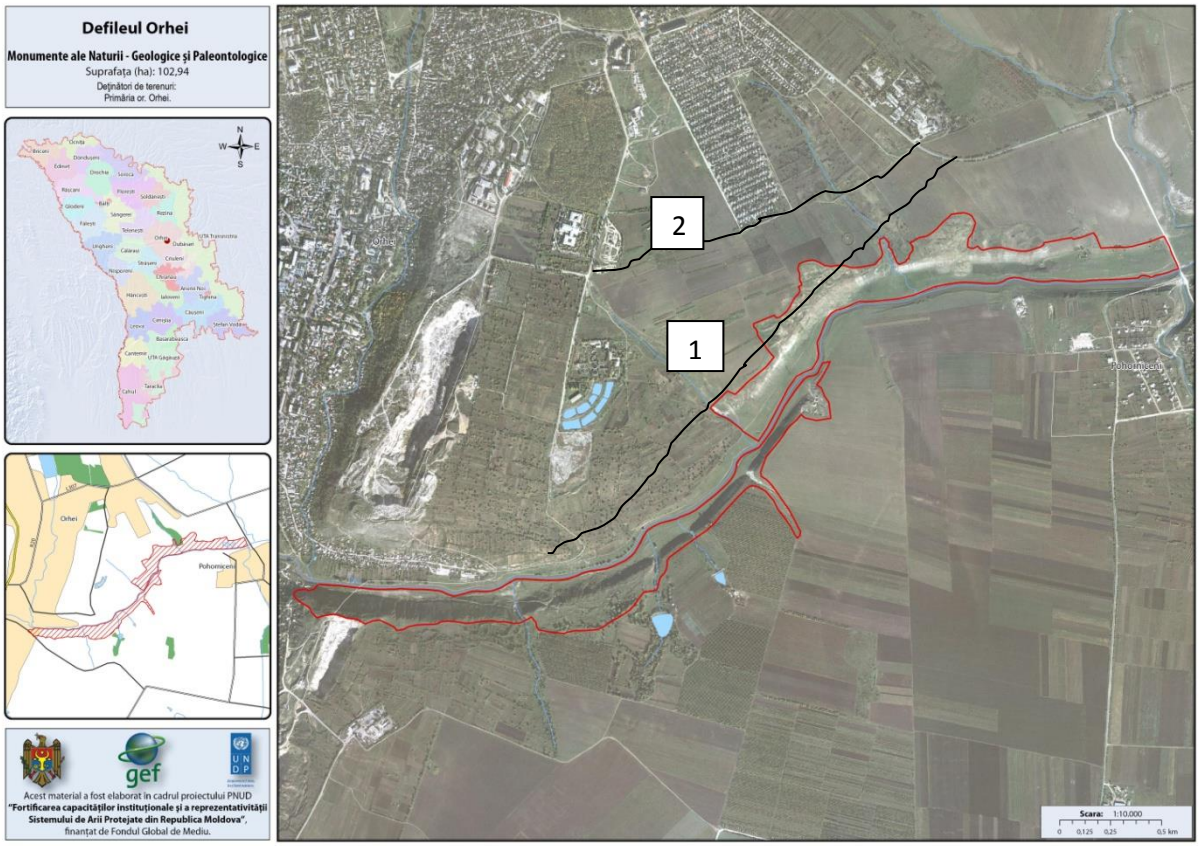
Map VIII. 2 Alternative decisions of the Master Plan Orhei 2015 from environmental considerations



8.2 Environmental alternative for the construction of a new city road in the South-East part of the city

The old Master Plan (2008) proposed the transit road to be built in the Raut river protection zone and crossing the Natural protected monument "Defile Orhei". The proposal is to move the problematic segment of the new road (up to 50%) to the north, closer to the residential areas and to be built on the base of the existing unofficial unpaved roads.

1 – Old proposed road (Master Plan 2008)



2 – New proposed road (accepted by the Master Plan development team after the scoping process)

Photo: the segments of the proposed new city road and place of its connection to the main road at the entrance to the city from villages

The relocation of the proposed road from the area of the natural monument eliminated the potential impact on the natural protected area, which was likely to be affected by the possible construction works and by the traffic on the new road. The construction of the road through the natural monument would cause damages to the natural areas, landscape elements and is likely to destroy existing ecosystems.

The value of the monument, its landscape and biodiversity conservation value will be not affected in case of the transfer of the road to the north, closer to the residential areas.

This is also an economically justified solution, as in this area already exists a traditional road (without pavement), used by the population to access the agricultural fields, and which connect the residential area with the existing road to the adjacent villages.

This new alternative was accepted by the planning team and received endorsement of at the public consultation within the SEA process.

8.3 Problems encountered in conducting the SEA and limits of the adopted approach

The pilot application of the strategic environmental assessment has naturally encountered number of obstacles and difficulties resulting from the lack of legislative and institutional arrangements as well as from lack of practical experience with such complex process among all involved stakeholders.

Major problems in conducting the pilot SEA:

- Luck or limited availability of disaggregated data at the city level for the major sectors of concern (environmental protection, health, transport, social, industry) due to the national/rayon level set up of collection of statistical data and rayon-structured environmental and health authorities. Developed tables or requests for data remained partially uncompleted, especially for the health sector;
- The resources of the project did not allow to carry out field works or made calculations of the transport intensity on the major highways and central streets to compensate for the lack of consistent official monitoring;
- No data was available on the real size and state of the green areas and park, as no records reflecting the actual state of the green areas are kept by local authorities;
- There was no assessment report on the achievement of the objectives and goals/decisions of the previous master plan (2008) or description of major problems and causes of not implementation of the planned developments. In many cases according to the expert judgement the main decisions of the Master Plan 2008 were not achieved due to lack of financial resources at the local level, and low technical or institutional capacities;
- The interest from local population and from business community (companies, factories, part of them having the central management in capital city) to participate in SEA-triggered consultations was very weak, due to generally low interest in environmental issues and lack of time and resources within the project to conduct an awareness and information campaign, public surveys, arrange small focus groups meetings etc.

- Local mass-media (local press, TV and radio, private internet sites, developed for the city), contacted and receiving all materials, were not interested in this process. As a result, there was a low level of participation in the public consultations, which in May also coincided with the period of local elections;
- Limited understanding of the local institutions to the potential of a SEA process to the Planning context in the current socio-economic conditions of the country;
- Access to the data and maps developed by the Master Plan team was ensured thanks to active communication and good will of all key stakeholders. Even though some of the essential components of the planning documents reached the SEA team with delays or being incomplete, especially after the forming of the new government in February 2015, when the political changes were also reflected by the new instructions for the Master Plan development (e.g. introduction of new territories for the industrial development). Provisions for the ready access of the SEA team to the most up-to-date planning outputs shall be a top priority when designing future SEA processes;
- Some of the highlighted problems, like the old waste water treatment plant, old unauthorized landfill of the city and placement of the future regional landfill, national highway crossing the city (pollution and noise), mining and authorization for mining activities, and high-voltage electricity lines location, are not under the management and decision making authority of the city council and solutions needs to be sought at the regional or national level. In such cases, the SEA have not effective means to facilitate desired solution beyond publicly acknowledging the pressing issues and proposing actions for responsible authorities/decision makers (who are not necessarily directly engaged in the SEA process).
- There are no strong environmental local NGOs in Orhei city and rayon, due to which fact there was no additional support of the process from NGOs. Some of the NGOs (sport, social or agricultural) did not demonstrate interest to the process.
- The local budget did not have special lines for environmental protection or investments in environmental infrastructure, main funds being provided from the national level, or from external grants or loans.

Added value of the SEA process

The SEA team has made significant effort to deliver added value not only form the point of view of conduction of the SEA process in line with the established international standards and producing high quality deliverables such as the SEA Report, but also to effectively contribute to the high quality of the planning (i.e. Master Plan development) process itself. The following aspects of the SEA process can be listed in this context:

- The SEA process provided support to the Master Plan development team in the identification of the major environmental problems and in obtaining new data, necessary for the environmental chapter and environment related maps of the Master Plan (e.g. new maps and borders of the natural monument, river basin protection zones, data on enterprises).
- SEA facilitated the dialogue between local authorities and municipal services in the city, environmental and health authorities have participated on the Master Plan development and environmental problems evaluation through the SEA-initiated consultations;

- The local priority environmental problems were highlighted and will be presented at the national level, where solutions could be found, actions planed or funds made available or mobilized from internal or external sources
- Local authorities identified some gaps in their work, in the field of environment and urban planning, which partially were already reflected and addressed within the Master Plan and SEA process. Other will be likely solved through the development of the Local Environmental Action Plan or integration of the main issues (landfill, highway) in the sectorial development plans at the national/regional level;
- Data gaps identified during the evaluation helped to formulate the needs to change/upgrade the data collection schemes for rayon and national statistical reporting, as well as the internal/departmental and administrative needs for specific data which have not been subject of regular statistics. The absence of data on level of noise and impact of the stone mines operations on the surrounding urban areas can be an example;
- Measures and indicators for the monitoring of the performance of the new Master Plan from environmental point of view were developed in the framework of the SEA (see chapter 9).
- Cooperation between central environmental authorities and local public authorities was enlarged;
- Central environmental authorities learned more about particular problems of the rayon centre/Orhei city, which face similar problems in its development and environmental protection as many other localities, but have its specific;
- The SEA facilitated identification of potential for improvement in the existing draft Law on SEA in Moldova, namely in following aspects:
  - To introduce the system of evaluation and monitoring the process of implementation the SEA recommendations,
  - The SEA legislation should provide guidance regarding the minimum standards for the public awareness activities with aim to ensure the public involvement in decision making process;
  - Ministry of Environment should keep the data base of the SEA process with ensuring transparency and access of stakeholders to the SEA report and all other SEA process-related documents
  - To add the financial responsibilities to the public budget regarding ensuring the SEA process, along with allocation for relevant planning activities;
  - To stipulate the institutional system of the environmental protection , including SEA, at the local level;

Lessons learned from the pilot SEA application:

Several key lessons can be formulated based on the SEA for Orhei Master Plan to identify issues that would be useful to account for while planning further SEA projects in Moldova

- Local authorities (the mayor and his office) recognized the importance and supported the SEA process, but could not influence all stakeholders or solve all problems, which need significant funding or decision making at Government/Parliament level.

- The SEA process benefits from being accompanied with a well-structured and funded information and awareness campaign, focused on the major target groups, vulnerable people, gender, etc.
- The SEA would benefit from allocating more time for the joint work of the planning team, SEA team, authorities and local environmental and health institutions, provided that the relevant institutions are ready to actively take part in the planning deliberations (i.e. beyond passive observation and data supplying role).
- A Master Plan of the city is a very complex and complicated document (considering the complexity of information conveyed in maps), which makes the related SEA particularly demanding in terms of structuring the SEA process and involvement of experts in urban/territorial planning;
- A full-time local team for the SEA procedure would be adequate for implementation of the pilot SEA process. Knowledge of all English, Romanian and Russian languages (or lack of thereof) by each SEA team member was an important factor influencing of the efficiency of the pilot SEA process.

CHAPTER 9. Measures envisaged for monitoring environmental, including health, effects of the implementation of the Master plan.

Provisions for the monitoring of environmental impacts resulting from the Master Plan implementation are presented in this section.

During the SEA Scoping phase as well as during the drafting of environmental report a big number of reports and data in the field of environment, health, transport, social and economic development of the city were collected and examined, and a general understanding to the structure of the various systems of data generation, proceeding and reporting at the city, rayon and national level was developed. Specific requests for data were sent to local and national agencies in different related domains. All that data was examined and contributed to the development of the relevant chapters of this report.

During the public consultations the following list of indicators was presented as a departing point for the discussion on the potential Master Plan environmental monitoring indicators. The presented set of indicators was prepared based on the evaluation of available data, which are already monitored or collected by local authorities or specialized agencies (environment, health etc.), in order to avoid the risk of designing monitoring system regardless the actual capacity of the responsible authority for its operation and use. Following indicators were considered:

- Share of state protected natural areas, %
- Share of the green areas in the total surface of the city, %
- Restoration/planting of the green river protection belts on the banks of Raut River, %, km
- Number of households, connected to the centralized water supply system, nr., % of total
- Number of households, connected to the centralized sewerage system, nr., % of total
- Volume of generated waste waters (industrial, municipal, the m3 per year), including the volume, which was discharged to the waste water treatment plant
- Volume of the generated wastes, t/year, share of separately collected/selected wastes for recycling, %
- Degraded lands, %, ha
- Share of environmental expenditures in the total budget of the city, %
- Extension of drinking water supply system, km/year
- Extension of sewerage system, km/year
- Construction of rain water collection system, km/year
- Renewed street pavement, km/year
- Volume of the emissions from the transport, t/year, % of daily concentrations, which exceeded the daily emission limits
- Cases of illnesses, caused by impact of use of polluted water for drinking or recreation purposes, nr., % of total.

A number of these indicators have a clear baseline and could be easily followed. Others however require setting up a new monitoring network or reporting arrangements. Based on the conducted consultations with the relevant stakeholders, for the monitoring of the implementation of the provisions and evaluation of the performance of the Master Plan, the following key indicators were selected and agreed on with the involved local institutions (environment, health etc):

Table 9.1: Selected monitoring indicators

Indicator	Definition	Data source
Surface of the green areas in the city (%, ha, per capita)	Green areas are defined as the land in urban areas covered by vegetation, such as parks, forests, green water bodies protective belts etc	Annual Report of the Ecological Inspection of the Rayon Reports of the municipal communal services company
Municipal wastes generation: total volume, tons/year, kg/person Separately collected wastes for recycling, tons/year, % of total	Volume of generated solid municipal wastes, collected by the municipal company for the transportation to the landfill Volume of separately collected wastes for recycling (paper, glass, plastic etc) from population	Reports of the municipal communal services company Statistical reports on communal services and wastes Annual Report of the Ecological Inspection of the Rayon
Households, connected to the centralized sewerage system, number, % from total	Number (or %) of individual households, connected to the centralized sewerage and waste water treatment system, in comparison with total number	Annual report of the Apa-Canal Company
Emissions of major pollutants from transport (on selected monitoring points in the city centre and highway) (CO2, NOx and PM, etc) , daily (mg/m3), compared to emission values, or annual (t/year)	Anthropogenic/transport emission of the carbon dioxide , nitrogen oxide and particulate matter	Repot of the State Hydro-meteorological Service, Environmental Quality Monitoring Centre Annual Report of the State Ecological Inspectorate
Rain water collector constructed, km	Length of the rain water collection system in the city, km, connected with the waste water treatment plant	Reports of the municipality, of the Ecological Inspection

The monitoring and reporting of the size and state of the green areas of the city will allow for the public to easily understand, to what extent the city authorities pursue the commitment to ensure spatial conditions for favorable and environmentally sound living standards of life to the citizens of Orhei. The expected gradual extension of green areas will help to reduce and mitigate air pollution and will create additional recreational areas. Establishment of a large green belt of the city will also help to better adjust to the extreme weather conditions (especially in summer time). The plantation of green cover on the degraded lands and on the banks of the rivers will reduce the erosion and landslides, and will consolidate the territory.

A proper monitoring and control of the municipal wastes flow will give the possibility to provide timely and efficient waste management services to the population. The separate

collection could generate additional source of income to the private or municipal companies, involved in waste management and recycling, and, as a result, contribute to the solution on of the main environmental problems of the city.

Even though the number of households and economic subjects connected to the centralized drinking water supply system is relatively high, the connection to the sewerage is still only covering half of the city. This indicator will help to monitor waste water management and treatment, and encourage the reduction of the discharge of polluted water on the ground or into water bodies.

Introduction of the monitoring of the quality of the atmospheric air, from transport and industrial units would be an important action for the coming 5 years. As there are no stationary air quality monitoring stations on the Orhei territory – the actual quality of the air in the key sensitive areas (city centre, industrial zones, transit road) are unknown, and thus adequate actions to reduce and mitigate impact of air pollution on public health and environment is difficult to plan and execute. To establish such monitoring will need investments from national level, namely for the financing the necessary installation of automatic sampling and testing stations.

Monitoring of construction of rain water collector system will show the progress in the reduction of pollution of the water bodies with washed-away soil particles, wastes and chemicals from the city surfaces. (The system will be connected to the waste water treatment system).

To sum up, the proposed and agreed upon indicators will help local, regional and national authorities as well as to the general population to observe the progress of implementation of the Master Plan from the environmental point of view. It is also designed to keep agenda focused on solving priority environmental problems of the locality and, as a result, to improve health and environmental conditions of the Orhei town. At the same time, the system is not over-complicated and should not entail excessive costs.

CHAPTER 10. The likely significant transboundary environmental, including health, effects

No transboundary effects were identified in the context of Orhei Master Plan SEA.

CHAPTER 11. A non-technical summary of the information provided

Background

Strategic Environmental Assessment (SEA) effectively promotes sustainable development by mainstreaming environment into economic development at a national and local level. SEA is a well-established, practical and efficient planning and environmental governance tool/system set out in the UNECE Protocol on SEA to the Convention on Environmental Impact Assessment (EIA) in a Transboundary Context. It ensures that development plans in key sectors such as energy, water and waste management with likely significant adverse environmental impacts are efficiently developed taking into account environmental (and health) considerations. The Government of Moldova selected the Master Plan of Orhei Town as a strategic document for a pilot application of SEA procedure.

The pilot SEA took place in parallel with the process of updating the Master Plan of Orhei so that the SEA-driven consultations as well as analyses prepared by SEA team served to optimization of the Master Plan from the environmental point of view.

The SEA process took place between July 2014 and May 2015, and had following phases:

- Establishment of SEA team, initial consultations and identification of stakeholders
- Scoping (identification of key relevant environmental concerns), including public Scoping Workshop, targeted consultations, and preparation of Scoping Report
- Environmental baseline analysis
- Evaluation of risks and potential for cumulative environmental effects, and considering alternatives
- Development of recommendations for mitigation measures and environmental monitoring
- Preparation of SEA Environmental Report and conducting public consultations

At every stage the work of expert team included working meetings with local stakeholders and site visits in Orhei.

The Orhei Master Plan Preparation Process

The Master Plan is subject to an environmental assessment during it preparation, and before adoption. This includes the drawing up of an environmental report in which the likely significant effects on the environment and the reasonable alternatives are identified, and the carrying out of consultations (with the public, the environmental authorities, and with other States in the case of transboundary impacts). The environmental report and the results of the consultations are taken into account before adoption.

The Orhei municipal authorities took decision to update the existing Master Plan (approved in 2008). The overall goal of the development of the Orhei Master Plan (amended

version) is to reflect the current social and economic development situation in the Orhei city and to update the existing Master Plan (approved in 2008).

The amendments/updated Master Plan are developed by the ISC Land Support Systems, under the coordination of the Chief Architect of the city. The development of the Updated Master Plan of Orhei started in the spring of 2014. The objectives and plans of this work were presented and discussed during the Workshop on SEA in Moldova, 29-31 July 2014.

There were planned two public consultations of the draft plan:

- Mid December 2014 for the identification/coordination with general public of the options and alternatives for the proposed amendments/ changes and development proposals (in parallel with the public consultations of the SEA Scoping Report).
- In May 2015 for the discussion of the final draft of the Updated Master Plan and SEA Environmental Report.

The Content and the main objectives of the Master Plan

The overall goal of the development of the Orhei Master Plan (2015) is to reflect the current social and economic development situation in the Orhei city and to update the existing Master Plan (approved in 2008). The new 2015 Master Plan includes the digitized cadastral information, further develops functional zoning and takes into the consideration the national and local development and sectorial strategies and plans, relevant for the locality.

Key environmental problems of the city identified

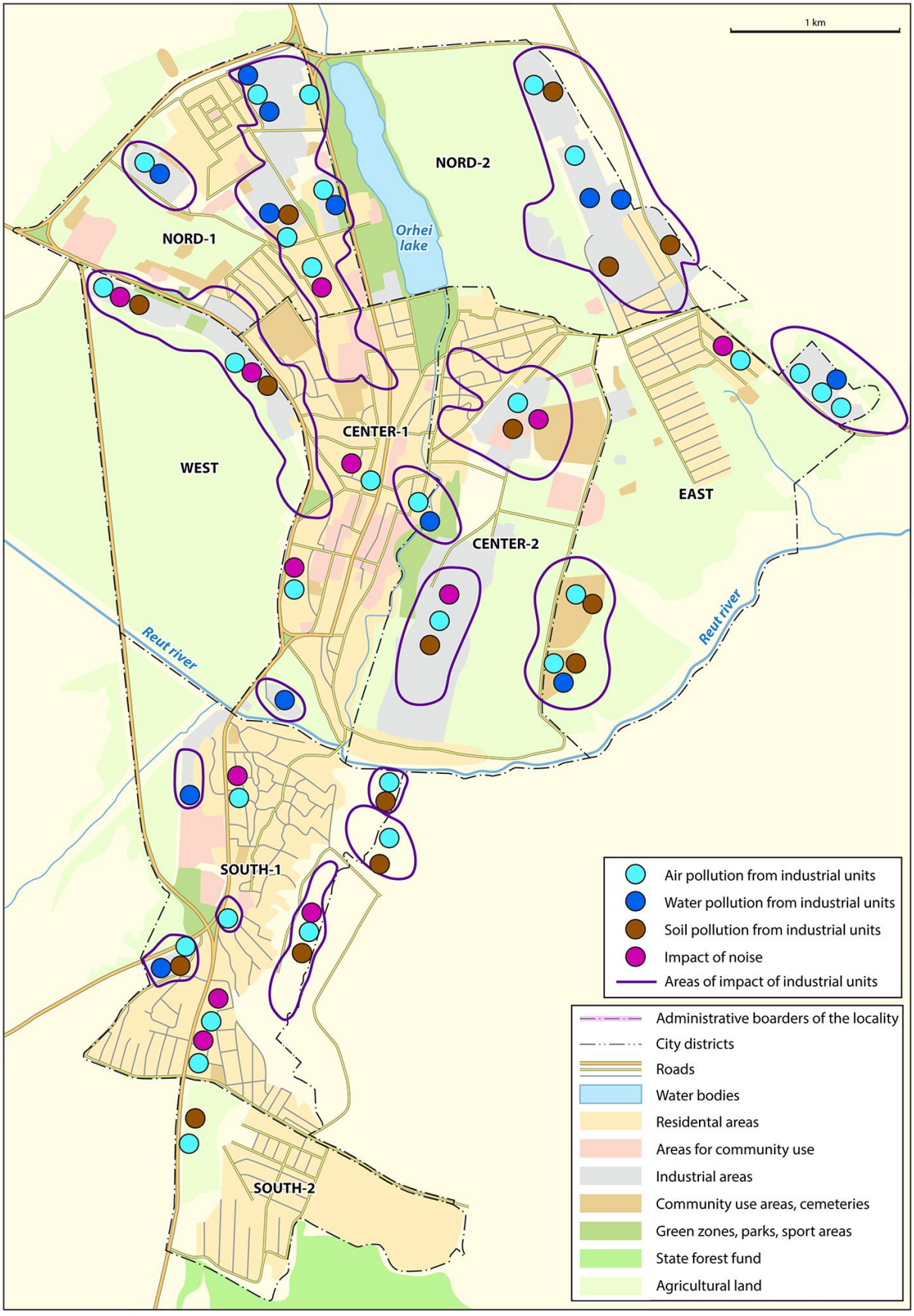
The SEA process assisted with the identification of major environmental and public health concerns in Orhei. An overview of key problems including identification of specific localities where these problems are most relevant has been prepared in order to focus the assessment.

Among the prominent problems are the following:

- Degradation of soils (including slope slides) limits the area available for spatial development, as well as it contributes to the loss of biodiversity.
- A specific problem of Orhei city, which create barriers for the development of the city and has an environmental and health impact, is the presence of the open stone mines within the city limits.
- Existence of the flooding areas (during the heavy rains damage to urbanized areas are experienced) creates limitations for the development of the city, worsens the sanitary condition of the city as well as reduces the quality of water resources.
- The pollution from transport is the most critical in the central part of the city, and on the segment of the national highway, on the crossroads at the entrance and exit of the by-pass road.
- Water pollution is caused by the discharges of insufficiently-treated and contaminated wastewater into water bodies. A direct discharge of the rain waters into surface water bodies, the inefficiency of the existing old waste water treatment plant are the main sources of pollution in the basins of the Raut, Ivanos, Vatici Rivers and in the city lake.

- Pollution from the disposal of municipal wastes took place due to the poor state of the existing landfill, which does not meet the legal requirements, and its improper management,
- The loss of biodiversity takes place due to several reasons, including the vulnerability of the landscape to erosion and landslides
- Lack of management and maintenance of the Nature and Paleontological Monument „Defile Orhei" (natural area protected by state with a surface of 100 ha, near the Orhei city centre)

Map II.3 Zones of existing impacts of industrial sector on the environment



Mitigation measures proposed by the SEA

The SEA experts evaluated individual components of the Master Plan in order to identify potential for negative environmental impacts of the planned developments as well as potential conflicts with environmental policy goals established in other strategic documents. This allowed to formulate (in discussion with planners) number of measures to prevent, reduce or mitigate identified potential negative consequences for the environment and public health, which should be of priority in the context of the Master Plan implementation. Thus the municipality of Orhei shall plan and ensure realization (investment) of the following actions:

- Development a system of drainage, which will reduce water pollution, and improve environmental and sanitary conditions of the city;
- Expansion of water and sanitation systems to increase the population's access to quality water sources that will help to improve public health, increase the access of the population and enterprises of different economic sectors to sewerage systems, enabling connection to the new wastewater treatment plant. These measures will help to reduce pollution from households and industry to groundwater and surface water resources;
- Closure and reclamation of existing landfill and old treatment plant to achieve positive effect on all components of the environment, including human health, improvement the overall environmental and aesthetic condition of the city;
- Closure of stone quarries in the city center - including employment of legal and administrative measures taken by the local authorities, as well as enforcing the land reclamation, which should be carried out by the owner of concerned quarries. This action will significantly reduce emissions of pollutants into the air, and reduce the noise;
- Modernization of waste management infrastructure (provision of platforms and containers for separate waste collection, etc.) in order to help to reduce pollution, increase of utilization of secondary resources, and the implementation of environmentally sound approaches in the field of waste management;
- Modernization of road infrastructure (development of road junctions, the new urban development schemes, intra-roads, bypass) in order to reduce emissions from vehicles in certain problem areas of roads, to lower impact of traffic on the city center and to redirect transit traffic to the bypass road. These measures will contribute to the capacity of the network and reduce accidents on the roads. It is necessary to provide for the creation of parking areas for motor vehicles, especially in the central part of the city;
- Creation of a single scheme of green areas including the expansion of green areas, forestation of water protection belts of rivers Raut, Ivanos, Vatici, and city lake area, development of recreation areas. Significant proportion of the green zone to be dedicated for pedestrian and bicycle paths, and playgrounds. This action will help to improve the quality of the components of the environment, including health, improve the urban landscape of the city. It is necessary to clearly delineate and respect the boundaries of green zones.

A number of measures of an administrative nature, which can not be included within the framework of the Master Plan but will contribute to its implementation, are also proposed. The need for the following measures was identified during the process of SEA in the phase of data collection and analysis of the current situation:

- Ensure basic monitoring of air quality in the city center and on the highway of national significance and the monitoring of water quality (environmental and health indicators). Monitoring on these components is necessary in order to ensure a proper implementation of the Master Plan as well as for the effective work of local authorities, environmental and health authorities in order to produce informed decisions to improve the situation in these areas.
- The development of a management plan for the natural monument "Defileul Orhei" and delimitation of its boundaries in the territory will improve the safety and protection of the monument;
- Strengthening control of compliance with environmental requirements for new facilities and during construction. This measure is critical for avoiding the above identified risks of negative impacts, as the environmental authorities shall respect the functional zoning provided by the Master Plan, but at the same time define and enforce conditions ensuring that the individual or cumulative impacts from economic activities will not trigger worsening of the overall environmental situation;
- Introduction of changes in statistical reporting in the field of environment in order to obtain data not only in the district as a whole, but also for the city level. The problem of the absence of specific statistical data is typical of other cities of the republic. Ideally for each level of ordinarily conducted planning processes shall be a corresponding level of the official environmental reporting, so that the planning authorities (and other relevant stakeholders) have adequate detailed information from official sources;
- Active exploration of funding resources for the investment in environmental protection measures. The implementation of the decisions of the Master Plan and implementation of recommended environmental protection measures will require substantial investments. This can be achieved by mobilizing the local budget, local environmental fund, the participation of business, by attracting funds from the National Environmental Fund, the investment of national and international financial institutions.

SEA evaluation of available alternatives

In the context of the strategic environmental assessment of the Orhei Master Plan the following three perspectives were adopted to examine available alternatives and their environmental implications.

1. "Zero/ no-development option";
2. Comparison of the Master Plan Orhei 2015 and Master Plan of 2008;
3. Alternative proposals for the bypass road in the framework of 2015 Master Plan.

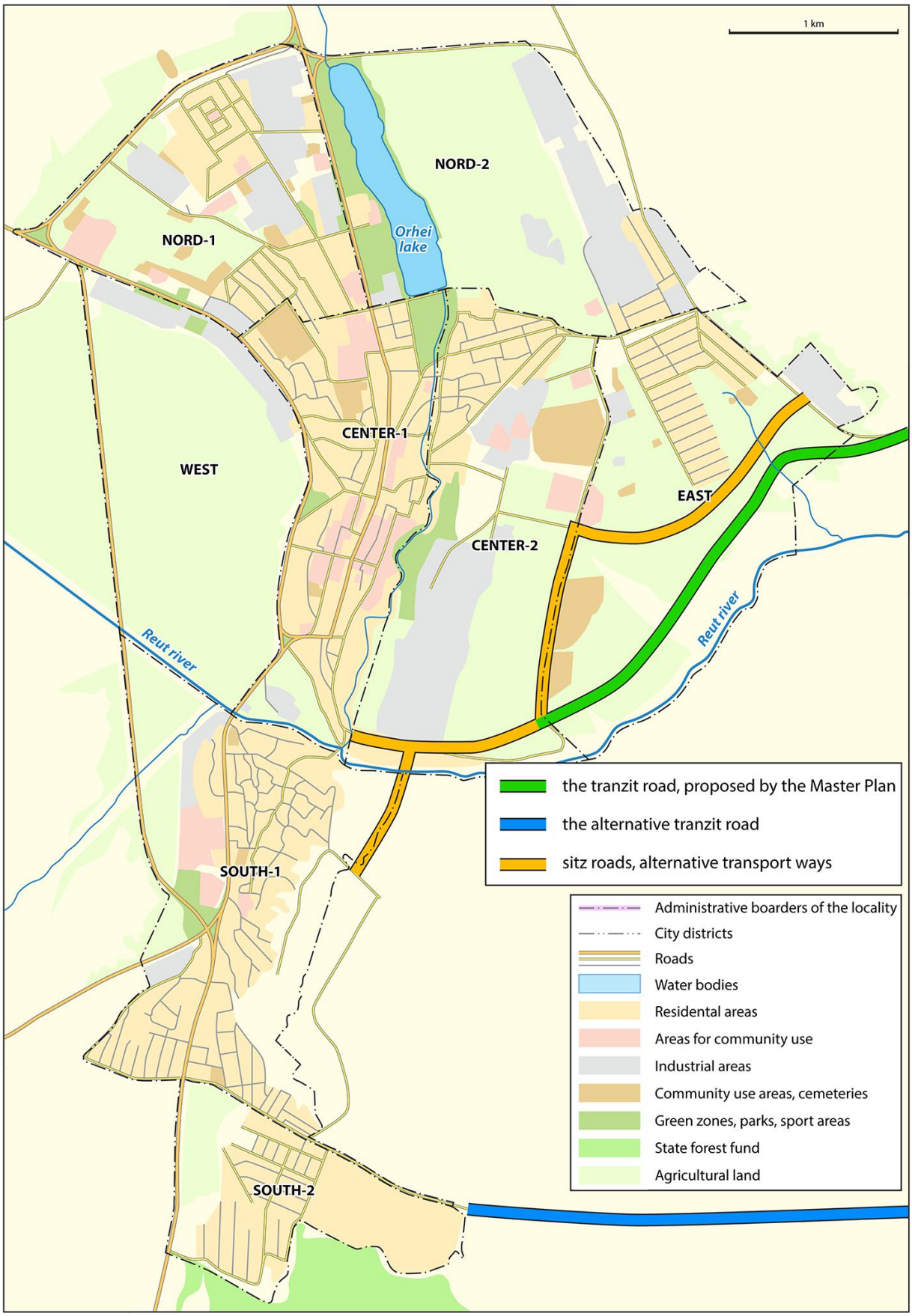
Conducted expert evaluation of formulated complex development options indicated that the current 2015 Master Plan proposal carries the largest potential for addressing environmental concerns related to Orhei´s spatial development. The theoretical no-development option would have zero environmental impacts related to any new spatial development, on the other hand, it would not allow for addressing already existing problems

(air quality, waste management, water pollution, etc.) requiring development and re-configuration of the city infrastructure.

A comparison of estimated environmental effects associated with different functional designation of several territories in the 2015 Master Plan proposal in comparison with the Master Plan adopted in 2008 indicated superiority of draft Master Plan of 2015 in most of the related parameters.

During the development of the SEA it has appeared necessary to consider alternatives regarding the placement of a bypass road, proposed by the developers of the new Master Plan. The evaluation of the potential environmental impact of the planned road construction indicated risk of spatial conflict and potentially significant impact on the paleontological monument protected by the state "Defileul Orhei." Therefore, the SEA has established a requirement - to change the scheme to avoid conflict with the protection zone of the paleontological monument. As a result, the proposal was taken into consideration and the alternative routing of the bypass was introduced.

Map VIII. 2 Alternative proposals concerning the transport network development the Master Plan Orhei 2015



Problems encountered in conducting the SEA and limits of the adopted approach

The pilot application of the strategic environmental assessment has naturally encountered number of obstacles and difficulties resulting from the lack of legislative and institutional arrangements as well as from lack of practical experience with such complex process among all involved stakeholders.

Major problems in conducting the pilot SEA:

- Lack or limited availability of disaggregated data at the city level for the major sectors of concern (environmental protection, health, transport, social, industry, green areas) due to the national/rayon level set up of collection of statistical data and rayon-structured environmental and health authorities. Developed tables or requests for data remained partially uncompleted, especially for the health sector;
- Lack of knowledge and experience on which environmental factors to consider, what the potential environmental impacts are, and how to achieve integrated policy-making.
- Institutional and organizational difficulties-need for effective coordination among and within authorities departments.
- Public involvement is limited.
- Lack of clear accountability for application and the policy EA process.

Added value of the SEA process

The SEA team has made significant effort to deliver added value not only form the point of view of conduction of the SEA process in line with the established international standards and producing high quality deliverables such as the SEA Report, but also to effectively contribute to the high quality of the planning (i.e. Master Plan development) process itself. The following aspects of the SEA process can be listed in this context:

- The SEA process provided support to the Master Plan development team in the identification of the major environmental problems and in obtaining new data, necessary for the environmental chapter and environment related maps of the Master Plan (e.g. new maps and borders of the natural monument, river basin protection zones, data on businesses in the territory).
- SEA facilitated the dialogue between local authorities and municipal services in the city, environmental and health authorities have participated on the Master Plan development and environmental problems evaluation through the SEA-initiated consultations;
- The local priority environmental problems were highlighted and will be presented at the national level, where solutions could be found, actions planed or funds made available or mobilized from internal or external sources
- Local authorities identified some gaps in their agenda (e.g. lack of clear division of responsibilities on certain issues), in the field of environment and urban planning, which partially were already reflected during the Master Plan and SEA process. Other identified issues will be likely solved through the development of the Local Environmental

Action Plan or integration of the main issues (landfill, highway) in the sectorial development plans at the national/regional level;

- Data gaps identified during the evaluation helped to formulate the needs to change/upgrade the data collection schemes for rayon and national statistical reporting, as well as the internal/departmental and administrative needs for specific data which have not been subject of regular statistics. The absence of data on level of noise and impact of the stone mines operations on the surrounding urban areas can be an example;
- Measures and indicators for the monitoring of the performance of the new Master Plan from environmental point of view were developed in the framework of the SEA (see chapter 9).
- Cooperation between central environmental authorities and local public authorities was enlarged;
- Central environmental authorities learned more about particular problems of the rayon centre/Orhei city, which face similar problems in its development and environmental protection as many other localities, but have its specific;
- The SEA facilitated identification of potential for improvement in the existing draft Law on SEA in Moldova, namely in aspects concerning scoping phase of SEA process, system of monitoring and evaluation, the roles of the environmental inspection in providing control and monitoring of the implementation of the recommendations stipulated in the SEA Report, financial issues, institutional system on SEA at local authorities, public consultations and awareness campaign, data sources availability, etc:

Lessons learned

- Local authorities (the mayor and his office) recognised the importance and supported the SEA process, but could not influence all stakeholders or solve all problems, which need significant funding or decision making at Government/Parliament level.
- The SEA process have to be accompanied with a well structured and funded information and awareness campaign, focused on the major target groups, vulnerable people, gender, etc.

The SEA process should be based on cooperation approach between LPA, SEA team and the program / plan elaboration team; such approach will bring to the sustainable decision.

SEA Experts Team

Michal Musil – international expert
PhD., Marina Khotuleva – international expert
PhD., Iordanca-Rodica Iordanov - Team leader
Faina Munteanu – expert
Andrei Isac – expert
Tatiana Plesco – expert
Tim Shumsky – map designer
Natalia Guranda, coordinator

ANNEX 1. SEA Environmental Report-related meetings and consultations

This section provides summary on the activities and steps made by SEA team in order to facilitate participative process throughout the environmental report development phases of SEA.

Visits to Orhei

Trips and meetings to Orhei (mayor, deputy-mayor, Head of Ecological Inspection Orhei, general architect, municipal services, and visits to the sites) were organized by the SEA team in the winter-spring 2015.

In the period of February-May 2015 working visits and meetings with the office of the mayor of Orhei, services (water supply, sanitation, and waste management), Ecological Inspection of the Rayon, and Chief Architect of Orhei took place. Data needs were identified and request for the submission of data transmitted to the municipal and rayon services.

Meetings of the SEA team and Master Plan development Working Group

In the period of March-April a number of the working visits to Orhei and working meetings took place with the goals to discuss the data needs, implementation plans, examine maps and links with the draft Master Plan and proposed environmental measures, alternatives, indicators.

Photo: Meeting of the SEA team with the Master Plan development team (Mayor of Orhei, architect of the project, representatives of environment and health institutions) and work on draft maps on the state of environmental factors and with Ecological Inspection.

Among the main meeting of the SEA team with the stakeholders could be mentioned:

1. Planning meeting with the mayor and local institutions, 27 February 2015:

Participants: SEA Team: ***Iordanca Rodica Iordanov*** – SEA Team Leader, ***Isac Andrei*** – Social and Stakeholder engagement expert***, Plesco Tatiana*** -consultant, ***Taranu Alexandru*** – land use planning expert, ***Faina Munteanu*** – general environmental expert, and **Mr. Vitalie Colun**, Mayor of Orhei, **Mr. Stefan Mihalas**, Head, Ecological Inspection Orhei, **Mr. Constantin Vacarciuc**, Senior Specialist, Health Protection centre, Orhei and **Mr. Nicanor Pulbere**, Head of Municipal Enterprise (waste management and green areas).

Major results: was reached an agreement on the parallel finalization of the draft Master Plan and SEA Environmental Report; agreed on the possible dated and time for the working group and experts meetings; proposed preliminarily date for public consultations; interest expressed from the mayor's side to enlarge the surface of the territory for the industrial activities; the placement of the new bypass road have to be revised in line with

environmental requirements; old waste water treatment plant to be in operation until there will be not found solutions for the industrial waste waters treatment; old landfill to be in operation until the regional solution will not be proposed, but as soon as this will be possible, to be closed and the site remediated; was agreed on the process of collection of the remained necessary data from the local level.

2. Consultative meeting with local decision makers, 18 March 2015:

Participants: SEA Team: ***Iordanca Rodica Iordanov*** – SEA Team Leader, ***Isac Andrei*** – Social and Stakeholder engagement expert***, Plesco Tatiana*** **-**consultant, ***Taranu Alexandru*** – land use planning expert, ***Faina Munteanu*** – general environmental expert, and **Mr. Vitalie Colun**, Mayor of Orhei, **Mr. Stefan Mihalas**, Head, Ecological Inspection Orhei, **Mr. Constantin Vacarciuc**, Senior Specialist, Health Protection centre, Orhei.

Major results: agreement on the greening of the Raut River banks to be included in the Master Plan; initiation of the development of a feasibility study for the design and building of a storm (rain) water collector; agreement to receive from the development team of the final draft maps of the Master Plan; discussion of the process of approval of the draft Master Plan and final stakeholders consultations.

3. Work with Ecological Inspection Orhei: several working meetings in the period of March-May 2015

Participants: ***Iordanca Rodica Iordanov*** – SEA Team Leader, ***Isac Andrei*** – Social and Stakeholder engagement expert***, Plesco Tatiana*** **–**consultant, **Mr. Stefan Mihalas**, Head, Ecological Inspection Orhei, Ms. Angela Vartic, Senior Inspector, Ms. Diana Vasilachi, Senior Inspector.

Major results: obtaining of the updated information on the industrial units and pollution; updated information on the problem of the municipal wastes collection; discussion and agreement of the environmental proposals of the SEA team for the master plan; identification, visit and photo of the major sites of concern for the SEA Environmental Report.

SUMMARY of the Consultation Meeting on the draft Master Plan and of the draft Environmental Report, Orhei, big conference meeting room in the Mayoralty of Orhei city, 13.05.2015

Present: 58 persons, representatives of the LPA – Mayor and Deputy Mayor of Orhei, municipal services, Divisions from the Rayon Council, environmental and health inspections, interested stakeholders and NGOs, youth representatives. Invitations were sending from MoE, Mayoralty (announcement placed on the web site), contact with stakeholders and economic units was by phone and fax.

Moderators: Mr. Vitalie Colun, Mayor Orhei, Ms Rodica Iordanov, SEA Team Leader,

Secretary of the meeting: Ms Natalia Guranda, Project Coordinator.

Photo: Public Consultations of the Draft Master Plan and Draft Environmental Report, 13.05.2015, Orhei

The objectives of the Public Consultations were to present the final draft of the Master Plan of Orhei and draft Environmental Report of the SEA of the master plan (with the accent on environmental measures, alternatives and indicators).

Mayor of Orhei, Mr. Vitalie Colun, welcomed the participants and underlined the need of solving environment and urban development problems in synergy and public participation is a key element in further development of cooperation between authorities and citizens.

Participated in the discussion:

Mr. Alexandru Taranu, Chief Architect of the Orhei city, presented the General Master Plan, the major differences between the current draft and the proposed updated version, the evaluated dysfunctions, the zones with the potential for urban development in the city. The problem of extension of the roads network was indicated as an issue of concern for the natural protected area "Defileul Orhei" on the Raut river banks. Also the presented information was visualized on maps that had been placed on conference rooms walls; in this case all the interested parties could approach and see the changes, and eventually changes that need/will be made according the assessment. Mr. Alexandru mentioned that according to the new the followings change needs to be made: brick factory need to be moved outside of the city; construction of a new road (Lupoaica) to avoid the concentration of mid-town transport;

Mrs Rodica Iordanov on behalf of the project team presented the findings of the Environmental report and underlined the major environmental problems identified in all domains: water resources, atmospheric air, soil resources, biodiversity, wastes etc. Measures for the improvement of the environmental situation, major recommendations on alternatives and draft list of indicators were introduced.

During the debates the following major issues of concern were mentioned by the participants:

- *What measures will be take in order to decrease the transport traffic*, where Mr Taranu mentioned that will be build up a new road, so in this case to avoid the necessity to interconnect the center of the city if you want to move from East-West part of the Orhei city; Also the roads from the center of the city will be enlarged.
- *What will happen with bus station and central marketplace*, it was mentioned that the bus station cannot be moved but will be organized the transport itineraries which will reduce the traffic from the center; The central marketplace will not be moved but will be reorganized through construction of special market amenities;

- One recommendation made by the participants was that the stone quarry to be transformed in tourism attraction, in this case will be solved many issues created by it.
- *Proposed environmental measures* were considered appropriate and in line with national policy documents and local circumstances and needs. Institutional capacities, funds for this have to be secured. The problems, which need solution at regional/national level – have to be raised to this level and follow-up ensured, in order to include this measures and mobilize funds for their implementation.
- *Selected indicators* could be applied for the evaluation of the performances in the implementation of the master plan and of the local action plan for environmental protection.
- *Alternatives* (new proposed city and by-pass roads, change of destination of lands) were generally accepted by participants.

Conclusions of the meeting:

1. To generally endorse the draft Master Plan of the Orhei city and the draft Environmental Report on the SEA of the master plan, proposed solutions and improvement measures.
2. To finalize and send to all participants the Environmental Report both in Romanian and English, with the inclusion of maps, final selected indicators (and their description) and references.
3. The organizers of the meeting (project team) will prepare the Summary Minutes and necessary documents in order to submit them to the Mayoralty and all local stakeholders involved and to the Ministry of Environment.
4. The take note of the information presented to the key actors on the final national event of the project that will take place on 17 June 2015, in Chisinau and where the experience of RM will be presented regarding SEA and Orhei pilot project.

ANNEX 2 (to the Chapter 1). National policy goals and their reflection in the draft Master Plan

Objectives of the national strategic documents	Objectives of the Strategy for the social-economic development of the Orhei city for 2014-2020 (nr 13.20 from 27.12.2013) and other documents	Objectives, stated in the draft Orhei Master Plan	Level of compliance
Atmospheric air **Major goals in the field of protection of atmospheric air are set up in the:** - ***National Environmental Strategy 2014-2023*** (Governmental Decision nr. 301 from 24.04.2014) ***and in the Strategy for adaptation to climate change*** (GD nr.1009 from 24.12.2014) – establishment of the integrated system of atmospheric air quality management and reduction of the emissions of the pollutants by 30% till 2023 and of the green house gases not less than 20% by 2020; - the ***Energy Strategy*** *(GD nr.*102 from 05.02.2013), and ***the National Program on energy efficiency for 2011-2020*** *(GD nr. 833 from 10.11.2011)* – increase of energy efficiency for the reduction of energy use by 20% till 2020, achieve till 2020 of the level of 20% production of energy from renewable sources and by 10% from bio fuel. ***The National Regional Development Strategy for 2013-2015*** *(No. 685, of 04.09.2013) sets goals in the field of the road infrastructure:* *- repairs of 166.5 km of roads and 27 bridges, construction of 10 bridges and 2 km of the road.* *The National Strategy of Development of "Moldova 2020" (No.* 166, of 11.07.2012) envisions the following: - rehabilitation of national public motor highways - 1900 km - rehabilitation of local public motor highways – 4900 km **The Strategy for Transport and Logistics for 2013-2022**	Increase of the potential for the obtaining of the energy from alternative sources: Use of wind potential; Installation of solar panels (for electricity and water heating) Local Program for Energy Efficiency	Transfer of the national highway, which cross the city, on the by-pass road. Closure of the stone mines in the city and re-cultivation of the territory Assessment and optimization of the autonomous heating systems and further implementation Planting of green zones (but as a measure to prevent erosion)	Partially. In the master plan there is not foreseen the establishment of the units of production or use/application of alternative sources of energy There is not indicated the potential for the enlargement of the green zones No measures or indicators to reduce and measure air pollution set up at the local level

(No. 827, of 28.10.2013**)** sets the goals, among which are: - Rehabilitation, modernization and proper maintenance of all major motor highways - Rehabilitation and proper maintenance of local motor highways - Inclusion of measures aimed at enhancement of the road traffic safety in activities related to maintenance of motor highways - Elaboration and implementation of technical norms and standards that comply with international requirements			
Water Resources *In the* ***National Environmental Strategy 2014-2023*** (Governmental Decision nr. 301 from 24.04.2014), and in the ***Strategy for water supply and sanitation for*** **2014-2028**, *(GD nr.199 from 20.03.2014) there are set up the following specific objectives:* a) improving the quality of at least 50% of surface waters by implementing hydrographic basins management system; b) ensuring access of about 80% of the population to safe water supply systems and services and of about 65% to sanitation systems and services; **c)** ensure the integrated water resources management on the base of hydrographic river basin. d) reduction of the risks and adaptation to the climate change in the field of water resources ***The National Regional Development Strategy for 2013-2015*** *(No. 685, of 04.09.2013) envisions the following:* Construction of 246.21 km of water-pipes, 18.96 km of sewage networks, 4 water treatment plants	Measures for the cleaning of the River Raut	Carry out the hydrogeological investigation and identification of the limits and areas of flooding Ensure measures for the protection from floods during the construction of objects on this territory (raise the level of soil on the potential construction places etc) Construction of the rain water collection system Construction (extension) of the network of the sewerage on the territories/households not covered by this services	Partially. There is no decision on placement of permanent monitoring stations for the water quality. Measures to reduce the pollution from the old landfill not specified. No measures to address potential pollution sources and to work with authorities upstream to avoid/reduce the flow of polluted water from upper stream of the river
Land resources			

*In the **National Environmental Strategy 2014-2023*** (Governmental Decision nr. 301 from 24.04.2014), and in the ***National Program on the establishment of the national ecological network for 2011-2018*** **(**GD Nr. 593 from 01.08.2011) *there are set up the following specific objectives:* - improvement of the state of the 880 th ha of eroded lands and of the 21,57 th ha of lands affected by land slides; - remediation of 1588 territories, contaminated by POPs; - increase the share of territory covered by state protected areas; - identification and mapping by 2018 of the elements of the national environmental network (corridors, core areas and buffer zones); - establishment of the green belts on the river basin and water bodies banks on a total surface of 30400 ha by the end of 2018.	Measures to reduce erosion (planting trees and green zones)	Restoration of the degraded lands – closure of the mines and their re-cultivation. Rehabilitation of the territory and carry out measures against erosion and land slides.	Partial compliance. But there are no indicators or measures/timing set up to further monitor state and evaluate efficiency of proposed actions Decisions at the local level did not correspond to the ones, adopted at the national ones (authorizations for mining are issued at national level).
Wastes ***In the National Environmental Strategy 2014-2023*** (Governmental Decision nr. 301 from 24.04.2014), and in the ***Strategy for wastes management in the Republic of Moldova for 2013-2027*** *(GD nr.248 from 10.04.2013) there are set up the following specific objectives:* - Establishment of the system of integrated wastes management and of the management of chemicals. - contribute to a 30% reduction in the amount of landfilled waste and a 20% increase in recycling rate until 2023 In the field of municipal wastes management: a) promotion and implementation of the separate waste collection systems in localities, at households and industrial level, of the installations for waste separation;	Set up the parameters for the permitted landfill, set up indicators Organization of the separate waste collection in the city. Purchase and installation of the bins and containers. Organization of ecological hours and information for the schools and population.	Closure of the unauthorized landfill. Establishment of the system for wastes management Selection of the place for the separation and temporary storage of the not separated wastes	Partial compliance No indicators, time frame or monitoring measures proposed Solutions for the old landfill not set up, the separation station is still placed on the old spot

b) improvement of the system of waste transportation and development of intermediary transportation stations (4-7 stations in each rayon); c) development of the potential for municipal wastes elimination (construction of 7 polygons for solid municipal wastes at the regional level and of 2 stations for mechanic-biological treatment); - increase of the volumes of the recycled and recovery of packaging by 20% in 2027. *The National Regional Development Strategy* ***(No. 685, of 4.09.2013)*** *envisions****:*** - Development of 2 regional strategies for waste management, - involvement in the process of solid municipal waste management of 41 inhabited localities, - development of 6 landfills for storing and transporting of waste.			
Biodiversity conservation ***In the National Environmental Strategy 2014-2023*** (Governmental Decision nr. 301 from 24.04.2014) and in the **Strategy on biological diversity conservation** for *2014-2020 in the* ***National Program for Development of the National Ecological Network for 2011-2018*** **(ПП No. 593, of 01.08.2011)** *are set up the following specific objectives:* - ensure measures for enlargement of the state protected natural areas to 8% of the territory of the country; - establishment of the National ecological network and of the 44 plans for the management of the state protected natural areas; - enlargement of the forest areas by 15% of the territory of the country by 2020; - creation of the 2 th ha of green areas in the cities and	Sustainable management of the green areas	Establishment of the recreation areas, based on the proposals from the master plan Development of the schemes of the green areas of the city with their integration in the National Park Orhei Enlargement of the surface of the green areas	Partial compliance No indicators or zoning of planned green zones set up

villages. - establishment by 2018 of a system of physical inventory taking and monitoring of habitats and endangered species that are included in the national environmental network; - afforestation of shoreland areas of water conservation zones of rivers and water bodies in the area of under 30400 ha by the end of 2018; - determination and mapping by 2018 of elements of the National Environmental Network needed to ensure its functioning (ecological corridors, core zones and buffer zones, etc.);			
Socio-Economic Aspects The National Strategy of Development of "Moldova 2020" (No. 166, of 11.07.2012) is based on the following priority areas of development: 1) Bringing the system of education in compliance with requirements of the labor market for the purpose of increasing productivity of labor force and increase of the level of employment in the economy; 2) increase of public investments in the national and local road infrastructure for the purpose of reduction of transport costs and acceleration of access; 3) reduction of costs associated with financing at the expense of increasing competition in the financial sector and development of risk management tools; 4) Improvement of business environment, promotion of competitive policies, optimization of the regulatory-legal base and application of information technologies in the sphere of public services meant for business circles and citizens; 5) Reduction of energy consumption by means of enhancing energy efficiency and utilization of renewable energy	Creating Business Incubator. Refurbishing / upgrading agricultural Square. Consumer education program. Developing the capacity for innovation and technological modernization Promoting advanced technologies in extracting ore Streamlining and modernizing public transport Local Energy Efficiency Program (Plee) and the Local Action Plan for Energy Efficiency (plaese) has the following objectives: - Reduce energy costs in total costs of the City; - Improve ambient conditions particularly in areas that must comply with some special features (indoor temperatures as intended premises, appropriate lighting workspaces and street traffic safety and population, etc.);		

sources; 6) ensuring financial sustainability of the pension system for the purpose of guaranteeing an adequate level of replacement of a salary; 7) Enhancement of the quality and efficiency of justice and combat with corruption for the purpose of ensuring equal access to public benefits to all citizens.	- Protecting the environment by reducing energy requirements due to the implementation of energy efficiency improvement actions with positive impact on reducing the level achievable emission of greenhouse gases; - Identify potential funding sources for the introduction of energy efficiency measures proposed.		
The National Strategy in the Sphere of Public Health for 2014-2020 (No. 1032, of 20.12.2013) establishes a number of specific goals and objectives, among which are the following:			
Improvement and strengthening of public health supervisory systems for the purpose of detecting health-related problems and provision of relevant, accurate and timely information for the purpose of making decisions and taking actions in the sphere of publ			
Strengthening of the national warning system, preparedness and response in case of emergency situations in the sphere of public health on the basis of a complex approach to threats			
- minimization of negative impact on human health of risks and emergency situations in the sphere of public health caused by natural, technology-related, man-induced, biological, radiological and social factors			
Ensuring protection of health at the expense of enhancing efficiency of control over behavioral risk factors and risk factors present in environment			
Adoption of a healthy lifestyle by the population by means of taking efficient and coordinated measures aimed at promotion of health in different sectors at the national and local levels	- Creation of pedestrian zones; - creation of cycle lanes; - installation of ramps for access to transport for people with disabilities; - rehabilitation / construction /		

	improvement of pedestrian crossings - Construction of the sports center "Avtodrom"; Construction of sports and fitness center and training grounds, and a football club "Milsami". Development of the park "Ivanos" with „mounting bike" lanes"		
Reduction of the burden of infectious and non-infectious diseases by means of reducting risk factors and ensuring equal access of the population to primary, secondary and tertiary preventive measures, and other goals			
Provision of the sphere of public health with the sufficient number of qualified human resources by means of strengthening the system of training human resources for exercising major operational functions in the sphere of public health			
Tourism **The Strategy for Tourism Development "Tourism 2020" (***ПП No. 1032, of 20.12.2013)* defines the following objectives:			

The general objective of the Strategy is promotion of development of tourist activities in the Republic of Moldova by means of development of domestic and inbound tourism, and the specific objectives are as follows: - improvement of the regulatory-legal base for tourism in accordance with requirements of the tourist market and European standards; - absorbing the national potential and promotion of the image of the Republic of Moldova as a tourist destination country; - regional development of tourism; - enhancement of the level of human resource training in the industry and of the quality of tourist services; - technological modernization of the tourist industry using information technologies and communications.	Expansion and modernization of the infrastructure for accommodation and servicing tourists (hotels, restaurants, recreation places). Expansion of tourist walking routes, urban recreation places and creation / development of specific services		
Historical monuments **The Strategy for Culture Development "Culture 2020"** specifies the goal - ensuring accounting, regulation and preservation of historical monuments	Restoration of protected areas in development of the historical part of the city. Taking physical inventory, evaluation and regulation of historical monuments Developing a program on restoration of monuments. • Inventory, assessment and regulation Monuments List Recovery protected historical development of protected areas in city • Preservation of Monuments unused. • Develop a program for the rehabilitation of monuments. • Develop a social - cultural educational and public interest of protecting historical monuments.		

ANNEX 3. (to the Chapter 4). Evaluation of the environmental objectives, relevant to the master plan

Issue /Objectives	Relevance for the Orhei Master Plan	Notes
Atmosphere air[1)]		
- creation of a system of integrated atmosphere air quality control	-	This goal cannot be achieved in the framework of the master plan
- reduction of discharges of pollutants by 30% by 2023 and of greenhouse gases by at least 20% by 2020;	+	
- enhancement of energy efficiency to reduce energy consumption by 20% by 2020, to achieve by 2020 generation of 20% of energy from renewable energy sources, and 10% - from biofuel		It does not matter in the context of the Master plan
- repair of national public roads - 1900 km	+	
- repair of local public roads - 4900 km	+	
Implementation of technical norms and standards in the sphere of road transport that correspond to international requirements		It does not matter in the context of the Master plan
Water resources (including water supply and water discharge)[2)]		
- enhancement of the quality of at least 50% of surface waters by 2023	+	
- ensuring integrated water management on the basis of the catchment basin		It does not matter in the context of the Master plan. This goal has to be addressed at the national level.
- ensuring by 2023 to about 80% of the population access to water supply systems and services, and to about 65% – to sewage systems and services	+	
- reduction of risks and adjustment to climate changes in the sphere of water resources.	+	
- construction of 246.21 km of water pipelines, construction of 18.96 km of sewage networks	+	
- construction of 4 water treatment facilities	-	Solution at the regional level
Construction and expansion of water supply and sewage systems in the towns of Soroca, Floresti, Hincesti, Orhei, Leova, Ciadir-Lunga, and in 30 villages by 2018	+	

Land resources [3)]		
- enhancement of the state and quality of 880 thousand ha of eroded lands and 21.57 thousand ha of lands subjected to landslides;	+	
- determining by 2016, criteria for spatial planning;	+	
Waste[4)]		
- creation of waste and chemical substance integrated management systems;		It does not matter in the context of the Master plan
- reduction of the quantity of waste stored at landfills by 30%, and increase of the share of processing by 20% by 2023;	+	
- promotion and implementation of systems of separate waste collection in all populated localities, both in the residential sector and in the industrial sector, and also of sorting installations;	+	
- improvement of the system of waste transportation and development of transfer stations (4-7 stations in each district);	+	
- development of potential for removal of residential waste (construction of 7 landfills for solid municipal waste at the regional level and 2 stations for mechanical-biological processing;		Solution at the regional level
- increase of volumes of recycling and recuperation of packaging by 20% by 2027;		It does not matter in the context of the Master plan
- elaboration of 2 regional strategies on waste management;		Solution at the regional level
- involvement into the process of solid waste management of 41 localities;	+	
- improvement of 6 landfills for waste storage and transportation.		Solution at the regional level
Biodiversity[5)]		
- expansion of natural territories protected by the state by at least 1% of the total area of the country by 2018 and by 8% - by 2023;	+	
- creation of the National Environmental Network and of 44 developed management plans for natural territories protected by the state by 2020;		It does not matter in the context of the Master plan
- expansion of forestland by 15% of the total territory of the country by 2023;		It does not matter in the context of the Master plan

- creation of 2 thousand ha of green plantations in towns and villages by 2020	+	
- determination and mapping by 2018 of elements of the National Environmental Network needed to ensure its functioning (ecological corridors, core zones, and buffer zones, etc.);		It does not matter in the context of the Master plan
- afforestation of shorelines of water conservation zones of rivers and water bodies in the areas of up to 30400 ha by the end of 2018.	+	
Historical monuments[6)]		
Ensuring accounting, regulation and preservation of historical monuments	+	
Tourism[7)]		
The Strategy of Tourism Development "Tourism 2020" the main objective is determined – promotion of development of tourist activities in the Republic of Moldova by means of development of domestic and inbound tourism, and also the following specific objectives are identified:		It does not matter in the context of the Master plan
- improvement of the regulatory-legal base for tourism in accordance with requirements of the tourist market and European standards;		It does not matter in the context of the Master plan
- absorbing the national potential and promotion of the image of the Republic of Moldova as a tourist destination country;	+	
Regional development of tourism;	+	
- enhancement of the level of human resource training in the industry and of the quality of tourist services;		It does not matter in the context of the Master plan
- technological modernization of the tourist industry using information technologies and communications.		It does not matter in the context of the Master plan
Health of the population [8)]		
Improvement and strengthening of public health supervisory systems for the purpose of detecting health-related problems and provision of relevant, accurate and timely information for the purpose of making decisions and taking actions in the sphere of public health		It does not matter in the context of the Master plan

Strengthening of the national warning system, preparedness and response in case of emergency situations in the sphere of public health on the basis of a complex approach to threats		It does not matter in the context of the Master plan
- minimization of negative impact on human health of risks and emergency situations in the sphere of public health caused by natural, technology-related, man-induced, biological, radiological and social factors	+	
Ensuring protection of health at the expense of enhancing efficiency of control over behavioural risk factors and risk factors present in environment		It does not matter in the context of the Master plan
Adoption of a healthy lifestyle by the population by means of taking efficient and coordinated measures aimed at promotion of health in different sectors at the national and local levels	+	
Reduction of the burden of infectious and non-infectious diseases by means of reducing risk factors and ensuring equal access of the population to primary, secondary and tertiary preventive measures, and other goals		It does not matter in the context of the Master plan
Socio-economic development[9)]		
The Strategy of development of the Republic of Moldova "Moldova – 2020» determines the main goal – ensuring sustainable economic development and, as a consequence, reduction of the poverty level, and it also determines the main areas for development:	+	
Bringing the system of education in compliance with requirements of the labor market for the purpose of increasing productivity of labor force and increase of the level of employment in the economy		It does not matter in the context of the Master plan
- reduction of costs associated with financing at the expense of increasing competition in the financial sector and development of risk management tools;		It does not matter in the context of the Master plan
Improvement of business environment, promotion of competitive policies, optimization of the regulatory-legal base and application of information technologies in the sphere of public services meant for business circles and citizens;		It does not matter in the context of the Master plan
Increase of public investments in the national and local road infrastructure for the purpose of reducing transport costs and acceleration of access;	+	
Reduction of energy consumption by means of enhancing energy efficiency and utilization of renewable energy sources;		It does not matter in the context of the Master plan
- ensuring financial sustainability of the pension system for the purpose of guaranteeing an adequate level of replacement of a salary;		It does not matter in the context of the Master plan
- enhancement of the quality and efficiency of justice and combat with corruption for the purpose of ensuring equal access to public benefits to all citizens		It does not matter in the context of the Master plan

ANNEX 4. Table 5 (to the Chapter V) The environmental, including health, problems which are relevant to the Master plan.

1. ***Evaluation of environmental risks and recommendations within the SEA of the draft Master Plan of Orhei city***

№	Issue	Potential risks	Evaluation method	Limitations	Preliminary recommendations for the planners
1	**Public health**				
.1	Pollution of the water in the wells by waste waters from households (from waste water tanks and toilets)	Decrease of the water quality, increase of water burn diseases	Detailed examination of available reports and documents, expert judgment	Lack of background data on the water quality in the wells and in other water supply sources	Gradual transfer of all household to the centralized water supply. Use of water from wells only for technical needs.
1.2	Discharge of rain waters from the city directly to the water bodies	Pollution of water bodies with oil, detergents, other chemicals and spreading of infection	Examination of available reports and documents	Luck of data on the volume of discharges and their composition	Support from the beneficiaries in obtaining the necessary data from the responsible authorities Develop in the master plan the scheme of the rain water collectors network and planning of its building
2.	**Water resources**				
2.1	Microbiologic and chemical pollution of surface and underground waters in the basins of rivers Raut, Ivanos and of the city lake	Risk of decreasing of water quality and dissemination of infections, increase of illnesses	Detailed examination of available reports and documents, expert judgment	Luck of background data: - on the discharged water and its composition - on the quality of water in the water bodies (rivers, lake)	Support from the beneficiaries in obtaining the necessary data from the responsible authorities Reduction/elimination of the sources of pollution of the water bodies and underground waters
2.2	Flooding and under-flooding of the areas, including living zones, in the Raut and Ivanos rivers basins	Flooding of living areas/households and natural areas	Expert judgment, maps on flooded areas	Limited data on the hydrological conditions of the water bodies (Raut and Ivanos	Carry out the hydro geological investigations as part of the Master Plan section and determine the limits of flood During the allocation of territories in these zones for

№	Issue	Potential risks	Evaluation method	Limitations	Preliminary recommendations for the planners
				rivers)	construction to foresee necessary preventive measures (increase the soil level etc)
2.3	Absence of treatment of rain waters and of the rain waters collectors (on hole territory of the city)	Impact on the water quality of the Raut and Ivanos rivers Impact on city infrastructure and traffic during strong rains	Detailed examination of available reports	Luck of background data on the discharged water and its composition	Support from the beneficiaries in obtaining the necessary data from the responsible authorities (request to the authorities) Develop in the master plan the scheme of the rain water collectors network and planning of its building
2.4	Increase of the level of underground waters in the area of Raut river	Flooding of the territory, change of conditions for the discharge and pollution of underground waters	Expert judgment, examination of maps	Not sufficient background information	Carry out the hydro geological investigations as part of the compartment of Master Plan "Hydro geological conditions"
2.5	Not fully coverage of the households with the waste water collection/sewerage system (only 65% covered at the moment)	Decrease of the quality of water in the wells and soil, uncontrolled discharge of water Impact on river and lake water quality	Detailed examination of available reports	There are not	Support from the beneficiaries in obtaining the necessary data from the responsible authorities (request to the authorities) Development of the compartment "Sewerage" of the master plan and planning of the building of the network
3.	**Atmospheric air**				
3.1	Noise and air pollution with dust from the stone mines placed in the city area	Impact on the air quality and on the public health	Detailed examination of available reports, expert judgment	The mines were closed, but reopened and authorizations issued for exploitation	Examination of the data from AGRM on the activity of the mines Foresee measures to reduce the impact on public health Real closure of the mines and remediation of the land
3.2	Pollution of the air by emissions from transport (NOx, CO etc) Increase of the load on the highway on the entrances to the	Decrease of the air quality and diminution of the living standards and comfort of living	Quality assessment, detailed examination of the reports, statistical data, expert judgment	Luck of data on the intensity of traffic, composition and number of transport units in the city and	Support from the beneficiaries in obtaining the necessary data from the responsible authorities (request from authorities) Development of the compartment of the master plan on transport within

№	Issue	Potential risks	Evaluation method	Limitations	Preliminary recommendations for the planners
	city Increase of the load in the city centre Limited parking places			in transit	which the optimization of the roads and streets network have to be developed (transfer of the part of the national road out of the city, transfer of the transit transport and heavy transport to the by-passing roads, development of the system of parking etc
3.3	Pollution of the air by emissions from individual heating systems (NOx, CO etc), not regulated increase of the number of individual heating systems	Changes/ decrease in air quality, increase of diseases of the population	Quantitative evaluation, expert judgment	Luck of data on the number of individual/autonomous heating systems and their parameters and volumes of emissions	Carry out on the next stages of project evaluations of the assessment of the impact of the heating systems on the air quality and their optimization
3.4 3.5	Pollution of air from industrial activities	Changes/ decrease in air quality, increase of diseases of the population	Quantitative evaluation, expert judgment	Limited background data	Support from the beneficiaries in obtaining the necessary data from the responsible authorities (request to the authorities) Control of pollution from enterprises
	High level of particular matters/dust from wind erosion	Changes/ decrease in air quality, increase of diseases of the population	expert judgment	There are not	Territorial development and measures to reduce soil erosion (planting trees, grass and bushes), cleaning of the streets, keep the level of the soil in green zones lower than the pavement
4	**Land**				
4.1	Land slides	Significant change of relief and durability/sustainability of the buildings, roads, impact on the agricultural fields	Quality assessment, detailed examination of the reports, statistical data, expert judgment	Not sufficient background data	Foresee measures to prevent and reduce land slides as part of the chapter of the mater plan on engineering protection of the territory (ex: take of the surface waters, strengthen hills by planting trees and bushes, accompanies by planting multiannual grass

№	Issue	Potential risks	Evaluation method	Limitations	Preliminary recommendations for the planners
					etc)
4.2	Erosion	Damage of the soil and of the soil layers	expert judgment	There are not	Territorial development and measures to reduce soil erosion (planting trees, grass and bushes), cleaning of the streets, keep the level of the soil in green zones lower than the pavement
4.3	Affected territories because of mining in the city area	Changes of the landscape	expert judgment	There are not	Recovery, greening and strengthening of mine walls by terraces
4.4	Change of destination of the land due to lands under agricultural activities	Reduce the number of lands under the agricultural activities	expert judgment, examination of maps		Examine the land balance and land needs for living areas, development and agriculture
4.5.	Waste water treatment plant for the industrial enterprises The waste landfill, which is not authorized	Changes of the landscape, reduce of the size of territory for the city development	expert judgment, examination of maps	There are not	Closure, recovery, greening and territorial development
5.	**Wastes**				
5.1	Wastes from mining	Degradation of natural resources, pollution of soil	expert judgment,	Limited background data on volumes and	Examine the potential of reuse and secondary raw material

№	Issue	Potential risks	Evaluation method	Limitations	Preliminary recommendations for the planners
				possible use system	
5.2	Formation of solid municipal wastes	Pollution of environment	Quality assessment, detailed examination of the reports, statistical data, expert judgment	Limited background data on volumes, on the collection and separation/reuse system	Develop a plan for the transfer to the new scheme of the collection and recycling of wastes Selection of places/platforms for the separate waste collection, separation, temporary storage and final storage of the untreated wastes
5.3	Absence of the authorized territory for the municipal waste storage/landfill on the territory of the city	Pollution of environment	Detailed examination of the reports		According to the regional development strategy that problem have to be solved at the regional level with the support of the national authorities
6.	**Biodiversity conservation and recreation**				
6.1	Luck of recreation areas in the natural places	Impact on the public health and biodiversity	expert judgment		Establishment of the recreation areas based on the proposals from the master plan and strategy of development
6.2	Absence of the scheme of green areas of the city	Improper green areas management	Quality assessment, detailed, expert judgment	Luck of background data on the limits of the green zones, their composition and quality	Development of the scheme of the green areas of the city taking into consideration the potential of integration in the National Park Orhei
7.	**Tourism**				

№	Issue	Potential risks	Evaluation method	Limitations	Preliminary recommendations for the planners
7.1	Absence of a touristic scheme in the city	Touristic flow is not oriented to the city	Expert judgment	Luck of infrastructure, touristic attractions placed out of the city	Development of the concept of use of touristic potential and historical and architectural heritage of the city in combination with the traditional tours to Old Orhei and monasteries

2. *Environmental and social problems of the city and how they are addressed in the Master Plan*

Main issues	Specific concerns and problems	Linkages to the spatial plan	Proposals of the Master Plan
Impact on the health of the population	Pollution of water in wells with utility fluids	Individual private buildings : - from the south Slobozia Doamnei - in the central part of the town residential constructions that date back to 1950-60-s; - residential constructions in the eastern and northern parts	Transition to the centralized water supply system, expansion of the sewage network to achieve full coverage,
	Chemical and microbiological pollution of surface and ground waters	Catchment areas of the rivers Raut, Ivanos, Vatich and of the city lake	Construction of the storm-water system, shutdown of old treatment facilities and of the landfill site, 100% coverage with the sanitary sewer system, planting of trees and shrubs at shore lands of water bodies
	Pollution of air (mostly with emissions from transport, and also with dust emissions from soil erosion and exploitation of quarries and)	Territories subjected to pollution from transport - the central part of the town, the part of the national highway within the city limits, crossroads at entry and exit to the bypass road Territories subjected to erosion – banks of the Raut river, the lower part of the town Territories with human-induced perturbations (quarries) in the central and southern parts of the	Optimization and arrangement of the street and road network, relocation of truck transport to the bypass highway, construction of the south-western part of the bypass road, restoration of parallel connections for the purpose of decongestion of traffic flows, construction of new roads connecting residential areas Bucuria-Nord, Lupoaica-Nord, Slobozia Doamnei, Lupoaica. Protective measures (planting of trees and shrubs, and) Closure of quarries within the

		town.	city limits
	Noise, vibration	Territories with human-induced perturbations (quarries) in the central and southern parts of the city.	Closure of quarries within the city limits
Degradation of top soil	Development of erosion and landslide processes, reduction of land dedicated to socio-economic development, Loss of biodiversity	Territories subjected to exogenic processes - **landslides** (in the north-western and south-western parts of the town), **erosion** (alongside the bank of the Raut river, the lower part of the town	Shutdown of old treatment facilities, quarries, and their rehabilitation, development of wetland areas, creation of green zones at degraded plots, afforestation of water conservation zones
	Alteration of use of land plots at the expense of agricultural lands	In the eastern part In the eastern part	For residential allotment. For tree and shrub planting
Existence of floodable and wetland areas	Damage caused to households, restrictions for city development, deterioration of the sanitary state of the town, of water resources	Floodable territories (alongside of the banks of the Raut river, the Ivanos river and flood plain of the Raut river in the western part of the town - wetlands (in the western part of the town between the bypass road and urban built-up area)	Construction of the storm-water system**,** measures (land elevation for prospective construction, etc.), afforestation of water conservation zones
Waste	The state of the landfill does not comply with environmental requirements	Territory of the municipal waste landfill	Shutdown and rehabilitation of the landfill, shutdown and rehabilitation of the landfill. Location for the new regional landfill of solid municipal waste to be determined in accordance with the regional strategy on waste.
	Low level of sorting and processing of waste	Territory of the municipal waste landfill	Development of the system of transportation and sorting of waste, arrangements of temporary waste storage
	Unutilized waste of the mining industry	Territories in the area of quarries	Utilization as secondary raw material
Pollution of atmospheric air	Pollution discharges from stationary and moving sources	Territories subjected to pollution from transport –the central part of the town, part of the national highway within the city limits, crossroads at entry and exit to the bypass highway. Territories subjected to	Optimization and arrangement of the street and road network and traffic flows, relocation of truck transport to the bypass highway, etc.Relocation of some enterprises out of city

		industrial pollution – the central and the northern parts of the town	boundaries,
	Pollution with particulates in the course of opencast mining of building-stone	Territories with human-induced perturbations (quarries)	Closure of quarries within the city limits and their rehabilitation
	Pollution with dust from erosion processes	Territories subjected to erosion – banks of the Raut river, the lower part of the town	Protective measures (planting of trees and shrubs, etc.)
Pollution of water resources	Discharge of insufficiently treated and polluted waste water into town water bodies, discharge of storm run-off into surface water bodies	Catchment areas of the rivers Raut, Ivanos, Vatici and the town lake	Construction of the storm-water system**,** shutdown of old treatment facilities and of the landfill, 100% coverage with the system of sanitary sewage, planting of trees and shrubs at shorelands of water bodies
	Inefficiency of operation of old treatment facilities	The territory of the old treatment facilities	Shutdown of old treatment facilities after putting into operation of local treatment facilities of industrial enterprises
	Incomplete coverage of the town territory with the sanitary sewage system	Individual private buildings : - from the south of Slobozia Doamnei - in the central part of the town residential constructions of 1950-60-s; - residential constructions in the eastern and northern parts	Expansion of the sanitary sewage system for 100% coverage of the urban territory.
	Lack of the storm-water system	Catchment areas of the rivers Raut, Ivanos, Vatich and the town lake	Construction of the storm-water system
Biodiversity	Lack of a common urban green planting system	The territory of the town: central and western	Unification of segmented plots of land into a common urban green planting system taking into consideration integration into the Orhei national park, expansion of green zones,
	Lack of well-developed recreational areas, while the potential exists	The territory of the town,: the floodplain of the river Raut, the town lake, the central park	Creation of recreational areas and water bodies in the central and western parts of the town, development of territories of the town lake, the floodplain area of the

			Raut river
	Vulnerability of the landscape (plowing, drainage, unauthorized cutting of trees, geomorphologisal processes)	The floodplain of the river Raut	Development of territories, the floodplain of the Raut river in the course of construction of the motor highways in the western part, engineering protection against landslides
Cultural heritage protection	The historical part of the city have not a special status and is not under protection Lack of touristic system	The central historical part of the town	Distinction of the historical part of the town and granting the status of a historical protected zone, cultural sites in the eastern part of the town.

ANNEX 5. This annex and table below provide additional explanation to the Table 6.1 in the Chapter 6 Table 6.3. Planned Major Decisions in the City of Orhei Maser Plan by zones

1. Zone for recreation, sports and tourism with water bodies (current status – stand-by area used for farming/pasture)

Environmental problems	Impact assessment (-2,-1,0,+1,+2,?)	Impact description
Ai	+1	Air pollution decrease, less dust and suspended solids Better city environment
Water	**+1**	Under flooding decrease due to drainage, collecting water and organizing water resorts.
Soil	**0**	+ Protection against excessive soil heating - Recreation load increase – soil repacking
Biodiversity	**+1**	I**n**crease of the green plantations area, better visual environment and planning functions
Social and economic	**+1**	- Recreational functions - City enhancement
Cultural	**+1**	Aesthetic relaxation zone City styling element

2. Mixed zone for commercial, services and storages (current status – partly industry, partly stand-by area used for farming/pasture)

Environmental problems	Impact assessment (-2,-1,0,+1,+2,?)	Impact description
Air	-1	Pollutant emission (industrial enterprises and transport) Noise pollution (transport and engineering process)
Water	**0,-1**	Partial pollution by transport and engineering emission
Soil	**-1**	Human disturbance as a result of construction and economic activity.
Biodiversity	**0,-1**	Pollutant emission (transport and engineering process)
Social and economic	**0,+1**	- Pollution of the environment + jobs, off-take
Cultural	**0**	no

3. Zone of leaving area with services and commercial units (current status – partly industry, partly stand-by area used for farming/pastures)

Environmental problems	Impact assessment (-2,-1,0,+1,+2,?)	Impact description
Air	-1	Pollution by emissions of heat-and-power engineering objects (boiler-houses) and vehicles
Water	**0**	Dumping into sewerage system
Soil	**0,-1**	Human disturbance as a result of construction and recreative load
Biodiversity	**?**	High-scale uncertainty
Social and economic	**+1**	Better housing conditions
Cultural	**0**	not

4. ***Zone for recreation, sports and tourism with water bodies (current status – industry and community facilities)***

Environmental problems	Impact assessment (-2,-1,0,+1,+2,?)	Impact description
Air	+1	No emission from industrial enterprises and motor transport Protection against noise Better city environment
Water	**+1**	Water pollution decrease due to industrial enterprises and community facilities removal
Soil	**+1**	Recreative load decrease due to industrial enterprises and community facilities removal
Biodiversity	**+1**	I**n**crease of green plantations area, better visual environment and planning functions
Social and economic	**+1**	Recreational functions City enhancement
Cultural	**+1**	Aesthetic relaxation zone City styling element

5. ***Zone of individual households with complimentary functions (current status – barren land)***

Environmental problems	Impact assessment (-2,-1,0,+1,+2,?)	Impact description
Air	0,-1	Pollution by individual boiler-houses and vehicles emission
Water	**0,-1**	Risk of subterranean water pollution by cottage dwellers
Soil	**0,-1**	Pollution by cottage dwellers' waste Human disturbance as a result of construction and providing homestead land
Biodiversity	**0,+1**	Planting of greenery at homestead land
Social and Cultural	**+1**	Better housing conditions
Cultural	**0**	no

6. Zone of commerce (angro), small industry and storages (current status – barren land)

Environmental problems	Impact assessment (-2,-1,0,+1,+2,?)	Impact description
Air	-2	Pollutant emission (transport and industrial enterprises) Noise pollution (transport and engineering process)
Water	**?**	High-scale uncertainty
Soil	**-2**	Human disturbance as a result of construction and economic activity, natural state violation
Biodiversity	**-1**	Pollution by engineering process and transport emission
Social and economic	**-1,+1**	+ Jobs, off-take - Pollution of the environment
Cultural	**0-**	no

7. Zone for planting forest and ecological restoration (current status – industry (brickworks))

Environmental problems	Impact assessment (-2,-1,0,+1,+2,?)	Impact description
Air	+2	Air cleansing from transport and industrial enterprises pollutant emission Protection against noise
Water	**+1**	Less water pollution as a result of transport and industrial enterprises emission stop
Soil	**+2**	Recreate load decrease
Biodiversity	**+2**	Better visual environment, increase of green plantations area
Social and economic	**+1**	City enhancement, light ions increase in urban air shear
Cultural	**0**	No

8. Zone for planting forest and ecological restoration (current status – community facilities (waste water treatment plant and municipal wastes landfill)

Environmental problems	Impact assessment (-2,-1,0,+1,+2,?)	Impact description
Air	+2	Air cleansing from transport and community facilities pollutant emission Protection against noise Better city environment
Water	**+2**	Less water pollution by junk and waste waters
Soil	**+2**	Recreate load decrease (pollution by waste waters and junk)
Biodiversity	**+2**	Increase of the green plantations area, better visual environment and planning functions
Social and economic	**+1**	City enhancement, light ions increase in urban airshead
Cultural	**+1**	City styling element

9. Zone of green areas (current status – barren land)

Environmental problems	Impact assessment (-2,-1,0,+1,+2,?)	Impact description
Air	+1	Air cleansing from industrial enterprises and transport pollutant emission Protection against noise Better city environment
Water	**+1**	Less pollution from unendorsed dumps, less moisture evaporation
Soil	**+2**	Protection against excessive soil heating , keeping soil moisturized, erosion process decrease
Biodiversity	**+2**	Increase of green plantations area, better visual environment
Social and economic	**+1**	City enhancement, light ions increase in urban airshead
Cultural	**+1**	City styling element

10. Territory of the forme open stone mine for development in economic purposes (current status – open pit, industry disposal site)

Environmental problems	Impact assessment (-2,-1,0,+1,+2,?)	Impact description
Air	+1	Pollutant emission (dust) decrease Less noise
Water	**+1**	Less subterranean waters pollution by waste and dust from the open pits
Soil	**+2**	Revegetation of the part of violated territories Waste and dump pollution decrease
Biodiversity	**+1**	Less dust emission
Social and economic	**-1,+1**	+ Jobs, off-tak - Pollution of the environment
Cultural	**0**	no

11. Zone of the reduction of industrial activities with ecological restoration (current status – open pit)

Environmental problems	Impact assessment (-2,-1,0,+1,+2,?)	Impact description
Air	+2	Dust and suspended solids emission decrease Less noise
Water	**+1**	Less subterranean waters pollution by waste and dust
Soil	**+2**	Revegetation of violated territories No pollution by waste
Biodiversity	**+2**	Less pollution of green plantations at adjacent homestead lands , increase of green plantations area
Social and economic	**+1**	City enhancement, light ions increase in urban airshed
Cultural	**+1**	City styling element

12. Zone of complex functions of public interest, leaving areas with public and commercial units (current status – stand-by area used for farming)

Environmental problems	Impact assessment (-2,-1,0,+1,+2,?)	Impact description
Air	0,-1	Pollution by individual boiler-houses and vehicles emission
Water	**0,-1**	Risk of subterranean waters pollution by cottage dwellers
Soil	**0,-1**	Pollution by cottage dwellers' waste Human disturbance as a result of construction activity
Biodiversity	**0,+1**	Planting of greenery at homested lands
Social and economic	**+1**	Better housing conditions
Cultural	**0**	no

13. Zone of industrial units (current status – barren land)

Environmental problems	Impact assessment (-2,-1,0,+1,+2,?)	Impact description
Air	-2	Pollutant emission Noise
Water	**?**	High-scale uncertainty
Soil	**-1**	Human disturbance as a result of constructing activity Natural state violation
Biodiversity	**-2**	Pollution by transport and engineering process emission
Social and economic	**+1,-1**	+ Jobs, off-take - Pollution of the environment
Cultural	**0**	no

14. Zone of individual households with complimentary functions (current status – agricultural land)

Environmental problems	Impact assessment (-2,-1,0,+1,+2,?)	Impact description
Air	0,-1	Pollution by individual boiler-houses and vehicles emission
Water	**0,-1**	Risk of subterranean waters pollution by cottage dwellers
Soil	**0,-1**	Pollution by cottage dwellers' waste Human disturbance as a result of constructing activity Partial cessation of agricultural use of the lands
Biodiversity	**0,+1**	Planting of greenery at homestead lands
Social and economic	**+1**	Better housing conditions
Cultural	**0**	no

15. Zone of industrial units (current status – agricultural land)

Environmental problems	Impact assessment (-2,-1,0,+1,+2,?)	Impact description
Air	-2	Pollution by engineering process and motor transport emission
Water	**?**	High-scale uncertainty
Soil	**-2**	Human disturbance as a result of constructing activity
Biodiversity	**-2**	Pollution by engineering process and transport emission Visual environment change
Social and economic	**+1, -1**	+ Jobs, off-take - Pollution of the environment
Cultural	**0**	no

16 Zone of parks and green areas (current status – individual dwelling – illegitimate land takeover)

Environmental problems	Impact assessment (-2,-1,0,+1,+2,?)	Impact description
Air	+1	Protection against noise Better city environment
Water	**+1**	Less water pollution by unendorsed dumps and cottage dwellers' waste
Soil	**+1**	Less pollution by cottage dwellers' waste Keeping soil moisturized
Biodiversity	**+1**	Better visual environment, increase of green plantations area
Social and economic	**+1,0**	City enhancement, light ions increase in urban airshed
Cultural	**0**	no

17. Transport scheme – Bypass/transit road (current status – agricultural lands)

Environmental problems	Impact assessment (-2,-1,0,+1,+2,?)	Impact description
Air	-2	Pollution of air form transport
Water	**-1**	Pollution of ground waters from transport
Soil	**-2**	Agricultural lands will be taken out of use Pollution of soil and road sides by wastes Impact on natural soil composition on site
Biodiversity	**-2**	Impact on natural Monument "Defileul Orhei", protected by state, and on its ecosystems, on buffer zone, landscape change etc
Social and economic	**+2**	Improvement of living conditions, decrease on time for transportation and transport related costs
Cultural	**0**	No

18. The system of drainage/rayon water collection

Environmental problems	Impact assessment (-2,-1,0,+1,+2,?)	Impact description
Air	0	No
Water	**+2**	Elimination of the source of water pollution
Soil	**0,-1**	Impact on soil due to the construction of the network and pipelines
Biodiversity	**0**	No
Social and economic	**+1**	Improvement of the quality of surface waters and improve their state for recreation use Improvement of the environmental and sanitary conditions, reduction of the social costs
Cultural	**+1**	Possibility of use of water bodies for recreation

19. System of the sewerage

Environmental problems	Impact assessment (-2,-1,0,+1,+2,?)	Impact description
Air	0	No
Water	**+2**	Elimination of sources of pollution of water bodies
Soil	**0,-1**	Impact on soil due to the construction of network pipelines
Biodiversity	**0**	No
Social and economic	**+1,**	Improvement of the quality of the ground water, reduction of the pollution of soil with households waste waters, improvement of the environmental and sanitary state
Cultural	**0**	No

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