SECOND URBAN INFRASTRUCTURE PROJECT
Vinnytsyaoblvodokanal Utility

ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN
(ESMP)

(for B-category projects)

Sub-project «Reconstruction of main water supply network in Vinnitsa city (from Pyrogova Str. to Lebedynskogo Str.)"

Contract VIN-ICB-03-1

2020

CONTENT

This Environmental and Social Management Plan (ESMP) is sub-project site specific oriented Environmental and Social Management Plan developed within the framework of Second Urban Infrastructure Project implementation.

Current document provides list of identified general environmental and social impacts caused by sub-project «Reconstruction of main water supply network in Vinnitsa city (from Pyrogova Str. to Lebedynskogo Str.)" implementation. The document also provides set of mitigation measures should be taken to address identified adverse environmental and social impacts.
Appropriate monitoring measures are presented in current Environmental and Social Management Plan, which also includes a comprehensive monitoring plan.

This ESMP contains links to applicable Ukrainian legislative regulatory acts in environmental protection sphere, especially in the sphere of water resources protection, as well as the World Bank's environmental and social safeguards operational policies.

Current Environmental and Social Management Plan provides review of the existing procedure of project stakeholders engagement under subproject implementation, compliant with the World Bank's operational policies and Ukrainian legislative requirements.

INTRODUCTION

Loan Agreement 8391-UA for $ 350,000,000 for Urban Infrastructure Project-2 was signed between Ukraine and International Bank for Reconstruction and Development (World Bank) in 2014. 300 million USD of the Loan Agreement is funded by the International Bank for Reconstruction and Development, and 50 million USD by Clean Technology Fund.

Second Urban Infrastructure Project objective is improvement of the quality and efficiency of water, wastewater, and solid waste services in selected cities in Ukraine.

Second Urban Infrastructure Project implementation is planned in 9 cities of Ukraine: Kyiv, Zhytomyr, Cherkasy, Kropyvnytsky, Vinnytsya, Ternopil, Novovolynsk, Kolomyia, Kharkiv.

SUIP Implementation will have a significant positive socio-economic effect due to sensibility of population to the low quality of communal services, especially to the absence of access to alternative sources of water supply. Improvement of the quality and efficiency of water supply and sanitation sector's operation will be achieved through rehabilitation of mentioned water supply and sanitation sectors. Project implementation will cause changes of tariff policy, that determine the financial viability of utilities. But, at the same time, replacing old equipment with new one allows to reduce the level of electricity consumption and accumulate Utilities' income for further development.

There are four components of Second Urban Infrastructure Project implementation:

- Strengthening of institutional capacity;
- System rehabilitation investments;
- Energy saving investments;
- Project Management.

SUIP implementation in Vinnitsa city is aimed at reconstruction of the water supply network section from Pyrogova str to Lebedynskogo str in Vinnytsya. Proposed activity will allow to increase the efficiency and quality of Vinnytsya water supply service provision, reduce Vinnytsyaoblvodokanal Utility costs and enhance the reliability of water supply service provision.

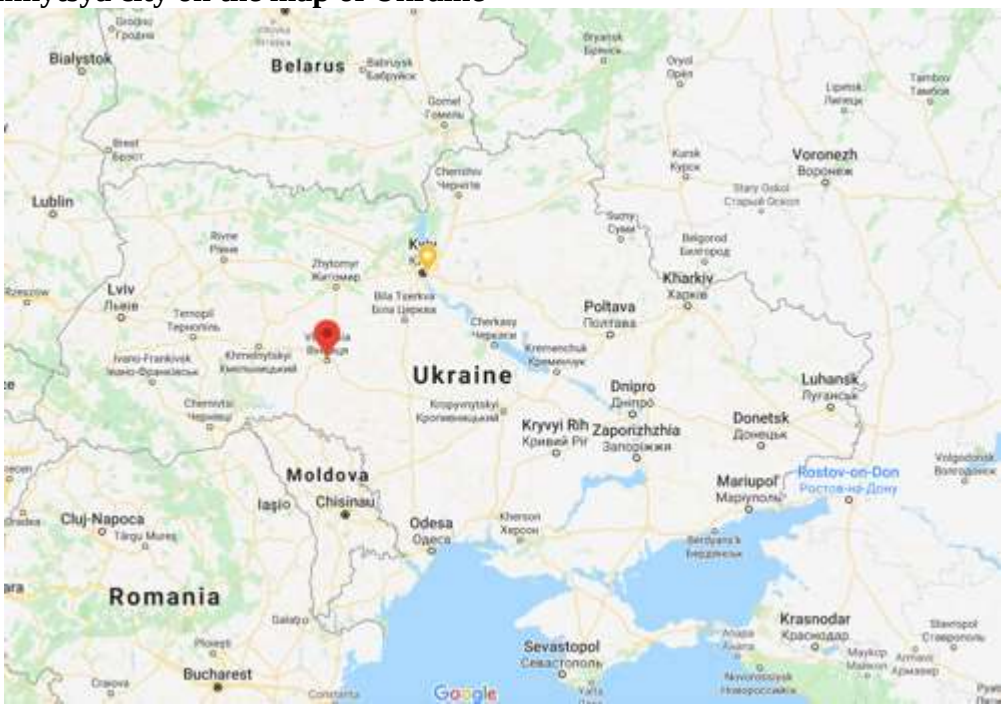
Environmental and Social Management Plan (ESMP) summarizes the potential environmental and social impacts identified during ESIA study and assesses further environmental and social risks and impacts associated with sub-project «Reconstruction of main water supply network in Vinnitsa city (from Pyrogova Str. to Lebedynskogo Str.)" implementation. In accordance with the World Bank's requirements, ESMP determines the list of mitigation measures to be taken to eliminate or mitigate the potential adverse impact of planned activity on environment and population.

Environmental and Social Management Plan includes a developed monitoring plan aimed to control that impacts are dealt with and mitigation measures are followed during the project implementation.

The specific objectives of ESMP are:

- to identify potential adverse impacts of planned construction activity;
- to establish a list of mitigation measures to be taken in the process of project implementation;
- to specify a list of monitoring and control measures;
- to determine the institutional structure responsible for the Project implementation.

Fig. 1. Vinnytsya city on the map of Ukraine



Vinnytsyaoblvodokanal Utility was created to meet the needs of region's population in providing water and sanitation services.

The main objectives of Vinnytsyaoblvodokanal Utility are:

- production and provision of potable water to the population of Vinnytsya and Vinnytsya region settlements;
- provision of drinking and technical water to the enterprises of Vinnytsya and Vinnytsya region settlements;
- collection and following treatment of waste water from population and legal entities of Vinnytsya city;
- maintenance of Vinnytsya and Vinnytsya region water supply and sewerage networks;
- conducting drinking water, waste water and surface water quality researches;
- design works provision in water supply and sanitation sphere;
- survey service provision in water supply and sanitation sphere;
- certification of engineering specialists;
- installation, calibration, repairment of water metering devices;
- implementation of scientific and technical accomplishments;

Within the Second Urban Infrastructure Project, the following investments are to be implemented in Vinnytsyaoblvodokanal:

- analysis of the municipal water supply networks and elaboration of Geographic Information System and Hydraulic Model;
- reconstruction of main water supply network in Vinnytsya city (from Pyrogova Str. to Lebedynskogo Str.);
- procurement of special machinery;
- construction supervision for reconstruction of water supply and sewage networks in Vinnytsya city.

Intended construction activity under sub-project "Reconstruction of main water supply network in Vinnitsa city (from Pyrogova Str. to Lebedynskogo Str.)" would have no significant negative social or environmental consequences. In addition, positive environment effect due to

improvement of the efficiency of Vinnytsya water supply system operation including reducing of energy consumption and water losses in water supply networks is expected.

Implementation of investments will ensure:

- improvement of water supply service for Vinnytsya population;
- reduction of water supply system leakages;
- reduction of electricity and chemical reagent consumption with associated reduction of operating costs.

Besides, other positive outcomes are expected, such as consumers' health improvement and enhancement of living conditions as a result of proper communal service provision.

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1. LEGISLATIVE MECHANISM

This chapter presents an overview of applicable state, Ukrainian and International policies and regulations that guide the implementation of the ESIA.

The relations in the field of environmental protection in Ukraine are regulated by the Law of Ukraine "On Environmental Protection", as well as land, water, forest legislation, mineral protection law, air protection, the protection and use of plant and animal life and other special legislation.

The goal of the Ukrainian legislation on environmental protection is regulation of relations in the field of protection, use and renewal of natural resources, ensuring environmental safety, preventing and eliminating the negative impact of economic and other activities on the natural environment, conservation of natural resources, genetic fund of wildlife, landscapes and other natural complexes, unique territories and natural objects connected with historical and cultural heritage.

A general overview of Ukrainian environmental legislation and regulatory base is presented in Annex 10. This Chapter describes issues related to environmental impact assessment.

In compliance with the art.31 of the Law of Ukraine “On regulation of urban development activities”, the results of environmental impact assessment (materials of the assessment and evaluation reports and public discussions) should be added to the project design documentation of objects which are the subjects of the environmental impact assessment in a transboundary context. The list of such objects and procedure for assessment is determined by the Cabinet of Ministers of Ukraine. Starting from 18.12.2017, the results of environmental impact assessment should be added to the project documentation for object construction which are subject to such assessment. However, according to the clause 3, article 17 of Law of Ukraine "On Environmental Impact Assessment” the conclusions of the state environmental expertise, obtained prior the Law came into force, remain valid and have the status of the conclusions of the assessment of environmental impact.

Engineering survey, design and construction are regulated by the Ministry of Regional Development and Construction. Out of the complete set of design and construction norms and standards, there should be mention here state construction norm # DBN A.2.2-3-2012 "Composition and Content of the Design Documentation for Construction" which defines terminology, types of construction activities and objects etc.

DBN A.2.2-3-2012 "Composition and Content of the Design Documentation for Construction" (namely Annexes B, D, E) requires mandatory section on "environmental impacts, measures for their minimization, mitigation and compensation" in all types of design documentation (feasibility study, detailed design etc.).

The abovementioned State Construction Norms DBN A.2.2-3-2012 provides also requirements to justify decision on the necessity to construct (reconstruct) particular object, as well as provision "to ensure accessibility for disabled persons".

The design documentation should include Environmental impact assessment of the planned activities on the environment and human health (OVNS).

Procedure for preparing full-scale environmental impact assessment documentation is described by the State Construction Norms DBN A.2.2-1-2003 "On Conducting Assessment of Environmental Impact".

The assessment is carried out taking into account the requirements of the national legislation in the sphere of environmental protection, the environmental capacity of the territory, the conditions of the environment in the place where the location of objects is planned, environmental forecasts, prospects for socio-economic development of the region, capacity and types of cumulative effects of harmful factors and objects to the environment.

On December 18, 2017, the special Law "On Environmental Impact Assessment" (OVD) came into force. The environmental impact assessment (OVD) includes the requirements of European Directives and establish the model for assessment procedure of the environmental impact.
In accordance with this Law, the environmental impact assessment became obligatory while making decision on implementation of planned activity, defined by parts 2 and 3 of the art.3 of the Law.

As per the Law of Ukraine "On Environmental Impact Assessment", OVD conclusions should supplement the design documentation and should be presented together for their state expertise for those facilities which are the subjects of OVD.

For the objects which are the subjects of environmental impact assessment (OVD), the environmental impact assessment (OVD) report should be developed.

The following regulations were adopted in compliance with the requirements of the Law:

- criteria for definition of the planned activity, its expansion and changes which are not the subject to an assessment of the environmental impact;
- the procedure for conducting public hearings in the course of environmental impact assessment;
- the procedure for the submission the documents to provide the conclusion on the assessment of environmental impact and funding of the environmental impact assessment and the Procedure for maintaining the Unified Register on Environmental Impact Assessment.

As per the Law of Ukraine "On Environmental Impact Assessment, the envisaged activity related to the project implementation is not included to the list of planned activities referred to in Article 3 (Part 2 and Part 3). This means that there is no need for developing a separate Environmental Impact Assessment Report (OVD). The environmental impact assessment (EIA) is being a relevant part of the design documentation which is a mandatory part of the project documentation set.

In turn, the World Bank has established its social and environmental safeguard policies in order to prevent and mitigate potential negative impacts associated with the Bank's. Taking into account the nature of the proposed sub-projects such operational policies as OP 4.01: Environmental Assessment, OP 4.12 - Involuntary Resettlement and OP-BP 4.11 - Physical Cultural Resources are used in the course of project implementation. These three policies are described below.

OP/BP 4.01: Environmental assessment
This policy is applicable in the case if the implementation of project may have the potential (negative) environmental risks and impacts. OP / BP 4.01 covers environmental impacts (air, water and soils); health and safety of the person; material cultural heritage; transboundary and global environmental issues.
As noted earlier, UIP-2 subprojects are classified as Category B projects. The Borrower is responsible for the environmental assessment of the project and the development of the Environmental and Social Management Plans (ESMP).

For Category B projects the Borrower conducts consultations with the affected project groups as well as local non-governmental organizations (NGOs) about the environmental impact of the project and takes into account their point of view. The Borrower should initiate such consultations as soon as possible.
The Borrower should place ESMF and detailed ESMP on a public resource and provide access to these documents to anyone willing to conduct public consultations and in a language that is understandable for the groups consulted. These documents should be available in the country and at local levels where subprojects are implemented, in the national language and in public places accessible to groups and non-governmental organizations, prior to the examination of the project.

OP 4.11: Physical Cultural Resources
During the implementation of UIP-2, the World Bank's OP 4.11 "Physical Cultural Resources" is used. If the implementation of a subproject may have potential negative impact on material cultural resources, the borrower/beneficiary of the subproject together with the SPMU, will have to prepare a Plan of Action for the Protection of Cultural Heritage and agree with the local authority responsible for cultural heritage. This plan must comply with the provisions of the Law of Ukraine "On the Protection of the Cultural Heritage" of 08.06.2000 №1805-III. The Plan should be a part of the Environmental and Social Management Plan for subprojects which must include declared historical and cultural objects that could potentially be damaged during the implementation of the subproject.

This question should be described in the contracts. Utilities must ensure that the relevant requirements are included in the sub-borrower's contract, where it assumes the responsibility to implement appropriate mitigation, monitoring and reporting measures as specified in the ESMP, if this occurs.

OP/BP 4.12: Involuntary resettlement
This policy covers not only physical displacement, but also any loss of land or property, which leads to:

- displacement or loss of housing;
- loss of property or access to property;
- loss of a source of income or livelihoods regardless of whether the persons who are negatively affected by the project move to another place or not.

This policy also applies to the restriction of access to officially specified parks and protected areas as a result of the negative impact on the livelihoods of displaced persons.
Resettlement planning is an integral part of the preparation of projects supported by the Bank. At the project identification stage, the Working Group should define all activities related to potential involuntary relocations within the project.
The condition of the projects implementation including the involuntary resettlement is the provision to the Bank of the resettlement plan, a framework document identifying a resettlement policy or a process that meets the requirements of OP/BP 4.12. The draft document covers issues related to resettlement, proposes measures for resettlement, as well as the Borrower's relocation obligations and institutional and financial capacity for resettlement.

Implementation of resettlement activities is monitored throughout the life cycle of the project, and monitoring missions include experts on social, financial, legal and technical issues. The main purpose of the mission is to check the compliance of the resettlement carried out with the legal principles, including the project implementation plan and resettlement tools.

The environmental, health, and safety ESHS guideline

The environmental, health, and safety (EHS) guidelines are technical reference documents with general and industry-specific examples of good international industry practice (GIIP)[1]. When one or more members of the World Bank Group are involved in a project, these EHS guidelines are applied as required by their respective policies and standards. The EHS guidelines contain the performance levels and measures that are generally considered to be achievable in new facilities by existing technology at reasonable costs. Application of the EHS guidelines to existing facilities may involve the establishment of site-specific targets, with an appropriate timetable for achieving them. When host country regulations differ from the levels and measures presented in the EHS guidelines, projects are expected to achieve whichever is more stringent. If less stringent levels or measures than those provided in these EHS guidelines are appropriate, in view of specific project circumstances, a full and detailed justification for any presented alternatives is needed as part of the site-specific environmental assessment.

[1] https://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/sustainability-at-ifc/policies-standards/ehs-guidelines

2. CHARACTERISTIC OF EXISTING WATER SUPPLY SYSTEM

Vinnytsyaoblvodokanal Utility water supply system serves 128 726 consumers.

Pivdenny Buh River is the main source of water supply for Vinnytsya community.

Water intake is carrying out from Sabarivske waterstorage. Waterstorage was constructed in 1962 for needs of a hydroelectric power plant on Pivdenny Bug River. Level of water on waterstorage depends entirely on the mode of operation of Sabarivska hydroelectric power plant.
The water intake area is 8960 km^2, forestation is around 11%.
Due to the low-level Pivdenny Bug River bank's erosion, water turbidity is quite low, it is around 50-100 g/m^3.

Waterstorage starts from Stryzhanivke village located in Vinnytsia district and extends across the city.

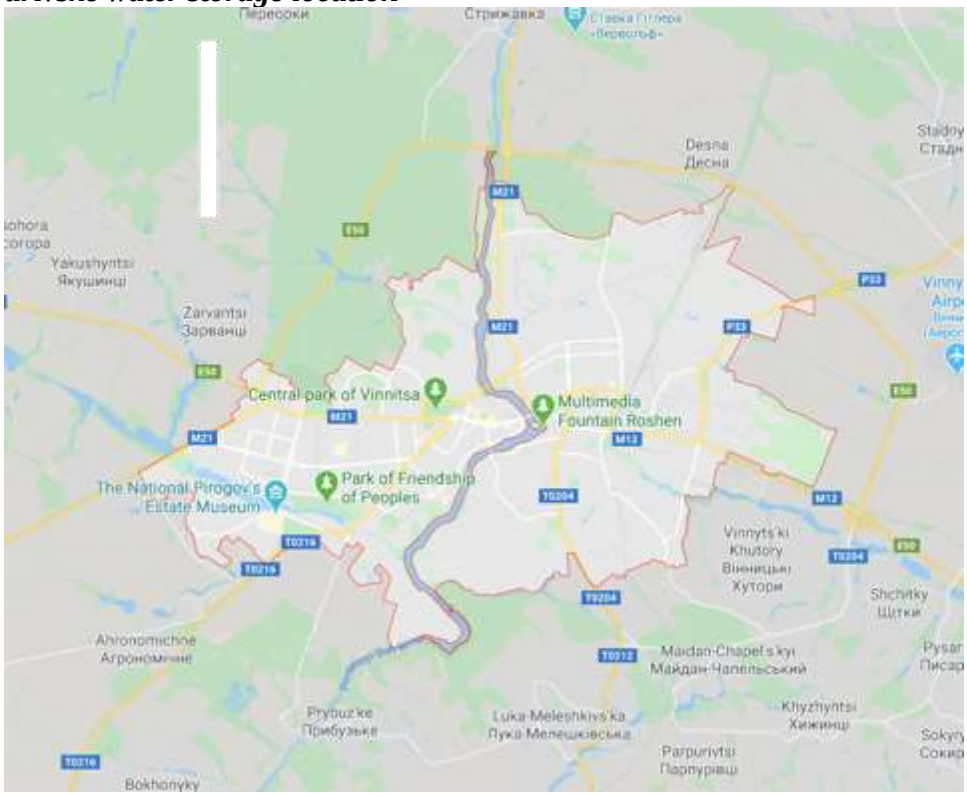
Vinnytsyaoblvodokanal water supply system includes two water supply stations:
- №2 for water supply on the right bank of the city
- №3 on the left bank.

Table.1. Vinnytsyaoblvodokanal water supply system components

Category	Indicator	Measurement unit	Value
Water intake	The number of water treatment plants	unit	2
	Number of surface water intakes	unit	2
	Number of underground water intakes	unit	0
Water Pumping Stations	Number of installed pumping units of water supply pumping stations	unit	72
	of which the number of pump units that have served the useful life (operation)	unit	43
	Number of booster pumping stations for water pumping	unit	22
	Number of I Lift pumping stations	unit	6
	Number of II and III Lift pumping stations	unit	24
	Number of Reservoirs of Clean Water	unit	11
Design and current capacity of Waterintakes	The total capacity of water intakes	thsd m^3/day	260
	Volume of water intake from natural surface or	thsd m^3	33700

	underground sources 36%(own and rise)		
	Use of water intake capacity	%	36
Design and current capacity of treatment facilities	Installed production capacity of treatment facilities	thsd m^3/day	200
	The amount of water treatment at treatment plants	thsd m^3	33 700
	Design production capacity of treatment facilities	%	46
Design and current capacity of water supply network	Design production capacity of water supply network	thsd m^3/day	200
	The amount of water supplied to the distribution network	thsd m^3	28788
	Use of water supply capacity	%	41

Fig. 2. Sabarivske water storage location



Vinnytsya water supply network total length is about 627.6 km.

- 62% of pipes is made of cast iron, of them:
  - 60% is in operation for more than 40 years.
  - 35% (about 200 km) is in operation for more than 50 years.

- 25% of Vinnytsya water supply system's pipes is made of steel (around 141 km of the total length), of them:
    - 40% of them is in operation for over 30 years.
    - 60% (about 99 km) are completely decommissioned.

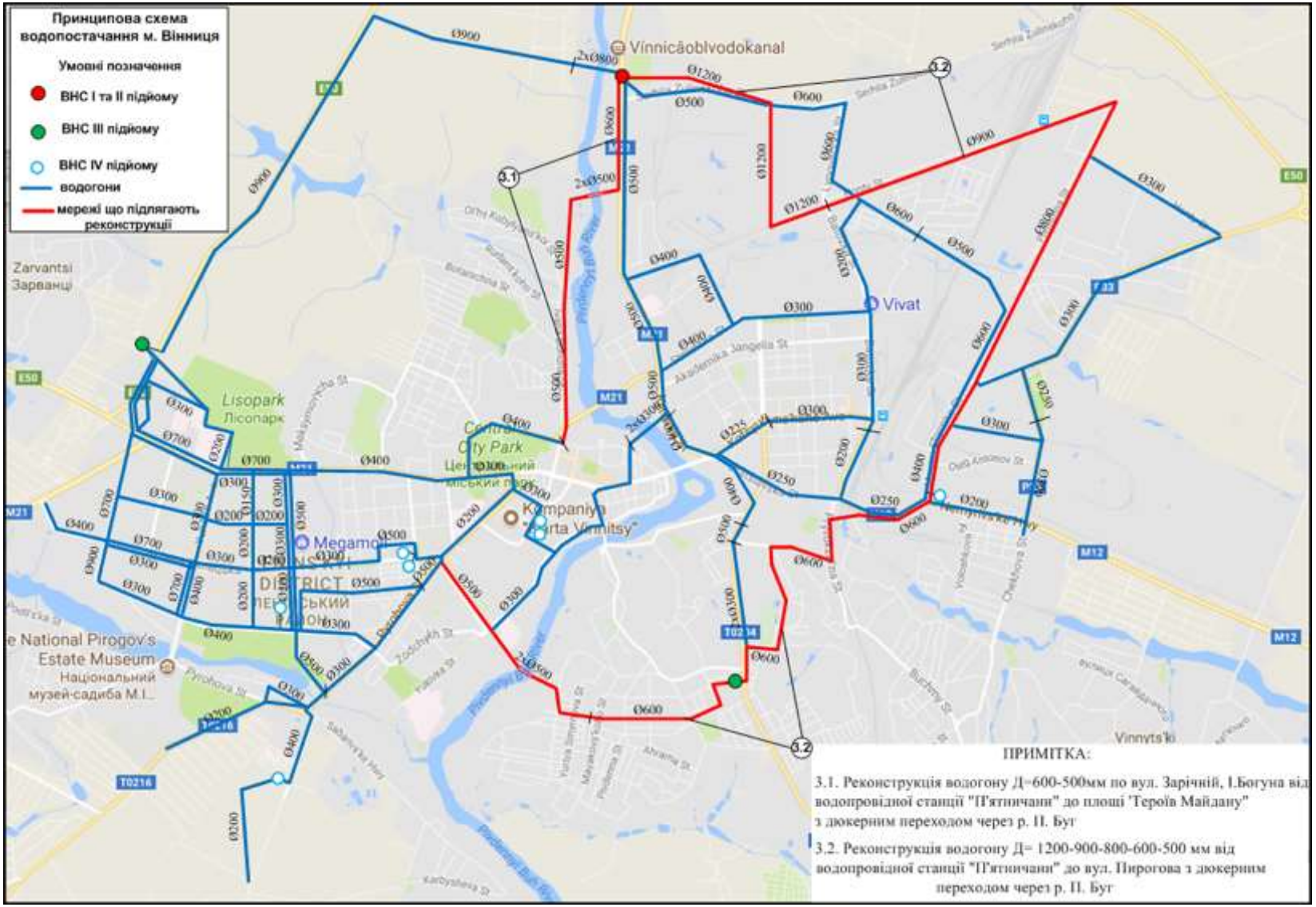
  Due to this, most of steel pipes require immediate replacement because of significant excess of operating costs and repairment costs comparing to the regulatory cost indicators.

Total length of Vinnytsya main water supply line is over 70 km. It includes:

- 55.5% - cast iron pipes
- 16.5% - steel pipes
- 1,8% - plastic pipes
- 26,2% - reinforced concrete pipes.

Detailed information on water supply networks is given on Fig. 3.

Fig. 3. Vinnytsya water supply network scheme



3. CHARACTERISTIC OF THE PROJECT ACTIVITY

Name of the Contract	Reconstruction of the main water supply network in Vinnytsya on the section from Pyrogova str to Lebedinskogo str
Type of reconstructed network	Water supply network
Length of the section under reconstruction	9 km
Land use regime	The reconstruction is planned on the territory of the public lands (detailed description of planned activity is provided in the current chapter below).

Within the framework of Second Urban Infrastructure Project it is planned to provide the reconstruction of the main water supply network in Vinnytsya, in particular it is planned to provide reconstruction of section from Pyrogova str to Lebedinskogo str. The reconstruction is aimed to restore the operational characteristics of depreciated water supply network.

Methods of reconstruction

During reconstruction it is planned to use the following network reconstruction methods:

- open method – method requires performing of excavation – digging of trenches with subsequent repairment of damaged pipeline directly in the developed trench;
- sanation method (pipe in pipe method) – is trenchless method that requires laying of new pipeline inside the existing one without excavation works (digging of the trench) and dismantling of old pipes. This method of reconstruction requires digging of two pits above the existing damaged pipe on the distance 50-100 m in average without digging of trench between them;
- horizontal directional drilling (HDD) - trenchless method of underground pipeline installation with a surface-launched drilling equipment. The technique is routinely used when conventional trenching or excavating is not practical or when minimal surface disturbance is required;
- above-ground pipelining method – trenchless method that requires pipeline lying above earth surface on specially previously installed supporting constructions.

Reconstruction of the main water supply network from Pyrogova str to Lebedynskogo str will be performed by sections. Reconstruction methods have been chosen depending on the criteria affecting pipelining process. The construction works will be carried out through all four construction methods listed above. Detailed description of reconstruction methods is provided in subchapter 3.1 of current ESMP.

Land use regime

Existing water supply network from Pyrogova str to Lebedynskogo str goes through public land plots. Reconstruction works on the territory of privately owned land plots is not planned, but the pipeline laying will be carried out across 4 lawns and small gardens in front of houses located on Tarasa Sycha lane (with several fruit trees), which are public land plots but are being informally used by the owners of the houses. Appropriate impact on social sphere is described in AbRAP document. Construction works will be performed by sections to mitigate the adverse impact on local population.

The water supply network section mainly goes through residential area, mostly presented one-store private houses with single driveways to each courtyard.

It is planned to perform construction works on the territory of:

- public roads. It is planned to perform construction by sections, through the HDD and sanation methods. In some locations, the road asphalt cover will have to be removed for subsequent digging of pits. Potential traffic re-routing scheme will be developed and provided to avoid possible traffic difficulties;
- on green zones along the existing public roads through open method of reconstruction;
- river crossing pipeline – through sanation method of reconstruction with construction of two pits on both banks of Pivdenny Buh river (one pit on each bank);
- Pivdenny Buh river slope with above-ground pipelining method. This type of reconstruction has been chosen due to the geological structure of the river slope (granite rocks). Reconstruction does not envisage the demolition of trees;

Reconstruction of water supply network at crossroads is planned to perform through sanation method of reconstruction to avoid possible traffic jam-up.

Current condition of water supply network section from Pyrogova str to Lebedynskogo str:

Brief description of current condition of water supply network section from Pyrogova str to Lebedinskogo str is provided below:

- ***pipeline laid along Skaletskogo str, river crossing pipeline across Pivdenny Bug River, pipeline laid along 3-rd Ukrainsky lane, Ushakova str a, 1-st Ukrainsky lane, Mayakovskogo str, Bogomoltsya str, Galchevskogo str, Sycha str, Svidinskogo str.***

  Currently, pipes are physically worn, corroded, and have to be replaced.

Starting of operation	1978-1979 Operation period of steel pipelines is 30-40 years.
Pipeline material	steel electro welded pipes
Diameter, mm	530

- ***Underwater pipeline across Pivdenny Buh River***

  The underwater pipeline is currently not being in operation, it is disconnected, and plugged on both sides.

  It is physically worn; pipeline section is out of operation due to the high corrosion damage.

  Switching chambers are not in operation – there are no manholes cover, chambers cover plates is damaged as well. Chambers are flooded with a water, shut-off valves are physically worn due to high corrosion damage that requires their replacement as well. It is planned to perform reconstruction through open method with complete replacement of existing chambers and its components according to approved project decisions.

  The reconstruction of this pipeline section will be carrying out through sanation method of reconstruction with construction of two pits on both banks of Pivdenny Buh river (one pit on each bank).

- ***pipeline laid along D. Nechaya str, Shyrotskogo str, Pokryshkina str, Dubovetska str, Dubovetsky passage, Yasna str, Pryvokzalna str, Lebedynskogo str***

Starting of operation	1978-1979

	Operation period of steel pipelines is 30-40 years.
Pipeline material	steel electro welded pipes
Diameter, mm	630

3.1. **Detailed description of planned construction activity by sections**

Reconstruction of water supply network in Vinnytsya city is planned to be provided with the following sections:

- Section Skaletskogo str/Pyrogova str to Koriatovichyv str
- Section underwater pipeline crossing Pivdenny Bug River
- Section «underwater pipeline crossing Pivdenny Bug River to J. Galchevskogo str»
- Section Galchevskogo str to the fence of WPS «Stare Misto»
- Section WPS «Stare misto»
- Section Chambler №41 on the territory of WPS «Stare Misto» to the intersection with Dubovetska street.
- Section Intersection of Dubovetska str with Pokryshkina to Pryvokzalna str.
- Section Pryvokzalna str to the crossroads Lebedynskogo str, M. Shymka str and Nemyrivske Highway

Detailed description of planned reconstruction process is provided below according to the indicated sections.

Note: The routes where an open method of reconstruction is planned are marked in red colour, horizontal directional drilling method – in blue colour.

- **Section Skaletskogo str/Pyrogova str to Koriatovichyv str**

Section Skaletskogo str/Pyrogova str to Koriatovichyv str starts from Pyrogova str and goes along R. Skaletskogo str to the underwater pipeline crossing Pivdenny Buh River.

Planned methods of reconstruction

open method	– Along Skaletskogo str
horizontal directional drilling method	– Pyrohova str crossing – Knyaziv Koriatovychiv str crossing

Fig.4. Section Skaletskogo str/Pyrogova str to Koriatovichyv str*

**red colour – open method of reconstruction (digging)*
blue colour – horizontal drilling method

The water supply network will be laid along Skaletskogo str on the right side of the road on the pedestrian zone area through open method of reconstruction.

The water supply network section goes through public land plots, it is residential area, mostly presented one-store private houses with single driveways to each courtyard.

Reconstruction of water supply pipeline crossing Pyrohova str will be carried out through horizontal directional drilling method without digging of trenches. Pipe laying depth is 3,0-3,5 m.

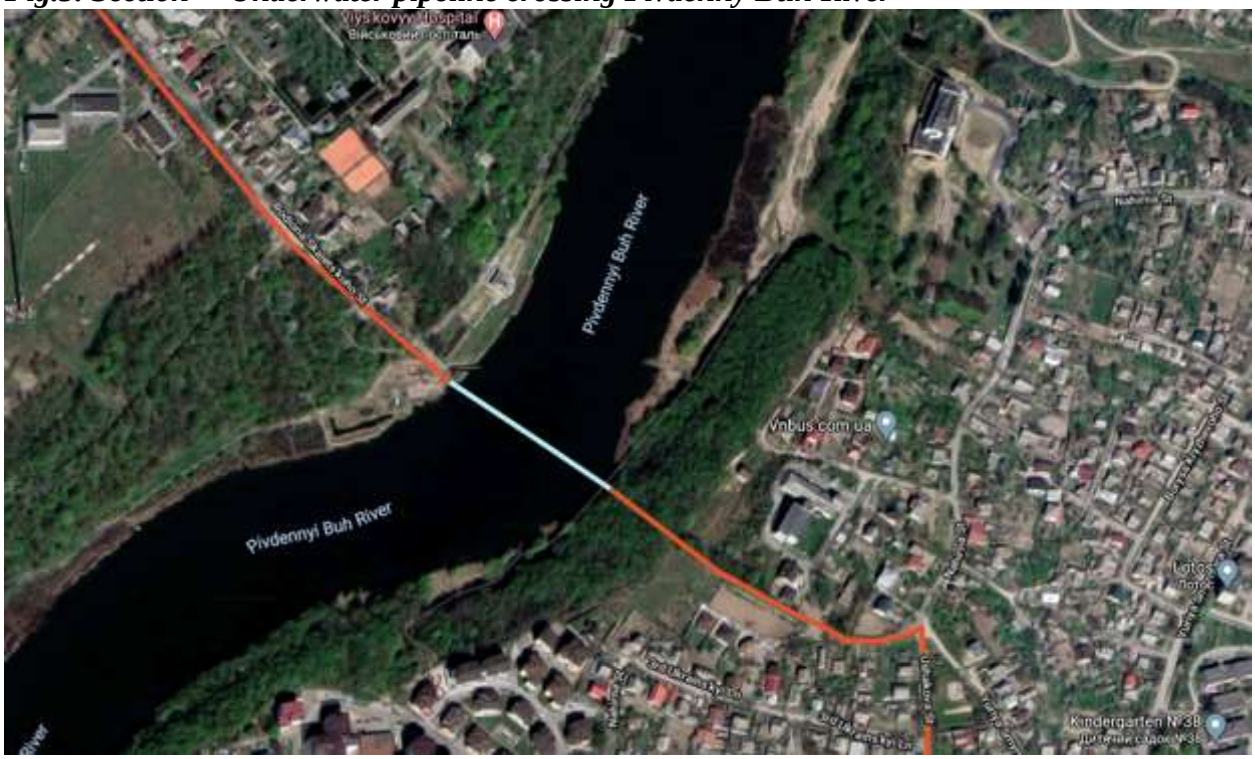
It is planned to perform construction of new water supply chambers to re-switch the existing pipelines that feed local subscribers from the opposite side of the Skaletskogo str to a new water supply network.

Reconstruction of water supply pipeline crossing Knyaziv Koriatovychiv str is planned to be carried out through horizontal directional drilling method without digging of trenches.

Reconstruction of the following section will be carried out through an open method along the existing public road.

Section "underwater pipeline crossing Pivdenny Buh River"

Fig.5. Section "Underwater pipeline crossing Pivdenny Buh River"



Methods of reconstruction

pipe in pipe method (sanation method)	– Underwater pipeline crossing Pivdenny Buh River

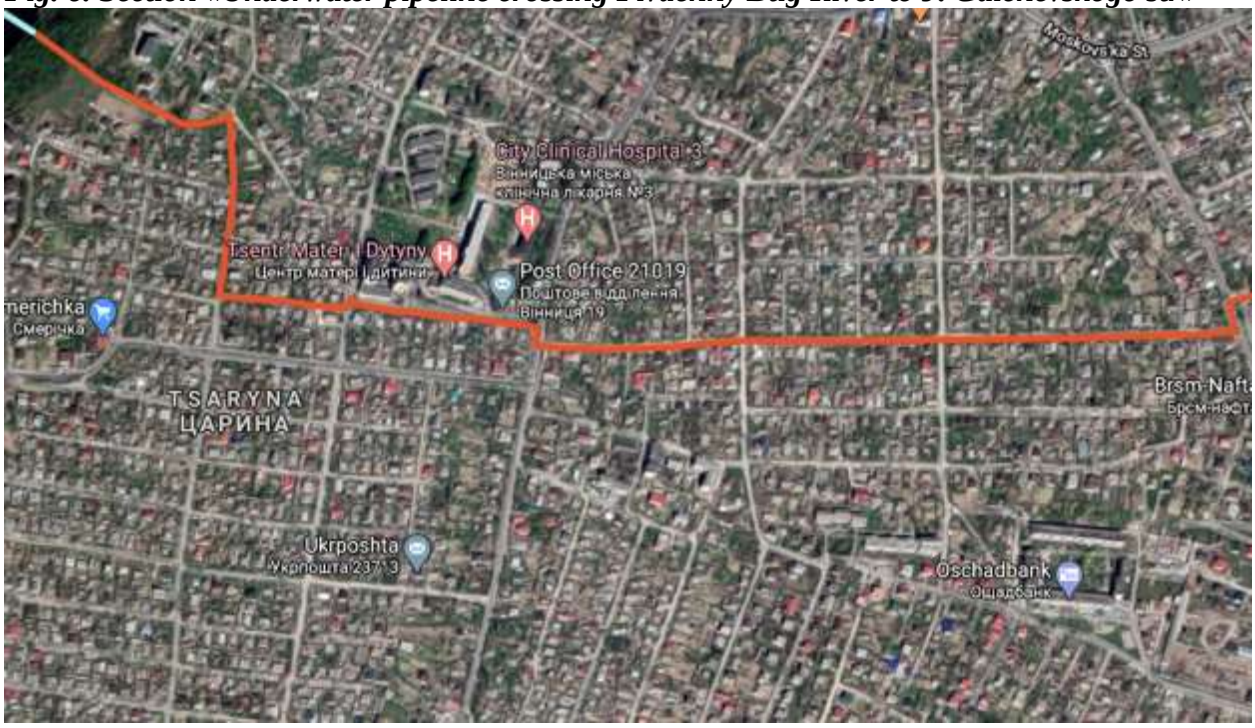
Reconstruction of Underwater pipeline crossing Pivdenny Buh River includes:

- reconstruction of two existing steel pipelines through sanation method by drawing new pipelines inside the existing ones.
  Pipeline length is: 2 pipelines x 2018m each.
  Special supporting systems for pipe drawing are being planned used in the process of reconstruction of mentioned section;
- construction of 2 new switching chambers (3,5x4,0 m each) at place of existing ones with dismantling of old ones;
- installation of cast-iron valves, shaped parts, compensators;

Section «Underwater pipeline crossing Pivdenny Bug River to J. Galchevskogo str»

Network section **«Underwater pipeline to J. Galchevskogo str»** starts on the bank of Pivdenny Buh river and goes up the Pivdenny Buh River slope to Ushakova str with further pipeline laying along Ushakova str, 1-st Ukrainska str, Mayakovskogo str, Bogomoltsya str and J. Galchevskogo str.

Fig. 6. Section «Underwater pipeline crossing Pivdenny Bug River to J. Galchevskogo str»



Methods of reconstruction

open method	–	1-st Ukrainska str (from Smirnova str to Mayakovskogo str), 1st Ukrainian lane, Mayakovskogo str, Bogomoltsya str (from Mayakovskogo str to Galchevskogo str)
above-ground pipelining method	–	Pivdenny Buh river slope
horizontal directional drilling method	–	existing crossroads

Reconstruction of water supply system on Pivdenny Buh river slope will be carrying out along the existing water supply network route through above-ground pipelining method (on supporting poles) with subsequent dismantling of existing water supply system pipeline.

Water supply network pipeline on Ushakova Street will be laid in parallel to the existing water supply route through an open method of reconstruction.
Depth of laying is 2.2-2.35 m.

Reconstruction of water supply network along 1-st Ukrainska str (from Smirnova str to Mayakovskogo str) will be carrying out along existing water supply network route through open method of reconstruction.
Depth of laying is 2,2-2,35 m.

3rd City Hospital located on 1st Ukrainian lane will be re-connected to the reconstructed network after construction works on this section will be completed.

Reconstruction of water supply network along Mayakovskogo str will be performed through horizontal drilling method and open method of reconstruction. It is planned to perform reconstruction on existing crossroads through horizontal directionally drilling method to avoid possible traffic problems.

Reconstruction of water supply network along Bogomoltsya str (from Mayakovskogo str to Galchevskogo str) will be carrying out along the existing water supply network route through open method of reconstruction.
Depth of laying is 2.35 m.

Reconstruction of water supply network under Galchevskogo str is planned through horizontal directional drilling method without digging of trench.

It is planned to lay down the new water supply pipeline along the existing water supply network route through open method of reconstruction to provide subsequent water supply service for consumers on Bogomoltsya str.
Depth of pipeline laying is 1.58-1.6 m.

Section Galchevskogo str to the fence of WPS «Stare Misto».

Fig.7. Section Galchevskogo str to the fence of WPS «Stare Misto».

Methods of reconstruction

open	– Galchevskogo str, Tarasa Sycha lane, Tarasa Sycha str.

It is planned to perform reconstruction of water supply network on mentioned section along the existing water supply network route through an open method.
Depth of laying is 3,0 m.

Section "Galchevskogo str to the fence of WPS «Stare Misto» starts from intersection of Galchevskogo street and Tarasa Sycha lane and goes along Tarasa Sycha lane, Tarasa Sycha str, A. Svydnytskogo str to the territory of WPS "Stare misto".

This area is mostly presented one-story private houses with single driveways to each courtyard. One multi-storey building is located on the intersection of Galchevskogo street and Tarasa Sycha lane. 4 lawns and small gardens are located in front of houses on Tarasa Sycha lane (with several

fruit trees), which are public land but are being informally used by the owners of the houses. Appropriate impact on social sphere is described in AbRAP document.
Construction works will be carrying out by sections and this allow to minimize the impact.

Construction works will be performed along the public roads on the territory of green zone. Construction works will be carrying by sections to minimize the negative social impact. Impact on social sphere is described in AbRAP document.

Construction works on this section may cause the negative impact on:

- parking area located on Tarasa Sycha Lane (demolition of asphalt cover and there is a need to provide the owners with new parking place during the reconstruction time);
- 4 lawns and small gardens located in front of buildings on Tarasa Sycha Lane, Tarasa Sycha str (the permissions of owners of crops have to be obtained before the start of construction works);
- road pavement in front of Tarasa Sycha Lane, 4 has to be temporary removed while the construction works will be performed (the permission of owners has to be obtained before the start of construction works);
- playground located on Tarasa Sycha str will be temporarily closed during time of reconstruction to avoid possible injuries to children;

Section WPS «Stare misto»

Fig.8. Section WPS «Stare misto»

Methods of reconstruction

open	– on the territory of WPS “Stare Misto”

On the territory of WPS «Stare misto», it is planned to perform:

- pipeline laying along the existing water supply network route, depth of laying is 1,9-2,0 m;
- reconstruction of the switching chamber №41 with subsequent replacement of shut-off valves.

Territory where construction works are planned is public one, construction on the territory of privately owned land plots is not planned. Demolition of green plants is not foreseen.
Section Chamber №41 on the territory of WPS «Stare Misto» to the intersection with Dubovetska street.

Methods of reconstruction

open method	–	Shirotskogo str
horizontal directional drilling method	–	along D. Nechaya str and Shirotskogo str

Reconstruction of water supply network on section "Chamber №41 on the territory of WPS «Stare Misto» to the intersection with Dubovetska street" starts from Chamber №41, crosses D Nechaya str (under the street) and goes by following sections:

- along D Nechaya str to the intersection D Nechaya str with K. Shirotskogo str,
- from intersection of D Nechaya and K. Shirotskogo str along K. Shirotskogo str to the intersection with Pokryskyna str
- from intersection of K. Shirotskogo str and Pokryskyna str along Pokryskyna str to the intersection Pokryskyna str and Dubovetska str

Reconstruction of pipeline under existing roads and crossroads is planned to perform through horizontal directional drilling method without digging the trenches to mitigate possible negative social impact. Planned depth of laying is 3 m.

Fig.9. Section Chamber №41 on the territory of WPS «Stare Misto» to the intersection with Dubovetska street.

Reconstruction of water supply network on K. Shyrotskogo (Shchorsa) str will be provided:

- through horizontal directional drilling method along the existing water supply network route, taking into account adjacent networks, depth of laying is 2.5-3.0 m.
- through open method of reconstruction, depth of laying is 2.5 m

Construction of a new chamber on K. Shyrotskogo str is planned within the reconstruction of current section.
Water supply network along Pokryshkina Street from intersection K. Shyrotsky Str and Pokryshkina Street to Kovpaka Street will be carrying out through open method of reconstruction, depth of laying is 2.0-2.1 m.

In accordance with the design documentation, reconstruction of water supply network along Pokryshkina str from Kovpaka str to Dubovetska str will be carrying out through horizontal directional drilling method along existing water supply network, depth of laying is 2.5-3.0 m.

Reconnection of consumers along Pokryshkina str to reconstructed water supply network will be performed through new local water supply network. Depth of laying is 1,5-1,6 m.

Section "Intersection of Dubovetska str with Pokryshkina to Pryvokzalna str"
Section starts from the intersection of Dubovetska str and Pokryshkina str and goes along Dubovetska str, Dubovetsky lane, Svitly lane to Pryvokzalna str.

This area is residential area mostly presented one-story private houses with single driveways to each courtyard. Construction works will be performed partially on public road and, on the territory of green zone, along public road. Construction works will be carrying out by sections to mitigate the negative social impact. Planned methods of reconstruction are described in the table below.

Demolition of green plants is not planned during reconstruction.
Reconstruction of water supply network that goes under the existing public road will be carrying out through horizontal directional drilling method to avoid negative social impact related to traffic changes.

Impact on social sphere is described in AbRAP document.

Fig.10. Section Intersection of Dubovetska str with Pokryshkina to Pryvokzalna str.

Methods of reconstruction

horizontal directional drilling method	– Dubovetska str. (from Pokryshkina str to the stream), Dubovetsky lane, Yasny lane
open method	– from Dubovetska str-Dibovetsky lane from Pokryshkina str to the building №6 on Yasny lane

The pipeline reconstruction along Dubovetska str. from Pokryshkina str to the "stream" will be performed along the existing water supply network route through horizontal directional drilling method, depth of laying is 2.5-3.0 m.

Reconstruction of water supply network along Dubovetsky lane and Yasny lane is planned through horizontal directional drilling method along the existing water supply network route, depth of laying is 2.5-3.0 m.

Reconstruction of water supply network on section from Dubovetska str-Dubovetsky lane from Pokryshkina str to the building №6 on Yasny lane will be carried out through open method of reconstruction with digging of trench along the existing route of water supply network.
Depth of laying is 1,5-1,6 m.
Connection of existing consumers to a new water supply system is foreseen in existing wells.

Section Pryvokzalna str to the crossroads Lebedynskogo str, M. Shymka str and Nemyrivske Highway

Fig.11. Section Pryvokzalna str to the crossroads Lebedynskogo str, M. Shymka str and Nemyrivske Highway

Methods of reconstruction

horizontal directional drilling method	–	from Yasny lane along Pryvokzalna str
open method	–	from the crossing of the railway to Lebedinskogo str

Reconstruction of water supply network will be carrying out along Pryvokzalna str, under Southwestern Railway, along Turchanovicha str, with subsequent laying underwater pipeline through the pond, along Lebedinskogo str to the Chambler №1 located at the crossroad Lebedynskogo str, M. Shimka str., and Nemyrivske Highway.

It is planned to carry out the reconstruction of water supply network from Yasny lane along Pryvokzalna str with horizontal directional drilling method. Depth of laying is 2.5-3.0 m.

Reconstruction of water supply network under the Southwestern Railway will be performed through lying of new pipeline in the existing asbestos-cement case under the railway.
It is envisaged to draw pipe into the existing asbestos-cement case without excavation. Construction of new chambers will be performed.

Works on laying, tracing, chipping of existing cables of the South-Western Railway should be performed with the presence of representatives of:
- Vinnytsia track division;
- Zhmerynka Power Supply division;
- Vinnytsia division

with preliminary notification (not less than three days before start of construction works) of mentioned services.

It should be noted that excavation at the intersection of water supply networks with networks of other Utilities should be carried out manually without use of machinery.

Reconstruction of water supply network from the railway to Lebedinskogo str will be performed along the railway through open method of reconstruction.

It is planned to carry out construction of underwater pipeline across the pond with horizontally directional drilling method. Depth of laying is 3.0 m.

Fig.12. Section crossroads Lebedynskogo str, M. Shymka str and Nemyrivske Highway to Maxyma Shymka str

Methods of reconstruction

horizontal directional drilling method	–	From house №13 to crossroads M. Shimka str- Nemyrivske Highway
	–	pipeline's crossing of the roads
open method	–	Lebedinskogo str, from building №3 to building №13

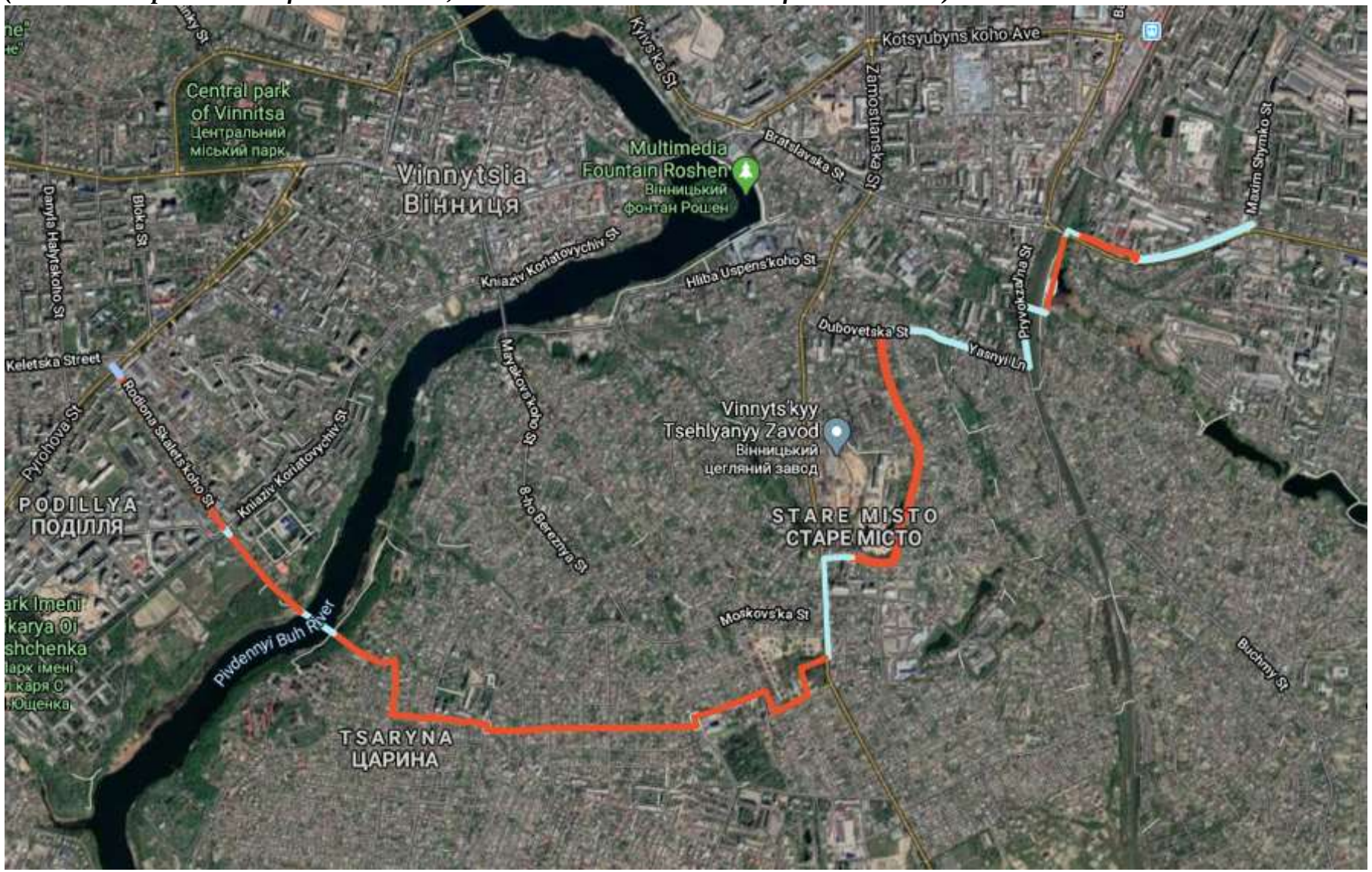
Reconstruction of water supply network under Lebedinskogo str (reference point is Lebedinskogo str,3) will be carrying out through horizontally directionally drilling method. On Lebedinskogo str, near house №3 it is planned to build a water supply chamber.

Crossing of railway (belongs to PJSC "Vinnytsky oliyno-zhyrovy kombinat") will be performed with horizontal directional drilling method. Depth of laying is 2.5-3.0 m;

Reconstruction of water supply network along Lebedinskogo str from Lebedinskogo str,3 to Lebedinskogo str, 13 will be carrying out with open method of reconstruction. Works will be performed on the green zone along the public road. Depth of laying is 2,0-2,1 m.

From Lebedinskogo str,13 to crossroad M. Shimka str-Nemyrivske Highway, reconstruction of water supply network will be carrying out with horizontal directional drilling method along the left side of Lebedinskogo str. Depth of laying is 2.5 m.

Fig. 13. Route of Water supply network planned to be reconstructed
(red colour – open method of reconstruction, blue colour – sanation method of reconstruction)

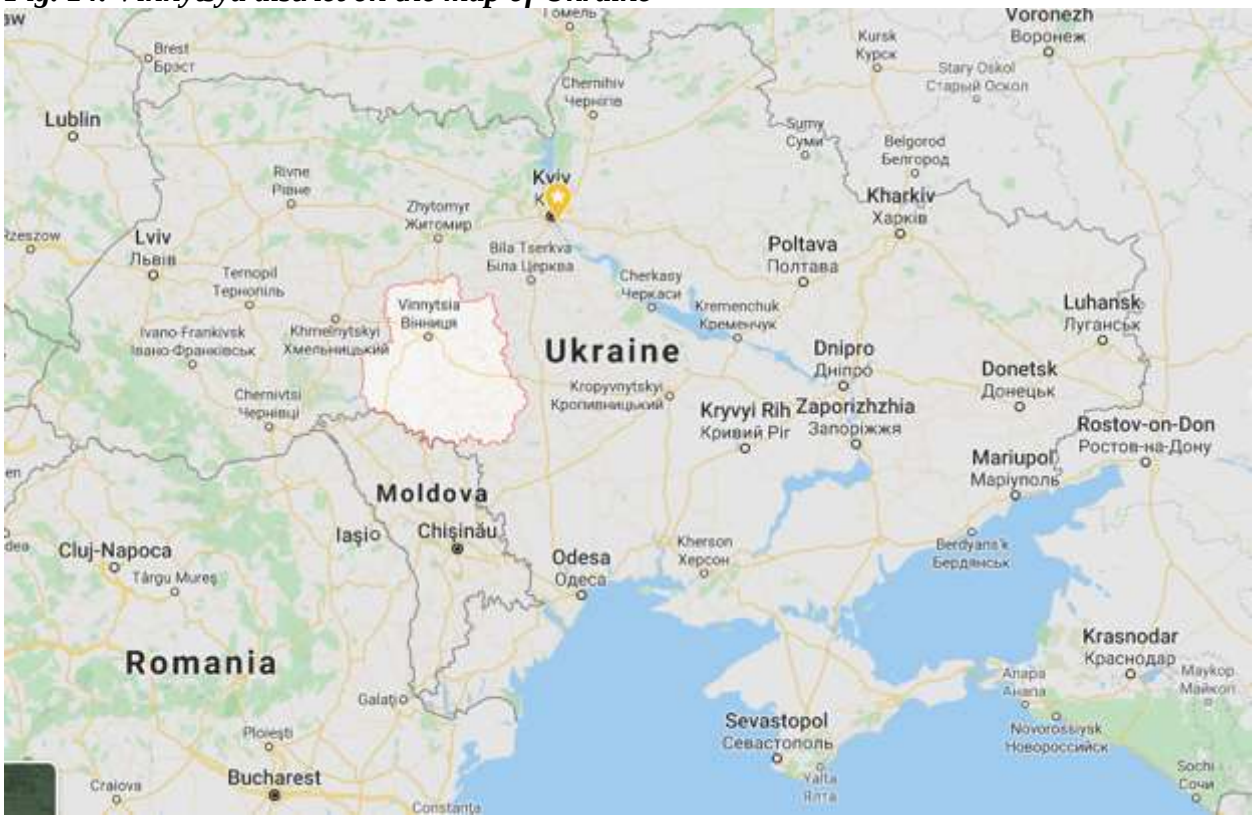


4. CHARACTERISTIC OF EXISTING ENVIRONMENTAL AND SOCIAL CONDITIONS

Vinnytsya city is the administrative centre of the Vinnytsya Oblast, as well as the administrative centre of the surrounding Vinnytsya Rayon (district) within the oblast. The city is directly subordinated to the oblast.

City area	113.2 km^2
City population	370.7 thousand
Main water object	Pivdenny Buh River

Fig. 14. Vinnytsya district on the map of Ukraine



Climate

The site of planned construction activity is located in the I-th - North-West architectural and construction climate area (according to DSTU-N B. V. 1.1-27: 2010).

The climate is temperate continental. The average annual air temperature is 7.2^{o}C, the average January temperature is -5.8^{o}C, July 19.2^{o}C.
The absolute maximum air temperature (July, August) is 38 ^{o}C, the absolute minimum air temperature in January is -33 ^{o}C.

Annual precipitation is 570mm.
The soil freezing depth is 90 cm.
The average wind speed is 3-4 m/s.

Terrain

The terrain where the water supply section is located has been changed by man-made activity.

Groundwater for the period of survey, detected by wells at a depth of 3.0m.
The main source of groundwater feeding is the infiltration of precipitation, inflows from the watershed, and Pivdenny Bug River.

During visual survey, no negative engineering-geological processes were detected on the site of planned construction activity, except of granite bedrock exposure on the left bank of Pivdenny Buh River.

The construction works will be carried out at the territory of an urbanized area. Design areas are a built-up residential area, mostly presented by one-story private houses with individual entries to each of them.

Mainly the territory of the planned construction activity without significant differences in heights, except the section of the water supply network in the area of reconstruction of underwater pipeline crossed Pivdenny Buh River. The slope's ground is mostly represented by granites.

It is planned to carry out the construction works on the territory of residential areas with underground engineering communication, in particular:

- on the territory of public roads (partially);
- on the territory of the green zones along the public roads;
- on the territory of the pedestrian zones along the public roads;

The description of land use issues related to the project implementation is provided in Resettlement action plan.

5. IMPACT OF THE PROJECT ACTIVITY ON ENVIRONMENTAL AND SOCIAL SPHERES

Successful project implementation includes precise identification of possible environmental and social impacts of planned construction activity and their subsequent assessment. The potential impact of planned activity should be considered both during the construction phase and during the operational phase of the proposed project activity.

The potential impact should be assessed in accordance with the requirements of the current environmental legislation of the country, where the project implementation is envisaged and requirements of World Bank's safeguard policies.

The environmental and social impact assessment process should include:

- studying of existing environmental and social conditions of the territory, where project implementation is planned;
- research and calculation (assessment's constituents) of environmental and social impact's parameters;
- selection and justification of environmental and social mitigation measures planned to be provided to ensure environmental, social and technological safety during reconstruction and operation of objects under the project implementation.

Assessment of existing project area environmental and social conditions is carried out through analysis of the baseline state of the project area environment including the characteristics of air conditions, ground water and surface water conditions, soil state, flora and fauna, climatic, geological and other natural conditions.

At the same time important part of environmental and social impact assessment is analysis of issues associated with land acquisition (legally designated and informally used lands) and possible restrictions of access to legally designated and informally used property caused reconstruction of Vinnytsya water supply network.

Direct effects of planned project activity:

- improvement of hygiene and sanitary indicators of provided water supply service;
- decreasing of number of interruptions in the provision of water supply services due to a reduction in the number of accidents on water supply networks in Vinnytsya;
- improvement employment conditions for utility employees;
- creation of additional work places for the period of reconstruction;
- saving of energy resources through increasing of pumping equipment productivity by reducing the number of accidents on water supply networks in Vinnytsya;

Indirect effects of planned project activity:

- prevention of flooding of the territories adjacent to the place of accident;
- prevention of deterioration of hygiene and sanitary services indicators for consumers;
- minimization of indirect adverse environmental impact through increasing the energy efficiency of the pumping equipment;
- operation of the existing engineering infrastructure without additional environmental impact.
- decrease of soil, air basin, water objects contaminations with chemical and biological pollutants.

In general, permanent negative impact on environment and social spheres resulted by the project activity is not foreseen. However, there is a likelihood of negative impact on safety and health of employees involved in construction process and local population during construction works (resulted possible emergency situations). It is possible to avoid or mitigate adverse impact of planned activity through the implementation of appropriate mitigation measures.

Atmospheric air pollution

The negative impact on atmospheric air will be caused by performing of following technological operations:

- earthworks (digging of trenches, alignment and compaction of the bottom of trenches, backfilling) and works related to the arrangement of wells;
- waterproofing works;
- welding during installation process, process of dismantling of metal constructions and pipes;
- operation of vehicles and construction machinery used in in construction process (transport pollution)

The major impact is associated with the contamination of atmospheric air through performing of excavations. The negative impact will be caused by following pollutants:

- suspended particles (excavation, asphalt layer removal processes and further backfilling and asphalt covering processes):
    - dust containing Si2 <20% resulted soil excavation (digging of pits for pipe laying, backfilling with soil, etc.) – 5,82 t
    - dust containing Si2 20%-70% resulted backfilling process – 0,34 t
    - dust containing Si2 20%-70% resulted backfilling with gravel – 0,026 t

- pollutants associated with machine and equipment fuel consumption, such as: carbon oxide, nitrogen dioxide, soot, sulphur dioxide, hydrocarbon.

  Based on the pollutant emission factors the average amount of pollutants will be estimated as follows:

Pollutants	Fuel type	
	Diesel	Gasoline
Fuel consumed during construction, t	112,5	31,5
CO, t	4,32	1,77
NOx, t	11,48	3,93
CH, t	3,04	1,44

- hydrocarbons emitted during asphalt covering process.
  Waterproofing process associated with the reconstruction of underwater pipelines will cause emission of about 0.415 tons of saturated hydrocarbons into the atmospheric air.
- pollutants resulted by welding process, namely: carbon oxide, nitrogen dioxide, as well as metal compounds (iron oxide, manganese and its compounds);

The negative impact on atmospheric air associated with construction will take place directly at the construction sites and adjustment areas, as well as along the roads planned to be used for construction needs.

Emissions of pollutants into the atmosphere will be unorganized.

Construction works will be carrying out by turns and at different construction sites located along the water supply network route planned to be reconstructed. Thereby, air quality indicators will return to the baseline values after completion of construction.

In general Construction works are discontinuous activities and happen in short period of time given the small to moderate scope and scale of the subproject.

Operational stage
During the operation of the reconstructed objects, no negative impact on the environment and the social sphere is envisaged. The risk of accidents is minimized due to reconstruction of emergency water supply system objects.

Impact on climate and microclimate

Implementation of investment project will not result emission of inert gases, additional heat and moisture. Excessive concentrations of pollutants in the lowest atmospheric layer due to adverse climatic conditions is not foreseen.

No climate or microclimate changes resulted by reconstruction is expected.

Surface and ground water pollution

Vinnytsya sub-project implementation will not result increasing of water consumption and drainage.
There are no water supply system's facilities in the area of planned construction activity. Water intake facilities are located outside the city.

Runoff water is discharging to the city storm sewer along sections of planned reconstruction.

During construction there is a risk of pollution caused by:
- accidental oil leakages of machinery and equipment,
- liquid waste generated during construction
- runoff water with soil particles washed away from the surface of construction sites. This substance mainly contains silica, clay particles, iron oxides, hydrocarbons.

Accidental spills can cause contamination of soils and, subsequently, further contamination of groundwater.

No negative impact on surface water and groundwater is expected during construction and installation process.

Operational stage
Polyethylene pipes used for reconstruction of water supply network will eliminate the risk of future pipeline corrosion, reduce possibility of pipeline damage caused by temperature fluctuations and surges in a conduit.

Surface water and groundwater pollution is not expected during operation of reconstructed water supply network.

Soil and landscape changes influence

The main impact on soil will be caused by excavation works during water supply networks reconstruction process.
The negative effect is associated with following types of impact:

- morphological impact;
- mechanical impact of transport and construction equipment. It will cause the compressional effect that increase the density of upper layers of soil (through the use of large-scale equipment and trampling by people);

chemical pollution of soil will be caused by:

- emergency spills of fuel and lubricants during construction works;

mechanical pollution through improper handling of domestic waste and construction waste, in particular: black scrap waste, polyethylene pipes, hardened concrete, fittings, etc.).

However, the probability of occurrence of negative impact is extremely low due to compliance with proper terms of use of construction machinery and accurate waste management during construction.

The landscape surface will be temporarily violated during the excavation works at the place of construction works performing.
The micro relief will return to baseline after completion of construction.

Elimination or mitigation of physical and mechanical impact on soils will be achieved through precise compliance performing of construction works with the design documentation requirements.

No new sources of potential negative impact will be generated during project implementation.

Operational stage
Adverse physical and geological processes on the territory of reconstructed networks are not expected.

During the operation of reconstructed water supply network, the main type of possible negative impact on the soil will be caused by chemical pollution due to:

- possible emergency spills of water;
- possible emergency spills of fuel and lubricants during during preventive inspections or network repairement;

Given the foregoing, no impact on soil conditions during operation is expected.

Impact on historical, cultural or religious sites or monuments

The construction works within the objects of cultural heritage is not foreseen.

In case cultural and historical monuments will be discovered or there will be need to violate the existing material and cultural values during reconstruction process, World Bank Operational Policy 4.11 "Material Cultural Heritage" should be applied.

If objects that have archaeological, paleontological, historical, architectural, religious, aesthetic, or other cultural significance are discovered, construction works should be stopped. Head of construction and relevant departments of local authority should be informed about identified objects during first 24 hours after mentioned identifying (in accordance with Article 36 of the Law of Ukraine "On the Protection of the Cultural Heritage").

It should be noted that earthworks can be restored after completion of archaeological research with subsequent written permission of relevant cultural heritage protection authority.

The subproject borrower/beneficiary together with CPMU safeguard specialist must develop a physical cultural resources management plan that includes measures aimed to avoid or mitigate any adverse impact on physical cultural resources, provisions for managing chance finds. Plan has to be approved by relevant institution responsible for identified cultural heritage. This plan must comply with the provisions of the Law of Ukraine "On the Protection of the Cultural Heritage" dated 08.06.2000 No1805-III and should be part of the Environmental and Social Management Plan developed under project implementation.

Landslides and erosion

Reconstruction of water supply networks will be carrying out through excavation works (digging of trenches and pits). Average depth of trenches according to project documentation's statements is 2-3 m. It requires precise compliance with health and safety norms and rules requirements, because of high risk of landslides that can cause injuries and deaths to employees and local residents. At the same time unsatisfactory sheeting or its absence in the process of deep soil excavation can cause landslides and subsequent adverse impact on workers and adjacent structures.

Operational stage

No negative impact associated with landslides or erosion processes during operation of water supply network is expected.

Waste management

Potential negative impact of waste created during construction process can be caused as a result of improper waste management process, improper waste storage process and transportation of waste. Mentioned above processes can cause contamination of the soil, surface and groundwater, and create a danger to human health and the state of the environment.

The following waste types will be generated in the course of reconstruction of water supply network (listed in the table below):

Table. 2. Type of waste created during construction

Waste type	Amount of waste	Temporary storage place
Household waste (including waste resulted by the cleaning of territory)	1,32 t	Containers on a hard surface. Once accumulated, it will be transported to a municipal landfill under the contract with a specialized company
Wiping materials tainted (worked out or contaminated)	0,38 t	Metal container with the subsequent delivery to a specialized enterprise
Mixed construction waste (including from dismantling and dismantling of wells and chambers, from cleaning of existing wells and chambers from rubbish, etc.)	650,00 t	Special sites with pavement, tanks on hard cover areas. As they accumulate, they will be transported to a municipal landfill under a contract with a specialized company

Domestic waste (liquid drains of dry closet)	8,6 t	Metal waterproofing container of dry closet. Once accumulated, it will be transported to wastewater treatment plants under a contract concluded with a specialized company
Parts of polyethylene pipes	0,43 t	Temporary storage will be carried out on special sites with pavement with the subsequent delivery to a specialized enterprise for disposal
Ferrous scrap (from dismantling of steel and cast iron pipes and parts)	458 tonnes	Specially designated place on the site of temporary storage with the subsequent delivery by contract to specialized enterprises for disposal.

Waste created during construction belongs to the 3 and 4 hazard classes and are moderately and low-risk waste types.

Taking into account that construction waste will be stored in accordance with current legislation requirements in the field of waste management, in particular Law of Ukraine “On Waste”, with the following transportation to specialized enterprises, dumping or wastewater treatment facilities, negative impact will be within acceptable limits.

Waste (generated during the construction works) collection, temporary storage, removal and its subsequent transportation to the waste disposal centres or landfills/ wastewater treatment facilities is responsibility of the organization that performs construction works.

Operational stage

Waste generation is not expected during the planned operation of water supply network .

Acoustic pollution

During the construction phase there are expected typical noise effects that cannot be avoided. Such typical noise effects include the noise effects caused by the movement of trucks and other construction equipment (excavators, bulldozers, tractors, etc.), loading and unloading processes, installation and demolition works, etc.

Mentioned noise effects are ***temporary*** and, depending on the type of work, they are:

- fluctuating over time (the sound level changes continuously);
- intermittent (the sound level of which is gradually changing);
- impulse (consisting of one or more sound signals, each of which lasts less than one second).

Performing of construction works (acoustic regime at construction sites) should comply with DSP-173-96 "Protection against noise and vibration" (Section 8.40). It is planned that noise level during the reconstruction of Vinnytsya water supply system will be under the permissible one.

It is assumed that the main sources of noise at the construction site are:

- motor vehicles and construction machinery involved for supply of materials and waste.

Protection measures to prevent negative acoustic impact must ensure the permissible noise levels and vibration levels within the area of planned impact.

Work hours will be provided in contract agreement after the contract signing.
At the same time, it should be noted that:

- construction works have to be performed between 8 am and 9 pm or another time period agreed with local residents (do not exceed the permissible noise level in residential area), duration of the shift will be established by contract provisions in accordance with the labour legislation of Ukraine and type of works;
- construction works during holidays and weekends are forbidden (except the cases of urgent need with obtaining of appropriate Utility's and Local authority's permissions)
- construction at night-time is forbidden.

Supervision over compliance with the established duration of construction works at construction sites should be carried out by:

- foreman of construction site;
- project manager of the construction site;
- Utility representative responsible persons

At the same time all employees have to be informed about legal provisions related to the work day duration during appropriate OHS trainings before start of construction works.
During construction works, the use of modern construction equipment and the best construction technology is envisaged.

It is supposed, noise impact will have periodic character and will be observed only during the day hours according to the current legislation of Ukraine or at appropriate time agreed with local residents (the issue should be discussed with local residents during public hearings). There are no need to use additional measures required to reduce the noise level during construction.

In turn, construction work does not envisage works that generate significant noise, such as explosions.

After completion of reconstruction, the noise level will return to the baseline in the area of work.

Operational stage

No increase of noise level due to the implementation of SUIP will not be not provided. Thus, the any permanent adverse impact related to the noise effects on the local social environment in the area of project implementation will not take place.

Impacts associated with the closure and dismantling

Environmental impact associated with the dismantling of existing equipment corresponds to the list of environmental impacts described in the relevant sections of Chapter 5 this ESMP.

Road accident risks

It is planned to perform Vinnytsya water supply network reconstruction works on the built-up area. Some of construction works should be performed on the territory of public roads.

During construction on the territory of public roads, traffic restrictions are expected. This will cause increasing of the road traffic intensity due to:

- movement of heavy machinery and trucks near the construction sites where the works will be provided;
- transportation of building materials and construction equipment;

- performing of works related to the reconstruction of the water supply network.

It should be noted that impact related to increasing of the road traffic intensity will be temporary and it will be localized near construction sites. In order to avoid inconvenience, it is planned to create a traffic management scheme – Traffic Management Plan approved by local authorities and relevant department of Ministry of Internal Affairs of Vinnitsa.

Impact on flora and fauna

Construction works during project implementation will include excavation works using number of special vehicles.

Following impact on existing flora and fauna are expected during project implementation:

- mechanical impact resulted by earthworks;
- mechanical impact resulted by anthropogenic trampling;
- mechanical impact due to the arrangement of temporary storage places for ready-to-install pipes and equipment;
- mechanical impact due to the compression effect of heavy machinery that will operate outside the surfaces with asphalt-concrete cover, which will lead to disturbance of the vegetation cover of the terrain.

The object of reconstruction is located in urbanized build-up area.

There are no objects of nature reserve fund and and Red Book species on the territory of the planned reconstruction.

Agricultural lands during construction will not be affected.

In case of need to cut off green plants at the reconstruction sites, the subsequent planting of trees and shrubs in appropriate amount will be performed.

The main adverse impact om flora and fauna is associated with emissions of inorganic dust and exhaust gases of vehicles and equipment.

Negative impact of dust will be expressed through its settlement on plants. The dust emission acts as a “screen” and reduces the reception of photosynthetic radiation, thereby slowing down the process of photosynthesis.

In general, improving of the sanitary-hygienic situation associated with project implementation will improve the existing flora and fauna condition.

Operational stage

Reconstruction of water supply network will allow to reduce or eliminate emergency water spills and subsequence flooding of territories. This will result improvement of air, soil, ground and surface water condition, what is crucial for flora and fauna.

Impact on land use regime

Construction works related to the implementation of the project will be performed within the existing land-use arrangements.

Consultant company is involved to prepare an abbreviated Resettlement Action Plan for the the purposes of Vinnytsyaoblvodokanal Utility Subproject (temporary restriction of accesses within the framework of project implementation).

Development of the document involves next issues:

- Description of the current social conditions.
- Identifying of all project stakeholders.
- Determination and description of alternative ways of water supply network pipe laying to minimize the negative impact on the living conditions of local population.
- Identification of potential social impact caused by project implementation.
- Description of the monitoring procedure for compliance with the requirements of Resettlement action plan.

Abbreviated Resettlement Action Plan defines:

- responsibilities of the contracting authority and customer in the field of construction site organization;
- issues related to the process of temporary restriction of access (public announcements, announcements, consultations, the organization of transitions and proper fencing).

Following principles will be taken into account in the process of Abbreviated Resettlement Action Plan preparation:

- Persons, who may have losses as a result of the project implementation and who are eligible for full compensation, including temporary loss or adverse effects, regardless of the legal status of the land and tenure.
- Compensation to people who should recover their incomes and living standards (conditions).
- Consultations should be provided during the preparation and implementation of abbreviated Resettlement Action Plan.
- Temporary negative impact that should be minimized through careful implementation of construction/renovation work;

Additional measures are foreseen to inform the public before construction works start. This will allow to minimize possible losses.
It should be noted that compensation will be provided regardless of gender or age.

The absence of land use agreements does not restrict the rights of affected persons to receive compensation and assistance provided to achieve the purpose of the Project.

Disclosure of Resettlement Action Plan in the process of subproject implementation is mandatory.

The main aim of its submission is to receive all suggestions and comments of local residents. This will allow to avoid or to minimize possible negative impact of planned activity. Abbreviated Resettlement Action Plan will be disclosed through Utility website and information about abbreviated Resettlement Action Plan will be provided through social networks also.

Information about the time and place of public consultations related to the disclosure and further implementation of abbreviated Resettlement Action Plan will be presented in local mass media, Vinnytsyaoblvodokanal Utility website and bulletin boards. In case of local consultations (“corner” consultations), information will be provided on local bulletin boards at the places of planned construction works, Vinnytsyaoblvodokanal Utility website and Utility social networks.

Construction works on lands with special land use status are not envisaged.

Operation stage
The adverse impact on the land use regime is not foreseen during the time of water supply network operation. In case to provide repairment works at the territory of privately owned land plots the relevant permission to perform these works will be obtained before start of works.

Emergency risk
Emergencies associated with SUIP implementation will have local character and in case of their occurrence the negative impact will be minimal.

In order to reduce the likelihood of an accident, the project provides a system of measures for safe construction process performing, that is aimed to prevent accidents, their consequences through appropriate technical and organizational measures implementation

During operation of water supply network, accidents can cause water supply service interruption to consumers, water losses, flooding of adjacent areas.

Mentioned emergencies will not cause the irreversible environmental consequences.
In general, SUIP implementation is aimed to provide reconstruction of existing physically worn Vinnytsya water supply network to prevent possible emergencies.

Operational stage
The possibility of emergencies with irreversible consequences for the environment is unlikely.

Impact of the projected activity on the social sphere
The possibility of negative impact on social sphere at the area of planned construction activity should be considered through the likelihood of impact on following spheres:

- local social management;
- working conditions (working environment and aspects of an employee's terms and conditions of employment);
- population health and safety conditions;

Thus, the potential negative impact can be expressed through:

- increasing of the number of complaints from local residents from the area of construction works caused by violation of living conditions due to increased level of dust, noise, road traffic intensity.
- increasing of the number of operations or production processes, which may cause a review of the existing organizational structure or review of the procedures of the production processes of the Utility.

Potential negative impact in the field of observance of working conditions can be expressed through:

- violation resulted by improper exploitation of construction equipment that does not comply with the instructions for its operation, failure to observe the rules and standards of work safety, improper supervision of construction process, that may cause injury to workers and locals;
- violation of working conditions due to the increased level of noise, vibration, air condition, etc.

Potential negative impact on public health and safety can be expressed through:

- violation of comfort of local residents (local households) in the area of construction work due to the increased level of noise, vibration, air condition, etc., violation of the public transport schedule caused by increased traffic of vehicles;
- complaints of local community in the area of construction works due to the increased level of noise, vibration, air condition, violation of the public transport schedule etc.

Assessment of negative impact on the population health and safety conditions was carried out at the stage of an environmental impact assessment development within the framework of design documentation in accordance with the requirements of Annex K Changes No.1 to DBN A.2.2.-1-2003.

Transboundary impact of construction facilities

Vinnytsya water supply network planned to be reconstructed under the SUIP is not included to the list of activities that require the use of the Convention in case of a significant transboundary environmental impact (Annex I to the Convention).

Thus, the operation of this convention does not apply to this type of work.

6. ENVIRONMENTAL AND SOCIAL IMPACTS MITIGATION MEASURES

Atmospheric air

Investment project implementation envisages whole set of measures to ensure compliance of the construction process with current national laws and regulations in the field of atmospheric air protection.

Taking into account the requirements of following legal acts of Ukraine:

- Law "On Automobile Transport" dated 5.04.2001 N2343-III,
- "Rules of Operation of Wheeled Vehicles", approved by the Order of the Ministry of Infrastructure of Ukraine dated 26.07.2013 N505,
- "Rules of Battery Operations lead-acid starter batteries of wheeled vehicles and special machines made on wheeled chassis", approved by Order of Ministry of Transport and Communications of Ukraine dated 2.08.2008 N795

for vehicles and equipment, it is mandatory:

- vehicles and equipment must be in good technical condition;
- to use high-quality fuel to avoid excessive harmful impact on atmospheric air;
- emissions resulted by operation of internal combustion engines should not exceed the established standards.

At the same time to mitigate the negative impact on atmospheric air condition caused by internal combustion engine emissions it is mandatory to develop traffic management plan. It will allow to avoid possible traffic complications with following increasing density of traffic flow resulted by reconstruction of water supply network on the territory of public roads. This traffic management plan should be approved by relevant department of Ministry of Internal Affairs territorial subdivision. Information about planned construction (street name, time of reconstruction, contact data of persons responsible for complaints reception, etc.) should be provided before start of construction works through Utility website, local media sources.

In order to avoid air pollution during construction, following measures must be taken:

- protective coating of dust-forming materials during their transport and storage;
- if it is possible, to use appropriate factory sealed packaging for dust-forming materials during their transport and storage;
- loading and unloading operations should be carried out with a minimum height difference, to avoid excessive dust generation;
- traffic plan management scheme for construction site should be developed to avoid excessive dust generation and negative impact on soil condition;
- it is mandatory to use asphalt covered roads (or another type of specially organized roads) to avoid excessive dust generation and negative impact on soil condition.

The pollution sources are temporary, discontinuous, dispersed and dependent on the intensity and duration of construction, the volume of motor vehicles. Therefore, impact magnitude on environment is insignificant.

List of effective measures aimed to eliminate or mitigate air pollution is provided in relevant section of mitigation measures plan of this ESMP. It has to be taken in the process of construction activity.

Impact on soil condition

The negative impact on soil condition will be mitigated through following measures:
all excavation works, as well as the temporary placement of building materials and waste generated during construction process, must be carried out strictly in accordance with the project design conditions in specially designated areas using appropriate packaging or waterproofing material (if necessary).

It should be noted that soil damage expected during reconstruction of water supply network will have a temporary character. For example, the probability of soil contamination due to leakage of fuel, oil or residual water will be limited trough the full compliance with best practise of construction and established rules of operation of special equipment.

Earthworks must be strictly controlled by Contractor's appointed competent persons in accordance with requirements of design documentation.

In order to prevent negative impact on soil condition it is mandatory:

- to prevent off-road vehicle and equipment traffic.
- to organize temporary roads and parking places for equipment movement;
- to store construction waste and construction materials at the specially designated places with special hard cover;
- to transport construction waste (according to its hazardous class) to the municipal landfill or special enterprise for its subsequent disposal.

Household drains and another liquid waste should be collected at special containers with appropriate marking to prevent contamination of soil.
Dumping of household drains and residual water from water supply pipelines on the relief is forbidden.

Vehicles and equipment must be in good technical condition to prevent contamination of soil by emergency spills of fuel, oil materials.

During construction the upper fertile layer of soil will be removed and stored at specially designated place.

The project implementation envisages restoration of roads, sidewalks and other damages resulted by construction process.

Impact on flora and fauna.

In the process of project documentation development preliminary estimation of green plantations should be performed. It is necessary to make an assessment of green plants will need to be demolished for construction needs. Appropriate compensation (financial) or planting of equal (or larger) amount of new plantings have to be done.

In accordance with the current legislation of Ukraine in the field of organization of construction process it is not allowed to provide demolishion of wood-shrub vegetation without special local authority's agreement and it is forbidden to cover with earth root zone of trees and tree trunks during earth works.

In accordance with the requirements of Order of The Ministry of Regional Development, Construction, Housing and Communal Services of Ukraine "On the statement of Rules of the maintenance of green plantings in settlements of Ukraine" dated 10.04.2006 No.105 following rules must be taken:

- trees located on the construction site should be fenced to avoid their damage;
- it is mandatory to perform excavations deeper than 1 m at the distance of at least 2 m from the existing tree and 1.5 m from the shrub;
- it is forbidden to cover with earth root zone of trees and tree trunks during earth works;
- upper fertile layer of soil from construction site should be removed and stored at specially designated place for its further use after completion of construction works;
- construction materials, waste should be stored at the distance of at least 2.5 m from the tree and 1.5 m from the shrub;
- places for temporary storage of construction materials, waste should be organized at the specially designated places (asphalt covered);
- movement of vehicles outside of asphalt roads is forbidden

Cleaning territory from construction garbage has to be provided after construction works will be completed.

Waste management

Appropriate waste management must be ensured to minimize the negative impact of waste during construction works.
Contractor should conclude an agreement with Company that has special license for waste handling (dumping or disposal).
Construction Waste will be temporary stored in containers or in specially designated places in accordance with their aggregate condition and hazard class. Containers should have the appropriate marking.
Construction waste have to be transported for further dumping or disposal in accordance with the concluded agreements.

Contractor company that performs construction works is responsible for waste management at the construction site. All Contractor’ s employees have to be familiar with waste management issues during trainings.

Waste management process is carried out according to the following scheme:

- Temporary accumulation of waste;
- Transportation of waste;
- disposal (recycling)/Export to the landfill for its dumping.

Impact on surface and groundwater condition

Planned reconstruction of water supply network will not cause deterioration of water quality.

It is assumed that during construction works there will be taken measures aimed to eliminate or to mitigate the risk of emergency situations at construction site. In particular, Contractor has to develop Emergency action plan that should include list of actions have to be taken to handle an emergency spills of fuel, lubricants or residual water spills.

Appropriate waste management must be ensured to minimize the negative impact of waste on ground and surface water during construction works.
Contractor should conclude an agreement with Company that has special license for waste handling (dumping or disposal).
Construction Waste should be temporary stored in containers or in specially designated places in accordance with their aggregate condition and hazard class. The containers should have the appropriate marking.

This allows to guarantee both during the construction period and during the operation of the elimination of pollution of surface and groundwater.

All involved to the construction process parties must undergo appropriate training handling in emergencies and performing high-risk works.

Noise

Construction works performing (acoustic regime at construction sites) must comply with DSP-173-96 "Protection against noise and vibration" (Section 8.40) requirements. It is planned the noise level will be under the permissible one during the reconstruction of Vinnytsya water supply network.
It is assumed that the main source of noise at the construction site will be:

- motor vehicles and construction machinery.

Special measures (protection screens, monitoring of noise level, etc.) should be implemented to ensure the permissible noise level at the construction site and adjacent area.

Work hours will be provided in contract agreement after the contract agreement signing.
At the same time, it should be noted that:

- construction works have to be performed between 8 am and 9 pm or another time period agreed with local residents (duration of the shift will be established by contract provisions in accordance with the labour legislation of Ukraine and type of works),
- construction works are forbidden during holidays and weekends (except the cases of urgent need with obtaining of appropriate Utility's and Local authority's permissions)
- construction at night-time is forbidden.

Supervision over compliance with the established duration of construction works at construction sites should be carried out by:

- foreman of construction site;
- project manager of the construction site;
- Utility representative responsible persons

At the same time all employees have to be informed about legal provisions related to the work day duration through appropriate OHS trainings before start of construction works.
Modern construction equipment and the best construction technology should be used during construction.

It should be noted, the informational stands with Utility's and Contractor company contact information will be installed near construction sites. In case of violation of acoustic regime local residents can apply through specified communication channels for reducing of noise level caused by construction.

There is no need to use additional measures required to reduce the noise level during construction.

In turn, construction does not envisage activities that generate significant noise, such as explosions.

After completion of reconstruction, the noise level will return to the baseline in the project area.

Impact of project activity on the social sphere

Potential impact of project activity on Vinnytsya social sphere is considered through following constituents:

- social management sphere;

- working conditions of employees;
- economic environment;
- occupational health and safety;

Adverse impact will be mitigated or eliminated through following measures:

- close cooperation with project stakeholders, aimed at timely consideration and processing of complaints. It will allow to create safe social environment at the place of project implementation. Close cooperation will be achieved through consultation process. The main purpose of consultation is to inform project stakeholders about planned construction activity and to assess public opinion about project implementation;
- construction works have to be performed between 8 am and 9 pm or another time period agreed with local residents (do not exceed the permissible noise level in residential area), duration of the shift will be established by contract provisions in accordance with the labour legislation of Ukraine and type of works;
- it is forbidden to perform construction works during holidays and weekends (except the cases of urgent need, appropriate Utility's and Local authority's permissions for this type of works must be obtained);
- it is forbidden to perform construction works at night-time;
- project implementation process should comply with design conditions and requirements of current legislative of Ukraine in the field of Occupational health and safety, environmental protection and sanitary and hygienic standards;
- appropriate warning signs and fences have to be installed, transitional bridges should be present (if needed);
- Illumination of workplaces should be provided at night-time.

Local population will be informed about planned activity during the period of Project implementation. Disclosure of information will allow to reduce the negative social impact. Public information will be carried out through:

- publication of information about planned activity and status of construction works on the Utility's website.
- Placing information regarding all the components of the Project during the performance of works in public access areas (bulletin boards, etc.) about the following:
    - Start of construction and its completion;
    - Contractors and Subcontractors of the Project;
    - Persons responsible for the works carried out and for technical supervision (with indication of their contact details);
    - Company's phone numbers and focal point information for public appeals and grievances.

Social sensitive areas (social objects could be impacted in the process of construction) should be identified in the process of project design development.

If there is need to use privately owned land plots in the process of project implementation, the alternative ways of project implementation should be assessed and considered. If it is impossible to avoid use of privately owned land plots, the respective owner's permission should be obtained before start of construction works.

Temporary public transport routes (detour) should be organized, as well as passages for pedestrians will be applied during reconstruction of water supply networks. Information about temporary public transport routes, possible changes of public transport schedules associated with construction works will be presented through municipal authority's informational sources, local mass media and Utility's website.

Before the start of construction works and during construction phase once week, inspections to detect damage of buildings located along the perimeter of the building site should be carried out.

7. PUBLIC PARTICIPATION, INFORMATION AND CONSULTATION

Public engagement in decision-making process is important part of SUIP implementation process. Public involvement will allow to provide the access to information related to project implementation process.
Effective and early public involvement creates ability to build local community support for project implementation and to improve stakeholder relationships.

Public involvement process should be carried out through public consultation process. Consultation process envisages interaction with all project stakeholders (physical or legal persons (institutions, organizations).

Consultation process is aimed at:

- providing information about planned construction activity, territory where construction is planned, possible impacts caused by construction works, ways of participation in decision-making processes, contact data of Contractor's and Utility persons responsible for reception and processing of grievances, etc;
- identification people whose status (economic, social, etc.) may be changed as a result of project implementation, busyness who may be directly or indirectly affected by planned project activity;
- determination and assessment of public opinion about planned project activity and further implementation of results of mentioned assessment with the aim to improve social significance of the project.

To reduce the negative social impact and inform the population about planned works during Project implementation period, following set of measures is supposed to be developed:

- Publication of information about the planned activity and current state of works on the Project on the company's website https://www.vinvk.com.ua.
- Information leaflets for all planned interventions under the project to be disseminated in the affected neighbourhoods. including consultations with the community.
- Carrying out public consultation with the population and to identify the places where trees, flowerbeds, playgrounds, rest arenas, and waste collection sites will be moved, if they are situated on the allocated land.
- Placing information regarding all the components of the Project during the performance of works in public access areas (bulletin boards, etc.) about the following:
    - Start of construction and its completion;
    - Contractors and Subcontractors of the Project;
    - Persons responsible for the works carried out and for technical supervision (with indication of their contact details);
    - Company's phone numbers and focal point information for public appeals and grievances.

Public involvement will allow to minimize the level of dissatisfaction, concern and number of complaints through creation of proper grievance redress mechanism aimed to process and resolve issues associated with project implementation. ***The purpose of GRM is to provide a multifunctional communicational channel for internal and external stakeholders to express their concerns, questions and complaints associated with the project.***

The grievance redress mechanism must meet the following requirements:

- grievance redress mechanism should be accessible and provide the available communication channels for all stakeholders;
- grievance redress mechanism should ensure an effective and timely approach for reception and solving the of stakeholders issues;

It should be noted that application related to project implementation issues can be provided to Vinnytsyaoblvodokanal Utility, Contractor Company, Ministry or CPMU.

At the same time, in accordance with the World Bank's policy, anonymous appeals, offers and complaints are accepted for consideration and record in the respective GRM log.,

The GRM will focus not only on reception and recording of feedback, questions and complaints but also on ways of complaints resolving.

GRM focal point person should be appointed by Head of Utility, this person should be responsible for GRM log handling. GRM log has to be submitted to CPMU on monthly basis.

Table 3. GRM form

№	Date of complaint	Contract number	City	Addressee			Type of Grievance	Complainant name
				Ministry of Regional Development	Local Utility	Consultant CSC Contractor		
1.	—	—	—	—	—	—	—	—

Table 3. GRM form (continuation)

Complainant contacts	Brief of grievance	Responsible for solving	Response status	Current Status (Yes/no)					
				Information Provided (Date)	Land acquired	Acquisition Process completed	Compensation paid	Title deeds transferred	Case in court
—	—	—	—	—	—	—	—	—	—

In accordance with the Article 7 of Law of Ukraine "On Citizens' Appeal" No. 393/96-VR dated 02.10.1996, if the resolving of the issues indicated in the project stakeholder's application is not under the competence of Vinnytsyaoblvodokanal Utility, Utility should send the application for affiliation to the relevant authority for further resolving.

In accordance with the Article 20 of Law of Ukraine "On Appeal of Citizens", applications have to be considered and resolved within a maximum of one month from the date of their reception. If it is not possible to resolve the issues within a one-month period, consideration period should be extended and agreed with person who submitted the application. The time for resolving issues of the application can not exceed forty-five days in general.

It is expected that complaints or proposals related to the project implementation will be resolved through negotiations with affected persons. Negotiations are aimed at achieving of a mutually acceptable solution.

In case if project implementation process cause damages to legally designated or informally used property, loss of income, affected person can to claim compensation for mentioned damages.

Affected person has to apply to Utility and to provide information about losses associated with project implementation. if compensation will not be provided or not cover indicated losses, affected person has the right to resolve issues in court.

The current grievance mechanism for Vinnytsya sub-project needs includes following responsible parties:

- Vinnytsyaoblvodokanal Utility, Contractor's company, Local authority
  Affected person of representative of affected business has the right to apply to Vinnytsyaoblvodokanal Utility, Contractor's company, Local authority with the aim to solve issues related to the project implementation or to claim compensation for damages or loss of income associated with project implementation.
- RPMU specialist who register complaints/requests will submit. GRM log to CPMU once a month.
- CPMU Safeguards Specialist will collect all project-related grievances and submit project level GRM log to World Bank on quarterly basis.

Contact data are provided in Annex 1. "Communication channels"

8. OCCUPATIONAL HEALT AND SAFETY SYSTEM DURING PROJECT IMPLEMENTATION

8.1. Occupational safety and work safety at the enterprise

During project implementation (construction and operation stages) health and safety has to be managed through application of national regulatory requirements and international environmental and health and safety (EHS) standards (WB/IFC EHS Guidelines).

In particular, Contractors has to to ensure following compliance during project implementation:

- compliance with project design documentation requirements (stage "П" and stage "РД", including relevant sections on the organization of construction site, sanitary and domestic service organization and labour protection, explosion safety, etc);
- compliance with the contract execution program, performance of works according to technologies and application of materials in accordance with the project documentation.
- implementation of layout design according to DBN A.3.1-5: 2016 "Organization of construction production".
- compliance with the Rules of Conduct on the construction site according to General Conditions of the Contract;
- compliance with the developed instruction cards of construction works
- timely conduct occupational health and safety briefings, keeping journals and other technical documentation required according to the current legislation of Ukraine;
- compliance with national requirements for Covid-19 spreading prevention.

Description of contractor's responsibility for compliance with occupational health and safety rules during construction is provided in design documentation, procurement documentation and contract terms.

At the same time, Contractor must:

- observe all current laws, norms and rules that regulate occupational health and safety issues that came into force in Ukraine and World Bank Operational Policies during construction, reconstruction and modernization process;

Contractor is responsible for the organization of prevention of accidents at construction sites with providing of appropriate safety equipment and protection measures.

The Contractor shall take all reasonable precautions to maintain the health and safety of the Contractor's Personnel. In collaboration with local health authorities, the Contractor is obliged:

- to provide appropriate accommodation and living conditions for its employees during construction;
- constantly take all reasonable measures to ensure the occupational health and safety conditions for personnel.

including having a available site vehicle at all times that can be used to transport Contractor's and Employer's Personnel to medical facilities.

The Contractor shall appoint a certified Safety Officer at the Site (according to the National occupational health and safety requirements of Ukraine), Supervision Engineer responsible for maintaining safety and protection against accidents.

Description of their responsibilities in the field of ensuring of compliance with occupational health and safety rules during construction is provided in design documentation, procurement documentation and contract terms.
Contractor has to develop occupational health and safety plan before start of construction and provide its employees with all assets and personal protection equipment according to their duties.

Contractor is obliged to inform CPMU and World Bank team about any accident during first 24 hours it happened.

The specific objectives of Occupational health and safety management process are:

- to ensure appropriate working conditions;
- to promote occupational health and safety issues through appropriate trainings;
- to ensure safety conditions of construction processes;
- establishment of appropriate sanitary and hygienic working conditions;
- provision of employees with appropriate personal protection equipment assets;
- organization of treatment and preventive maintenance of workers.

During project implementation, Occupational health and safety management process must be provided through:

- organization of work processes in accordance with the requirements of current Ukrainian sanitary and hygienic norms;
- mechanization and automation of heavy and hazardous works;
- providing of appropriate personal protective equipment for workers depending of types of work they perform (special overalls, shoes, protective helmets, masks, goggles etc.);
- providing of appropriate collective protection means (fencing, lighting, ventilation, protective and safety devices, etc.);
- organization of sanitary and household services for employees at construction site, that includes organization of sanitary and domestic premises: for the storage of clothing, personal hygiene, rest of employees, heating and cooling of workers, medical care and dining premises (mobile, container, prefabricated). Sanitary and domestic premises should be put into operation before start of construction;
- organization of sanitary-and-health service (for preliminary and periodic medical examination) in accordance with the requirements of the applicable norms and type of performed works.

During period of project implementation (including the Defects liability period), Contractor:

- provides information, conducts trainings and advisory activities for all employees regarding level of risk, danger and types of exposure, as well as measures for the prevention of sexually transmitted diseases (STDs) or transmitting infections.

Employees are allowed to perform construction and installation works after they pass:

- induction briefing (with all employees, regardless of profession and type of performed works);
- briefing at the workplace (carrying out before start of work, this type of briefing should be accompanied by demonstration of safe working practices);
- refresher training (carrying out with workers, regardless of their qualifications, length of service and work experience at set intervals);
- unscheduled briefing (carrying out in case of changes on Occupational and safety rules, technological process changes, violation of safety rules by employee, in case of an accident, after work have been interrupted for more than 60 days).

All personnel must successfully complete occupational health and safety training in accordance with the Law of Ukraine "On Occupational Health and Safety ". The training should include, in particular, complete information on occupational safety, fire safety and personnel hygiene.

The contractor should include to the training programme the information about prevention of transmitting infections spreading measures among the employees employed at the construction sites.

It is forbidden to employ personnel who may be ill with a disease transmitted by water or being the carrier of a disease could be transmitted through water. Customer may require that Contractor at his own expense send such a person to a medical examination to confirm his health conditions with following obtaining of health certificate.

Its forbidden to involve children to carry out works that may be dangerous or to carry out works prevent from obtaining education, or create the negative consequences for the child's health or physical, mental, spiritual, moral or social development.

Construction sites, workstations, workplaces must be provided with necessary collective and individual protection means, firefighting equipment, and communication and signalling equipment.

According to Art. 8 of the Law of Ukraine "On Occupational Safety" on work with harmful and dangerous working conditions, and on work related to pollution, unfavourable weather conditions, workers are given special clothing, special footwear and other personal protective equipment for free (at the expense of the employer), in accordance with to NPABO 0.00-4.01, NPABO 45.2-3.01.

Personal protective equipment must be provided to employees, depending on kind of work and working conditions for the period that can not exceed the expiry date specified by the manufacturer's documents (instructions for use, passports etc.). Personal protective equipment must complete the requirements of the standards, in particular GOST 12.4.011-89 "SSBT: means of protection of workers. General requirements and classification".

Personal protective equipment is used only for its intended purpose in accordance with the operating instructions, which must be understandable for workers. Their requirements should be included to the relevant occupational health and safety instructions.

Loading and unloading works

Adequate lighting has to be organized at the construction site. It must be uniform and sufficient for the construction process and comply with building norms and regulations (DBN V.2.5-28-2006 "Natural and artificial lighting, Normative", GOST 12.1.046-85). Lighting is carried out by means of general uniform or localized lighting and local lighting - inventory risers or portable devices.

Responsible for loading and unloading works persons must be familiarized with technological process details, work safety requirements, rules of safe lifting equipment operation, fire safety in accordance with their official duties. Loading and unloading operations with heavy and oversized cargo are performed under the supervision and guidance of specially appointed person.

Loading and unloading operations mostly must be mechanized. The loading of motor vehicles by materials and structures is carried out in accordance with its load-carrying capacity, and existing requirements for the dimensions of transported cargo. It is necessary to ensure a stable position of cargo during their transportation.

Safety of loading and unloading operations is ensured by the correct placement of workers, instruction and training on safe working operations, appropriate selection of load lifting mechanisms, auxiliary and rigging devices.

Employees engaged in loading and unloading works are required to undergo preliminary and periodic medical examinations in accordance with the requirements of the Ministry of Health of Ukraine. Persons admitted to loading (unloading) of dangerous and especially dangerous cargoes process must undergo special training and use personal protective equipment. Employees should be instructed on personal protective equipment use.

It is mandatory to use mechanized loading and unloading for:
- mass of cargo of more than 50 kg is mandatory
- lifting cargo to a height of more than 3 m.

Electric welding works
Persons are allowed to perform electric welding works if
- they are 18 years old or over;
- they have passed an appropriate medical examination;
- they have been trained in the theoretical and practical training program, have a certificate of an established sample and who have been assigned the Safety Group II.

Women can be allowed to perform manual electric welding works just in case of a work placement on outdoor platforms.

Each electric welder employee must be admitted to work only after passing an induction occupational health and safety training, that covers issues of fire safety. Refresher training should be carried out not less than one time every three months.
Electric welder must be equipped with the necessary personal protection equipment - tarpaulin suit, shoes, shields, masks with light filters.
Welders should also get a helmet, asbestos or tarpaulin armbands in addition to overalls, footwear and gloves during welding of the ceiling. Respirators and chemical filters should be used during the welding of nonferrous metals and alloys containing zinc.

It is necessary to use goggles to protect the eyes in accordance with the requirements of GOST 12.04.013-85 "Goggles. General technical conditions ".
It is mandatory to wear a helmet in accordance with the requirements of GOST 12.4.128-83 "System of labour safety standards. Protective helmets. General technical conditions ".

Overalls and gloves of a welder should not have traces of oil, fat, gasoline, kerosene and other flammable liquids.

Manual electric machines must meet the requirements of electrical installations rules, Rules of safe operation of electrical installations and GOST 12.2.013.0-91 "Manual electric machines. Security requirements.

Concrete works
Workers who operate concrete mixing units must be equipped with personal protective equipment - overalls, respirators, headphones, etc. If concrete mixture contains chemical additives, workers should comply with Occupational health and safety requirements for prevention of skin and eyes burns.

Construction site organizational issues

The following shall be provided at the construction site:

- developed measures to ensure fire safety;
- appointed a person responsible for monitoring fire safety;
- to comply with the requirements of fire safety: all facilities must be equipped with firefighting equipment, water for fire extinguishing, fire extinguishers, etc. (In accordance with GOST 12.4.009-83).

Traffic management scheme will be developed and installed at the entrance to the construction site.

Road signs and passage signs must be installed at construction site. Hazardous areas should be fenced or indicated with warning signs and signals.

During dark time, in addition to the fencing, light signals must be installed, the work places must be properly lighted.

The speed of vehicles' movement in the work area should not exceed 5 km/h.

Storage of materials, equipment must comply with the standards and specifications of materials and equipment.

The operation of construction machinery, equipment and tools, as well as construction and installation works should be carried out in accordance with DBN 3.2.2.-2016.

Works on the construction site must be carried out in accordance with the design documentation requirements and by construction companies that have the appropriate permits/licenses in accordance with the current legislation of Ukraine.

Electrical safety at the construction sites should be ensured in accordance with SNiP 12-03-2001 "Safety of construction work performing" requirements.
Subcontractors involvement requires development of measures that comply with applicable occupational health and safety requirements, and timetable for combined work has to be developed. Start of construction works without timetable is prohibited.

It is not allowed to perform other works on the site while the installation works are carried out.

Firefighting points with firefighting equipment have to be organized at the construction site.

While working with equipment and machinery, employees must adhere to following rules for safety use of equipment:

- it is necessary to provide sufficient space for inspection of the working area and manoeuvring. At the same time safety distance near the unclosed pits, piles of goods, equipment should be provided;
- persons responsible for the condition of the machinery should check their technical condition not less than one time per 10 days;
- it is mandatory to appoint employees responsible for occupational health and safety, who control construction and installation works with use of special machines and equipment; These workers must be appointed after checking their knowledge of the rules and instructions for safe work performance;
- in the area of machine's operation must be installed warning signs, and warning labels on the car;
- it is not allowed to leave unattended machinery/equipment with engine running;

- during operation of machines, appropriate measures must be taken to prevent their unauthorized movement under the impact of wind.

Provision of fire safety must be carried out in accordance with the requirements of DBN V.1.1-7-2017 "Fire protection. Fire safety of construction objects "and NAPB A.01.001-2004" Rules of fire safety in Ukraine".

Head of construction site is responsible for fire safety organization at construction sites, presence and maintenance of fire-extinguishing, timely implementation of fire prevention measures at construction sites.

Persons responsible for use and control of domestic, auxiliary and ancillary premises are responsible for fire safety of these premises.

Temporary buildings, auxiliary and ancillary premises, as well as construction sites should be provided with primary means of fire fighting (fire extinguishers, sandboxes, gaffs, shovels, buckets).

The distance between buildings, cars and places of open storage of building materials, structures must comply with sanitary and fire regulations. Passages and passes must have sufficient width to ensure movement of people and machinery.

Steam and water radiators should be used for heating of inventory premises. Clothes and shoes drying should be carried out in the rooms specially equipped for this purpose with central water heating or using water heaters. In temporary household and administrative premises, where there is no possibility for installation of central heating, it is allowed to have a furnace heating that meets the requirements of construction standards.

In case of fire (signs of burning) detection, every employee is obliged:

- immediately notify by phone fire department. In this case it is necessary to indicate address of the object, exact place of fire, current fire situation, the presence of people, name and position of person who provides information;
- if it’s possible, to take measures for the evacuation of people, extinguishing (localization) of fires and preservation of material assets;
- if necessary, to call other emergency rescue services (medical, gas-saving, etc.);
- notify the manager of the object;
- upon arrival of fire and rescue units the unimpeded access to the territory of the facility must be provided, except the case when the special procedure for admission is established by current legislation;
- simultaneously with extinguishing of the fire, to organize the evacuation and protection of property;
- upon arrival of fire and rescue units, the administration, engineering and technical personnel are obliged to provide the fire chief with information on the design and technological features of the object where the fire occurred.

Reconstruction of water supply network envisages performing of excavation works for further pipeline laying.

In places where the water supply network crosses networks of another Utilities, operators of these networks have to be informed about planned construction works not less than in 3 days before start of construction works.

It should be noted that excavation at the intersection of water supply networks with networks of other Utilities should be carried out manually without use of machinery. It is necessary to develop and agree with the relevant organizations – operators of these communications, measures to ensure safe working conditions in accordance with DBN A.3.2-2-2009 "Occupational safety and industrial safety in construction".

Earthworks should be performed under the supervision of the employee responsible for works performing. In case of detection of previously unknown underground structures, earthworks on the relevant section shall be suspended until these structures is clarified. In case of detection of explosive objects, gas in the trench, earthworks must be stopped and workers are obliged to leave trench immediately and notify the supervisor.

Further performance of works is possible after elimination of adverse impact on condition, additional safety measures providing, neutralization of an explosive subject and reception of the corresponding permission for further performance of works.

If earthworks are carrying out close to existing underground utilities or at the intersection of utilities, it is necessary to ensure the invariability of the spatial situation and the integrity of these utilities. Excavation of soil by a mechanized method is allowed at a distance of at least 2.0 m from the wall and at least 0.4 m above the top of the pipe, cable, etc.

Measures aimed at prevention of harmful impact on workers during earth work execution must be taken to mitigate or eliminate following dangerous and harmful production factors:

- collapse of rocks (soil)
- falling pieces of rocks;
- machines and their working parts;
- increased voltage in the electrical circuit, in case if closure of electrical circuit can occur through the human body;
- insufficient illumination of the work area;
- noise and vibration factors;
- dust and gas contamination of the air in the working area;
- pathogenic microorganisms.

Construction sites must be fenced in accordance with GOST 23407.

Fences should be delivered to the construction site before start of construction.

Prior to the start of earthworks on the streets and yards, the workplace must be securely fenced. This means that the following measures shall be provided:

- site should be fenced around the perimeter with boards 1.1 m high and 0.13 m wide, painted with parallel horizontal white and red stripes;
- shields 1.2 m high and 1.5 m wide, painted yellow with red border line 0.12 m wide along the contour;
- temporary road signs must be installed in accordance with the Rules of the road movement. The height of the racks for road signal portable signs should be 1.5 m.
- signal lantern with red lens should be installed around the perimeter of construction site in the dark time.

If there is no possibility to install a fence, in cases specified in Design Documentation (Project of Work Execution), for some types of work, using safety tape is allowed.

Contractor is responsible for fence installation.

It is forbidden to work alone without the permission and presence of Engineering personnel representatives in wells, pits, closed channels, tunnels. The following requirements must be met:

- go down into the well, canal (tunnel, pit) only with the permission of the master, making sure there are no gases;
- with the appearance of gases in the well before the descent it is necessary to put on a hose mask, as well as a life belt with a safety rope, the end of which must be held by two workers upstairs;
- to illuminate the well, use a rechargeable flashlight or a portable lamp with a voltage of not more than 12 V in an explosion-proof design. While working in closed containers, it is necessary to take a break every 30 minutes.

Responsibility for compliance with safety requirements during the operation of machines, electric and pneumatic tools, as well as technological equipment is assigned to:

- for the technical condition of machines, tools, technological equipment including protective equipment - to the organization (responsible person) owner of these machines, and, if transferred for temporary use (rent) - to the organization (person) specified in the contract;
- for the safe performance of work - for organizations performing the works.

At the transition points (through the trenches) transitional bridges should be installed with a width not less than 1.0 m, fenced on both sides with a railing at least 1.1 m high with continuous sheathing at the bottom to a height of 0.15 m and with an additional enclosing strip at a height of 0,5 m from the flooring.

Construction sites and workplaces, driveways and roads, as well as enclosed spaces should be lighted in accordance with the requirements of DBN B.2.5-28, GOST 12.1.046 in the dark time. The lighting equipment should not create a risk of electric shock.
Performance of work in places where illumination does not meet GOST 12.1.046 requirements is not allowed.
Wells, pits and other recesses must be closed with covers, shields, according to their design requirements, or protected in appropriate way. Fences must be equipped with signal electric lighting with a voltage of no higher than 25 V.

In order to prevent soil flushing, soil shifts, collapse of soil in places of earth excavation, start, surface and groundwater should be removed before start of construction works.

Construction site must be cleaned of boulders and stones, trees, construction debris, and soil detachment detected on the slopes should be removed.

It is necessary to provide constant monitoring of slopes during excavation, to limit the dynamic loads impact on them in the process of soil compaction, driving piles and blasting.

Earthworks in the high voltage cables protected area, existing gas pipelines and other utilities must be performed after obtaining permission of the organizations that operate these facilities.

Works must be carried out under the direct supervision of construction site manager, and directly in protection zone of cables or existing gas pipelines. In addition, representatives of organizations operating these utilities have to supervise excavation work performing as well.

Constant gas monitoring must be carried out in pits, trenches where existing gas utilities are present. Workers must be provided with respiratory protection personal equipment.

Placement of materials and construction equipment along the grooves of earthwork places is allowed within the collapse prism after checking the strength of the recess fasteners with determining the magnitude and permissible load intensity.

Soil removed from the place of excavation must be laid at a distance from the edge of the excavation so that to exclude a danger of collapse of the walls.

In case of detection of communications, underground structures or explosive materials not specified in the design and technological documentation during the excavation works, the excavation works must be stopped until the permission of the relevant authorities received.

Excavations on the streets, driveways, yards of settlements, other places of possible pedestrians or transport traffic, must be fenced with protective fences.

Appropriate fencing that prevents entering of unauthorized persons to the construction site must be installed, including night time.

Warning signs should be placed on the fences, and signal lighting should be installed at night time.

Transitional bridges, which are illuminated at night time, must be arranged for people to pass through the excavations.

For the descent of people into ditches and trenches and evacuation from them, ditches and trenches must be equipped with stairs with wide not less than 0.6 m with a fence or ladders (wooden - not more than 5.0 m long).

If trenches depth is more than 3.0 m, it is necessary to develop a design of trench wall fasteners before start of excavation works. Development of trenches deeper than 3.0 m without wall fasteners is forbidden.

It is necessary to use a sheet pile fence if excavations will be carrying out under difficult hydrogeological conditions, with water-saturated soils or in case is arrangement of slopes is impossible.

Steel sheet piling is used in case of depth more than 6.0 m, as well as on dense and strong soils.

Fastenings must be provided in case of exceeding of specified above values, tight production conditions, in soils with high water saturation.

For fastening it is necessary to use materials of coniferous and deciduous breeds.

Execution of works in excavations with a depth more than 1.5 m is allowed only by a unit that consist of at least two employees.

Excavations developed in winter should be inspected for thaws, and based on the results of the inspection, measures should be taken to ensure the stability of the slopes or to strengthen their attachments.

Execution of works related to the presence of workers in the trenches with slopes without fastening, sandy and dusty clay soils above the groundwater level or soils drained by artificial waterlogging is allowed if the depth of the excavation and the steepness of the slopes listed in table below.

Table 4. The steepness of the slope of the excavation depending on the depth of the excavation and the type of soil

Soil type	Slope steepness (the ratio of the height of the slope to its base), deg., at the depth of the excavation, m, not more					
	1,5		3,0		5,0	
Bulk	1	0,67 (56)	1	1 (45)	1	1,25 (38)
Sand	1	0,5 (63)	1	1 (45)	1	1(45)
Sandy	1	0,25 (76)	1	0,67 (56)	1	0,85 (48)
Loams	1	0(90)	1	0,5 (63)	1	0,75 (53)
Clays	1	0(90)	1	0,25 (76)	1	0,5 (63)
Loess	1	0(90)	1	0,5 (63)	1	0,5 (63)

Note 1 In the case of stratification of different types of soil, the steepness of the slopes is determined by the least stable type with respect to the collapse of the slope.

Note 2. Non-sedimentary bulk soils include soils up to two years old for sandy soils; up to five years - for dusty clay soils.

The upper part of them should protrude above the edge of the pits or trenches by at least 15 cm.

Trench walls must be checked by a person responsible for the safety of earthworks on stability of the slopes before workers will be admitted to excavations deeper than 1.3 m.

Admission of workers to ditches with moistened slopes is allowed after inspection of excavations by the person responsible for safety, condition of sloping soil and collapse of unstable soil in places where "peaks" or cracks (peeling) are found.

Development of trenches with vertical walls without fastening and trench excavators in viscous soils (loams and clays) is allowed to a depth not more than 3.0 m. In places where workers need to stay in trench, walls must be intensified or trench should be developed with the arrangement of slopes

It is necessary to install the fastening from top to bottom according to development of a recess on depth no more than 0,5 m.

It is not allowed to execute earthworks in calve. The soil selected from the excavation must be placed at a distance of not less than 0.5 m from the edge of this excavation.

It is not allowed to perform other works in front of excavator during its operation.

During digging of trenches with vertical walls, the soil should be removed manually with prevention of cracks formation. The first tier of fasteners should be installed, and then further development is continued in the same order. During the digging by the tiers, some parts of the fastening are replaced with through ones for the entire depth of the trench. Disassemble the fastening of pits and trenches must start from below tier during backfilling of the trench. It is allowed to remove not more than two tiers at the same time in height, and with unstable soils - no more than one.

Workers and other persons are not allowed to be in area (closer than 20.0 m from the base machine) where soil compaction works are performed by free-falling rammers.

Condition of slopes should be constantly monitored during performing earthworks. Appropriate measures should be taken to prevent landslides, especially after wetting by precipitation (for example, reducing the slope steepness, strengthening the attachments).

It is not allowed to move on the fasteners of the trenches, as well as to be in the trenches without the

production need.
If it is necessary to perform earth works with electric heating of the soil, the heated area should be fenced. Presence of people in area under voltage is not allowed.
It is necessary to arrange protective canopies to cover the workers in the trench if it is supposed to remove soil with buckets.

Soil loading with an excavator on the truck is allowed from the back or from the truck's side, but not through the truck's cab.

It is not allowed:

- presence of people between the excavator and truck, under an excavator's bucket or boom during soil loading;
- moving the soil by bulldozer on the rise or slope with an angle of more than 30 degrees;
- extension of bulldozer's knife for the edge of the slope of the excavation during discarding of the soil.

During excavation with single-bucket excavators, it is forbidden to be under the bucket in a radius of the boom plus 5 m.

If trenches pass through the protection zone of electricity cables, it is allowed to develop trenches with single or multi-bucket excavators if the distance between the extreme point of the excavator and nearest wire is not less than 1.5 m at a line voltage up to 1 kV, 2 m - at a voltage up to 20 kV, 4 m - at a voltage up to 110 kV and 9 m - at a voltage up to 750 kV.

The excavator must be placed on levelled ground, that provides a normal view of work front. The Excavator must be secured to prevent its freely movement.

Excavator driver must take into account following:

1. the excavator must be located outside the prism of soil landslide;
2. the distance between the face (removed mass of soil that is moved during excavation) and the excavator cab must not less than one meter at any position;
3. stones, beams, stumps that may collapse during the operation of the excavator must be removed.

The distance from the outer edge of the caterpillar to the edge of the trench or pit is determined by calculating the stability of the slopes, but must be at least 1 m.

If it is planned to perform construction works on roads, traffic management scheme must be developed to avoid traffic difficulties and organize detours. Traffic management scheme should be agreed with the local department of State Traffic Inspectorate of the Ministry of Internal Affairs of Ukraine, local authorities and organizations serving these routes

Workers are required to follow requirements provided below after daily completion of work (at the end of work shift),:

- inspect and tidy up their workplaces;
- inform their immediate supervisors about all malfunctions and remarks that have been found during work shift and make a corresponding entry in the application log;
- remove all equipment to a specially designated storage place.

If defects of equipment were identified, it is forbidden to use this equipment until they have been repaired. Equipment must be marked with an appropriate entry.

Pre-commissioning of equipment is allowed after installation, inspection of wiring, belt tension, installation of fences on moving parts in the presence of a master or contractor and a specialist responsible for the installation of electrical parts.

It is forbidden to repair armature on the pipeline, to carry out any works (except for tightening of flanges), to strike on the pipeline and armature, to be near plugs of the pipeline when it is under hydraulic test.

Elimination of detected defects in the pipeline should be performed only after pressure removal.

All control measures over the compliance the occupational health and safety requirements have to be carried out during construction are collected and presented in the table below

Control measures	Responsible person	Period
In particular, Contractors has to to ensure following compliance during project implementation: – compliance with project design documentation requirements (stage “П” and stage “РД”, including relevant sections on the organization of construction site, sanitary and domestic service organization and labour protection, explosion safety, etc); – compliance with the contract execution program, performance of works according to technologies and application of materials in accordance with the project documentation. – implementation of layout design according to DBN A.3.1-5: 2016 “Organization of construction production”. – compliance with the Rules of Conduct on the construction site according to General Conditions of the Contract; – compliance with the developed instruction cards of construction works – timely conduct occupational health and safety briefings, keeping journals and other technical documentation required according to the current legislation of Ukraine; – compliance with national requirements for Covid-19 spreading prevention.	Contractor Project Manager	Constantly
Control over compliance with working schedule requirements during Contract implementation: – compliance with Contract General Conditions regarding to established duration of working day on weekdays; – it is forbidden to carry out construction works on weekends, official holidays or during non-working hours;	Contractor Foreman Contractor Project Manager	Constantly
Proper organization of labour regulations under Contract implementation: – development of procedure of notification of Contractor Project	Director of the Contractor company	Before the start of works

Manager about start and completion of working day; – development of procedure of completion of working day, which should include following: – control over collection and further shipment of existent equipment and production machines and mechanisms to the place of their overnight storage; – control over collection and further shipment of existent equipment and production machines and mechanisms to the place of their overnight storage after the end of the working day; – appropriate fencing of the construction site after the end of the working day; – installation of appropriate lightening after the end of the working day' – installation of transitional bridges (in case of need).	Contractor Safety Engineer Contractor Project Manager	under the Contract
Control over the construction process under Contract implementation: – carrying out of construction in compliance with developed layout schedule of construction; – carrying out of construction in compliance with developed instruction cards of construction works; – proper reporting to the Consumer and World Bank according to the reporting forms approved before; – supervision over the compliance with applicable occupational health and safety requirements, in particular: fencing of the construction cite, installation of appropriate trench shields, storage of excavated earth, waste, construction materials, installation of transitional bridges (in case of need); – control of taking of periodic medical control in accordance with the requirements of current legislation of Ukraine and type of performed work; – control of daily medical examination before the start of the employee's work shift (including checking for signs of alcohol, drugs or toxic intoxication and signs of Covid-19 infection); – control of conduction training and testing of knowledge on occupational health and safety issues of employees involved in the implementation of the Contract; – control over the use by employees of individual and collective personal protection equipment (overalls, footwear, protective helmets, safety belts, etc.); – control over the proper completion of the work shift / working day in particular it should include following: – control over storage of equipment, switching off of machines and mechanisms and their further transportation to the places of their overnight storage;	Director of the Contractor company Contractor Safety Engineer Contractor Project Manager	Constantly

– proper fencing of the construction site; – installation of proper lightening; – installation of transitional bridges; – availability of information boards with contact data of persons responsible for the implementation of the Contract;		
Constant control over the prevention of unauthorized person entering the territory of the construction site. If unauthorized persons are found, they have immediately leave the construction site, in case they resist employee should call the police. Availability of proper fencing to prevent unauthorized persons entering the construction site.	Contractor Foreman Contractor Project Manager	Constantly
Timely informing of Customer and the Contractor Management about violation of the organization of works performance or non-compliance with occupational health and safety requirements, non compliance with requirements of working schedule.	Contractor Foreman Contractor Project Manager	Constantly
Preliminary approval of the plan of works (schedule where sequence and terms of works are established) with the Customer and performance of construction works according to it.	Contractor Foreman Contractor Project Manager	Constantly
Development of a procedure for the exchange of information between employees of Contractor and management of Contractor company to study the opinion of employees on the production process, obtain information on possible violations, etc.	Contractor Project Manager	Before the start of work under the Contract
Timely conduction of occupational health and safety trainings and briefings in particular for employees who perform high-hazard type of works.	Contractor Foreman Contractor Safety Engineer Contractor Project Manager	Constantly

Appropriate reporting system should be developed. It should include developed and approved before the start of construction works reporting forms which Contractor must to fill out and submit to the Customer with following submission to the World Bank.

Particular attention should be taken to the Covid-19 spreading prevention.
The Covid-19 spreading prevention action plan should be developed by Contractor before start of Construction works.

This plan should include following necessary measures to prevent the spread of coronavirus COVID-19:

- appointment of persons responsible for control of carrying out of Covid-19 spreading prevention measures;
- appropriate types and rules of use of personal protection equipment for Covid-19 spreading prevention;
- rules of personal hygiene should be established and adhered during construction works;
- establishment of a schedule of cleaning and airing of working premises;

- development of a procedure for case of detection of Employee's Covid-19 first symptoms at the construction site and outside the construction site;
- appropriate trainings aimed at Covid-19 spreading prevention should be provided before start of construction works.

In case of identification of Contractor's employee Covid-19 disease symptoms, Contractor has to provide information to RPMU, CPMU during first 48 hours after identification. Relevant ESRT report has to be provided to World Bank team during first 48 hours after identification of Covid-19 disease.

8.2. Applicable requirements of the EU/World Bank/other requirements and standards

Current national regulations on health and safety at work are based on the principles and approaches of the EU:

- the right to the occupational safety of all workers and the guarantee of its implementation;
- employer's responsibilities to ensure healthy and safe working conditions;
- implementation of state control over compliance with legislation on health and safety;
- accident and injury insurance.

EU legislation in the field of occupational safety is conditionally divided into two groups:

- EU Directives on the protection of workers;
- EU directives on the release of goods to the market (including equipment, equipment, machinery, collective and personal protective equipment used by workers in the workplace).

The general principles of prevention and health protection are described in Council Directive 89/391/EEC;

The requirements for occupational safety are set out in the following documents:

- Council Directive 89/654/EEC on a workplace; Council Directive 92/57/EEC on temporary or mobile construction sites;
- Council Directive 92/91/EEC on work safety in undertakings where minerals are harvested through wells,
- Council Directive 1999/92/EC of the European Parliament and of the Council on the protection of workers from potentially hazardous substances in potentially explosive atmospheres);

Requirements for occupational safety when using equipment:

- Council Directive 89/655/EEC on the use by workers of means of employment;
- Council Directive 89/656/EEC on the use of personal protective equipment at the workplace; COUNCIL DIRECTIVE 90/269/EEC on the manual movement of goods when there is a risk of injury to the back of the workers;
- Council Directive 90/270/EEC concerning display screens;
- Council Directive 92/58/EEC on the use of signs of safety and/or health at work);

Requirements of work safety during work with chemical, physical and biological substances:

- Council Directive 90/394/EEC on the protection of workers from the risks related to exposure to carcinogens at work;
- Council Directive 2000/54/EC of the European Parliament and of the Council on the protection of workers from the risks related to the use of biological working materials during work;
- Council Directive 9824/EC on the protection of workers from the harmful effects of chemical agents at work;

- Council Directive 96/82/EC on the prevention of major-accident hazards involving dangerous substances; Directive 2002/44/EC of the European Parliament and of the Council on the protection of workers from the risks related to vibration,
- Directive 2003/10/EC of the European Parliament and of the Council on the protection of workers from the risks related to noise;
- Council Directive 83/477/EEC on the protection of workers from the risks related to exposure to asbestos at workplaces;

During the construction work, the Contractor must comply with the following standards and rules:

- Law of Ukraine "On Occupational Safety";
- Law of Ukraine "On Health Care";
- NAPB.03.002-2007 "Standards for Determining the Categories of Premises, Buildings and External Installations with Explosion and Fire Hazard";
- DBN A 3.2.2-2009 "Safety Standards System. Occupational Safety in Construction. Substantive Provisions";
- NPAOP 0.00-1.01-07 Rules of Construction and Safe Operation of Load-Lifting Cranes;
- NPAOB 0.00-1.13-71 Rules of Construction and Safe Operation of Stationary Compressor Plants, Air Lines, and Gas Pipelines;
- NAPB A.01.001-2004 Fire Safety Regulations in Ukraine;
- DBN 3.3.6.037-99 "Health Standards of Production Noise, Ultrasound and Infrasound";
- DBN 3.3.6.039-99 "State Sanitary Standards for Production of General and Local Vibration".
- SNiP Sh-4-80 "Construction Safety".
- "Electricity Installation Rules";
- "Rules for Safe Operation of Electrical Installations of Consumers";
- "Rules for the technical operation of electrical installations of consumers" (PTEP). SNiP III-4-80 "Safety precautions during construction work";
- NAPAOP 45.2-1.02-90 "Rules for the protection of work during the construction and repair of utilities";
- IMUU.3.2-218-051-95 "Instructions for ensuring road safety in places of road works on highways";
- GOST 12.1.005-88 General sanitary and hygienic requirements for air in the working area;
- GOST 12.2.003-91 Safety measures on construction sites.

9. CONTROL AND MONITORING MEASURES

In order to ensure the effective implementation of the proposed mitigation measures, including the realization of environmental protection obligations during the project implementation (construction and operation stage) a corresponding Monitoring Plan was developed. Comprehensive monitoring plan is as a part of current ESMP.

The monitoring plan has following objectives:

- to ensure proper implementation of mitigation measures;
- to ensure construction works compliance with the requirements of national legislative and World Bank operational policies;
- prompt and timely identification of unforeseen dangers caused by project implementation and following implementation of appropriate mitigation measures for their mitigation or elimination;
- collection of GRM information, its assessment and control of its processing with subsequent resolving of grievances.

The monitoring plan is aimed at achieving the following goals:

- building a positive relationship with local communities;
- mitigation (or elimination) of negative environmental and social impacts caused by project implementation in accordance with the developed mitigation plan;
- optimization of potential positive effects of subprojects.

Monitoring during construction stage

The contractor shall appoint a responsible for implementation of social and environmental mitigation measures person. This person must perform regular contact with CPMU. The contractor have to ensure that all proposed mitigation measures are properly implemented during the construction phase. The relevant report should be provided to CPMU once a month according to the provided before form.

Monitoring during construction stage includes collection of grievances of project stakeholders, their processing and responding. The relevant report should be provided to CPMU one time a month with the aim to control all received grievances were processed

Monitoring during operation

During operation it is recommended to conduct continuous monitoring for:

- prevention of soil and groundwater pollution by fuel and lubricants, noise, dust, accumulated of waste, ultraviolet radiation during welding, exhaust gas control during operation of vehicles, control of harmful vapours during welding, employee safety, leakage of water, quality of water supplied to consumers associated with repairment works and scheduled maintenance of water supply network;

The monitoring plan could be updated during the construction stage (if needed).

During construction works and operation of reconstructed water supply networks, water quality control will be provided (periodically, according to the established schedule by Utility laboratory), water leakages control and prevention (constantly), occupational health and safety issues (constantly).

The CPMU safeguard specialist is obliged to visit construction cites under SUIP implementation in Vinnytsya city not less than once per every quarter and every time incident occurs in order to monitor the ESMP requirements implementation.

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10. DEVELOPMENT OF THE INSTUTIONAL CAPACITY

Second Urban Infrastructure Project financed by World Bank provides the implementation of the institutional capacity building at the local level to improve water resource management process and support improving water service provision at the local level for Vinnytsyaoblvodokanal Utility.

Thus, in order to ensure comprehensive environmental protection, optimization of the social component, compliance of the project activity with the requirements of national legislation and World Bank safeguard operational policies' requirements, an institutional structure responsible for the implementation of the project was created.

It consists of following elements:

- Regional Project Management Unit (RPMU) responsible for project implementation of local level, includes key Vinnytsyaoblvodokanal Utility specialists;
- Central Project Management Unit (CPMU). It reports directly to the Ministry of Communities and Territories Development and World Bank;
- World Bank SUIP team.

The RPMU is leading by Vinnytsyaoblvodokanal Utility Head of Procurement and Supply Department manager who is responsible for overall supervision and monitoring of ESMP implementation, endorsements and reporting, he is supporting by 7 specialists.

Taking into account possibility of a negative impact on environmental and social sphere during process of reconstruction, mitigation measures plan and relevant monitoring plan are added to this ESMP. This will allow to provide monitoring of implementation of provided mitigation measures to ensure the mitigation of identified adverse impacts.

Among other general functions related to SUIP implementation, in particular, development of institutional capacity and trainings, the scope of the Client's competence should include such measures as:

- Selection of the personnel according to the developed requirements;
- conduction of relevant training programs;
- development and implementation of internal control and quality management plans;
- development and implementation of environmental monitoring program in accordance with the current legislation of Ukraine and World Bank requirements;
- development and implementation of public engagement plan.

Contractors responsible are responsible for:

- reporting and submission of required documents related to social and environmental measures implementation during project implementation;
- monitoring of implementation of provided mitigation measures to ensure the mitigation of identified adverse impacts.

ESMP envisages that state institutions (i.e., the State Service for Food Safety and Consumer Protection and the State Inspection for Environmental Protection, Fire Safety Service, State Labour Service of Ukraine) perform their monitoring functions within the limits of their competencies.

To monitor and effectively implement the project Utility laboratory will carry out constant monitoring of water quality for compliance with state standards both at the stage of execution of works and at the stage of operation.

In order to ensure the successful implementation of the Project, the Central Project Management Group, which consists of key stakeholders, should be involved at all stages of the Project.

It has to be noted that contractors responsible for carrying out of works (with the concluded agreements) must report on the health and safety provisions, carrying out of mitigation measures plan once a month and once a quarter and submit it to the CPMU for monitoring control.

The CPMU safeguard specialist is obliged to visit in order to monitor the implementation of the requirements of the ESMP not less than once per every quarter and every time incident occurs.

11. ENVIRONMENTAL IMPACTS OF THE PROPOSED ACTIVITY

No.	Impact	Impact scale (S-significant, M-moderate, L-low)	Impact description
Construction Stage			
1.	**Impact on the state of atmospheric air:**	M	– emissions of unidentified suspended particles – emissions of carbon monoxide – NOx emissions during welding of equipment;
2.	**Pollution of underground and surface waters**	L	– emergency spills of fuel and lubricants; – emergency spills of water;
3.	**Impact on the soil condition and landscape**	M	– the risk of mechanical pollution due to the inadequate management of waste resulted by the formation of an additional volume of waste, construction waste during their temporary storage. – the risk of chemical contamination as a result of possible emergency spills of fuel and lubricants and sewage during the exploitation of construction machinery.
4.	**Improper waste management**	M	– The risk of improper temporary storage of waste and its improper transportation. – Chemical pollution of soils and groundwater resulted by accidental spills of fuel and lubricants and water. – Physical pollution of soils due to improper handling of building waste.
5.	**Noise pollution**	M	– Increased noise level due to construction and installation work. – At the expense of increasing the efficiency of the movement of motor vehicles and construction equipment.
6.	**Emergency risk**	M	– Increased level of emergency risk

7.	**Impact on the social sphere**	M	– The risk of increasing the number of complaints and grievances.
8.	**Observance of working conditions**	S	– The risk of non-compliance with the working conditions of the staff. – The risk of using construction equipment that does not comply with the instructions for its operation. – The risk of increasing the number of productive injuries. – The risk of unscheduled occupational safety and health instructions.
9.	**Health and safety of the population**	M	– Increase in the number of complaints and appeals. – Increase in the number of injuries among the population. – Violation of comfort of residence.
Operational stage			
10.	**Influence on the state of atmospheric air:**	L	– emissions of suspended particles of undifferentiated composition; – emissions of carbon monoxide resulted by vehicles;
11.	**Pollution of underground and surface waters**	L	– emergency spillages of fuel and lubricants and sanitation; – emergency discharges of water.
12.	**Impact on soil condition and landscape**	L	– The risk of chemical contamination at the expense of possible emergency spills of fuel and lubricants during the operation of equipment and water
13.	**Emergency risk**	L	– Increased level of emergency risk
14.	**Observance of working conditions**	L	– The risk of non-compliance with the working conditions of the staff. – The risk of increasing the number of productive injuries. – The risk of unscheduled occupational safety and health instructions.
15	**Health and safety of the population**	M	– Increase in the number of complaints and appeals. – Violation of sanitary requirements – Violation of comfort of residence.

12. MITIGATION MEASURES PLAN

Type of impact		Construction (assembling)	Operation
	– Obtaining a state permission for architectural and construction control for construction work	Vinnytsyaoblvodokanal Utility	Not expected
Emissions of unidentified suspended particles (dust) resulted by construction and installation work, transportation of loose materials, work of construction machines and mechanisms	Organization of dedusting measures: – Sites for the temporary storage of dust-forming materials must be covered with a special covering material or should be provided with effective dedusting measures during period of operation; – Loading, overloading and unloading of materials should be carried out with a minimum difference of heights and using windscreen screens; – Transportation of dust-forming materials must take place in packages packed in hermetic packaging or with the use of cover materials;	– Contractor responsible for work handling;	Not expected
Combustion products of internal combustion engines: – emissions of carbon oxides (carbon dioxide, carbon monoxide); – other compounds in the exhaust gases	– Whenever possible, use electrical equipment; – It is forbidden using of motor vehicles and construction equipment without the need for it (at idle)	– Contractor responsible for work handling	Vinnytsyaoblvodokanal Utility (owner of the vehicles)
	Periodical inspection of the technical condition in accordance with the requirements of regulatory legal acts of Ukraine, in particular: – Law “On automobile Transport” dated 05.04.2001, No.2344-III, “Rules of operation of wheeled vehicles”, approved by the Order of the Ministry of Infrastructure of Ukraine dated 26.07.2013, No.550; – Rules of exploitation of rechargeable lead-acid starter batteries of wheeled vehicles and special machines made on wheeled chassis, approved by the Order of the Ministry of Transport and Communications of Ukraine dated 07.07.2008 No.795,	– Contractor responsible for work handling;	Vinnytsyaoblvodokanal Utility (owner of the vehicles)

	– The technical condition of the used vehicle fleet should be in satisfactory condition, and all emissions related to the work of internal combustion engines should not exceed the established standards.		
Mechanical impact of vehicles	– if possible, prevention of the movement of technology away from hard-surfaced or temporarily equipped access roads; – temporary placement of building materials and construction waste should be carried out in strict compliance with the design conditions and within the construction sites	– Contractor responsible for work handling;	Not expected
Chemical contamination of soils	Preventing the dumping of wastewater masses (residual waste water) on relief and prevention of occurrence of erosion damage to the soil	– Contractor responsible for work handling;	Not expected
	– to ensure the organization of temporary sanitary facilities. – to ensure the removal of household waste water to storage capacities (for example, to the mobile toilet cabins). The cleaning of cabins should be carried out by an asenisative machine. During the pumping process, contact with the earth's surface should be avoided, preventing its contamination and contamination of soil by the waste water.	– Contractor responsible for work handling;	Not expected
Mechanical contamination of soils	– Temporary storage of waste in specially designated areas according to their hazard class. – Provide an issue of waste management in trainings for staff. – Prevent of clogging and unauthorized disposal of waste, including construction waste – Develop and maintain a waste management plan of the territory	– Contractor responsible for work handling;	Not expected

Chemical pollution of surface and underground water	– -development of plan of emergency measures in case of accidental spills of sewage or fuel and lubricants, which should include: – removal of the contaminated layer of land with its subsequent utilization; – localization of emergency discharges of sewage to surface water objects	– Contractor responsible for work handling;	Vinnytsyaoblvodokanal Utility
Noise pollution	– Conduct construction work in accordance with the schedule established by the current legislation of Ukraine or at hours agreed with the interested parties.	– Contractor responsible for work handling;	Not expected
	– To reduce the noise levels, by optimization of the traffic flow associated with construction work, including the elimination of delivery at night	– Contractor responsible for work handling;	
	– If necessary, install noise protection screens near construction equipment in order to prevent negative effects;	- Contractor responsible for work handling;	
Waste management	– Develop and implement a detailed waste management plan covering all types of waste; – The plan should be periodically updated and monitored for its implementation;	– Contractor responsible for work handling;	Vinnytsyaoblvodokanal Utility
	– All works, as well as temporary placement of construction waste, must be carried out strictly in accordance with the project design conditions and within the boundaries of construction sites;	– Contractor responsible for work handling;	Not expected
	– It is necessary to provide for the appointment of a person responsible for dealing with hazardous and solid household waste, which monitors and instructs employees on all issues related to the range of his liability.;	– Contractor responsible for work handling;	Not expected
	– All works related to transportation, utilization and storage of waste should be carried out subject to the availability of permits for the implementation of this type of activity.	– Contractor responsible for work handling;	Vinnytsyaoblvodokanal Utility

	– The collection and temporary storage of waste is determined separately according to their hazard classes.	– Contractor responsible for work handling;	Vinnytsyaoblvodokanal Utility
Occupational health and safety issues	– Develop and implement a comprehensive Accident and Emergency Response Plan;	- Contractor responsible for work handling;	Vinnytsyaoblvodokanal Utility
	– Conducting safety briefings and trainings	- Contractor responsible for work handling;	Vinnytsyaoblvodokanal Utility
	– All work must be carried out in strict compliance with the design conditions and within the construction sites	- Contractor responsible for work handling;	Not expected
	– Installation of warning signs and tables, arrangement of necessary fences and transitional bridges, appropriate lighting at night time;	- Contractor responsible for work handling;	Vinnytsyaoblvodokanal Utility (works related to the repairment during operation)
	– All works, as well as temporary placement of building materials and construction waste should be carried out in strict compliance with the design conditions and within the construction sites;	- Contractor responsible for work handling;	Vinnytsyaoblvodokanal Utility (works related to the repairment during operation)
	– Provide workers with personal protective equipment and overalls	- Contractor responsible for work handling;	Vinnytsyaoblvodokanal Utility (works related to the repairment during operation)
	– All works have to be carried out in strict accordance with occupational health and safety rules described in appropriate current Ukrainian legislative acts and norms	- Contractor responsible for work handling;	Vinnytsyaoblvodokanal Utility (works related to the repairment during operation)
	– All construction works have to be carried out in established work hours	- Contractor responsible for work handling;	Vinnytsyaoblvodokanal Utility (works related to the repairment during operation)
	– All workers have to be provided with appropriate personal protective equipment	- Contractor responsible for work handling;	Vinnytsyaoblvodokanal Utility (works related to

			the repairment during operation)
Social risks			
Community health and safety issues (Risk of injury to locals during project implementation)	– All works, as well as temporary placement of building materials and construction waste should be carried out in strict compliance with the design conditions and within the construction sites;	- Contractor responsible for construction work;	Vinnytsyaoblvodokanal Utility (works related to the repairment during operation)
	– Installation of fencing that will ensure the avoiding of occurrence of accidents	- Contractor responsible for construction work;	Vinnytsyaoblvodokanal Utility (works related to the repairment during operation)
	– installation of warning signs and tables, arrangement of necessary fences and transitional bridges, appropriate lighting at night time, that will ensure the avoiding of occurrence of accidents	- Contractor responsible for construction work handling;	Vinnytsyaoblvodokanal Utility (works related to the repairment during operation)
	– All works have to be carried out in strict accordance with occupational health and safety rules described in appropriate current Ukrainian legislative acts and norms	- Contractor responsible for work handling;	Vinnytsyaoblvodokanal Utility (works related to the repairment during operation)
	– All construction works have to be carried out in established work hours, after completion of work shift (work day) construction site must be fenced in appropriate way, all equipment must be removed and stored in specially designated place to prevent entering of persons entering/carrying out unauthorized work	- Contractor responsible for work handling;	Vinnytsyaoblvodokanal Utility (works related to the repairment during operation)
Inconvenience to project stakeholders	– Conducting explanatory work with project stakeholders;	- Vinnytsyaoblvodokanal Utility	Vinnytsyaoblvodokanal Utility (works related to the repairment during operation)
	– all work, as well as the temporary placement of construction materials and construction waste, must be carried out strictly in accordance with	- Contractor responsible for work handling;	Vinnytsyaoblvodokanal Utility (works related to the

	the design conditions and within the construction sites;		repairment during operation)
	– installation of warning signs and tables, arrangement of necessary fence, appropriate lighting at night time during repairment works during operation.	- Contractor responsible for work handling;	Vinnytsyaoblvodokanal Utility (works related to the repairment during operation)
	– Conduction of GRM log with the aim of analysis of complaints and their further resolving	- Contractor responsible for work handling; - Vinnytsyaoblvodokanal Utility	Vinnytsyaoblvodokanal Utility (works related to the repairment during operation)

13. MONITORING PLAN

Monitoring parameter	Monitoring place	Monitoring method / type of equipment	Monitoring period continuous/periodic	Why is this parameter monitored?	Responsibility for:	
					Installation	Operation
Noise, vibration	Near socially sensitive objects (residential buildings) during construction works	Measurements to determine compliance with national standards for measuring methodology. Measurements in case of receiving complaints/appeals According to DSN 3.3.6.037-99 "Health standards of industrial noise, ultrasound and infrasound" and " Health standards of permissible noise in the premises of residential and public buildings and on residential premises" No.3077-84	– In operation process – In case of grievances from citizens	To ensure comfort living condition for people living next to the place of work.	Contractor responsible for handling of work;	Not expected
	In the area of work of equipment and tools that are sources of increased noise		– In operation process; – In case of grievances from citizens	To ensure proper working conditions	Contractor responsible for handling of work;	
Atmospheric air pollution Dust, gases, harmful emissions of the construction site and	On the construction site	– control, in particular at the boundary of the settlement/in the SPZ/construction sites	– During the construction process;	To prevent environmental pollution and ensure proper working conditions for personnel	Contractor responsible for handling of work;	Not expected

construction equipment			– In case of grievances from citizens			
	Near socially sensitive facilities (in the case of complaints/ appeals from people)	Regular diagnostics of vehicles and construction equipment to control emissions of carbon monoxide in exhaust gases.	During activity Regular diagnostics of vehicles and construction equipment to control emissions of carbon monoxide in exhaust gases. In accordance with the current legislation of Ukraine, in particular: – Law on Automobile Transport dated 05.04.2001, No.2344-III, "Rules of operation of wheeled vehicles", approved by the Order of the Ministry of Infrastructure of Ukraine on 26.07.2013, No.550;	– To prevent environmental pollution and ensure proper working conditions for personnel – To ensure the comfort of people living next to the place of work. In accordance with the current legislation of Ukraine, in particular: – Law on Automobile Transport dated 05.04.2001, No.2344-III, "Rules of operation of wheeled vehicles", approved by the Order of the Ministry of Infrastructure of Ukraine on 26.07.2013, No.550; – Rules of exploitation of rechargeable lead-acid starter batteries of wheeled vehicles and special machines made on wheeled chassis, approved by the Order of the Ministry of Transport and Communications of	Contractor responsible for handling of work;	

			Rules of exploitation of rechargeable lead-acid starter batteries of wheeled vehicles and special machines made on wheeled chassis, approved by the Order of the Ministry of Transport and Communications of Ukraine dated 07.07.2008 No.795,	Ukraine dated 07.07.2008 No.795,		
Residual water during carrying out of works	At the construction site	Visually	During demolition of equipment As needed	– To prevent a negative impact on the state of the environment	Contractor responsible for handling of work;	Not expected
Volumes of waste generation	Construction site	Visually In the process of accumulation	Constantly during activity	– In accordance with the requirements of the current legislation of Ukraine and the European Union. – Checking for waste management	Contractor responsible for handling of work;	Vinnytsyaoblvodokanal Utility –
Rational Handling Building Waste	Construction site	Visually In the process of accumulation	Constantly during activity			
Construction waste management		According to the concluded agreements	Constantly during activity	To prevent environmental contamination		
				Provision of appropriate working conditions for the staff and living conditions of locals		

				To provide a separate collection of waste To ensure separate collection of waste according to the hazard class		
Ultraviolet radiation and harmful evaporation during welding	On the construction site, directly during welding	Ultraviolet radiation meter	As needed	To ensure safe working conditions for staff	Contractor responsible for handling of work	Not expected
Fire and explosions	Construction site	Inspections	Constant control by the Contractor	To comply with the rules of operation of equipment and to ensure the proper working conditions for staff and the comfort of movement of locals	Contractor responsible for handling of work	Vinnytsyaoblvodokanal Utility
Ensuring proper working conditions Emergency response plans. Training	Construction site	Inspections	Constant control by the Contractor	To comply with the equipment operation rules and to ensure the proper working conditions for the personnel	Contractor responsible for handling of work	Vinnytsyaoblvodokanal Utility
Ensuring personal protection equipment for employees engaged in construction work	Construction site	Inspections	Constant control by the Contractor	To comply with the equipment operation rules and to ensure the proper working conditions for the personnel	Contractor responsible for handling of work	Vinnytsyaoblvodokanal Utility

Occupational health and work safety. Observance of safety instructions, work safety procedures.	Construction site	Verification of data obtained after fixation: – Recorded accidents data, collected complaints and suggestions – data on the referral by the employees to the medical facility of the enterprise, as well as to the medical facilities of the district	Constant control by the Contractor	To comply with applicable work safety regulations and to ensure proper working conditions	Contractor responsible for handling of work	Vinnytsyaoblvodokanal Utility
Community health and safety	– Vinnytsya city (impact of water quality on water supply customers) – adjustment to the construction sites areas (physical impact of construction works on locals)	Verification of – water quality data (laboratory data) – Recorded accidents data, collected complaints and suggestions	In case of accidents	To comply with – applicable work safety regulations and to ensure proper working conditions – applicable sanitary and hygienic regulations	Contractor responsible for handling of work	Vinnytsyaoblvodokanal Utility
Operational stage						
Leakage of water	water supply networks	Visually Instrumental control	During operational;	To prevent environmental pollution and ensure the efficient functioning of the water supply network	— // —	Vinnytsyaoblvodokanal Utility

Ensuring proper working conditions Emergency response plans. Training (in case of restoration works)	water supply networks	Inspections	Constant control	To comply with applicable work safety regulations and to ensure proper working conditions	-- // --	Vinnytsyaoblvodokanal Utility

Annex 1. Communication channels

Vinnytsyaoblvodokanal utility communication channels:

- informational service desk (Tel. 53-72-85);
- written application to the Vinnytsyaoblvodokanal Utility;
- applying to an utility e-mail address *office@vinvk.com.ua*;
- personal reception by responsible persons (personal reception is scheduled, the schedule is provided on Vinnytsyaoblvodokanal Utility website https://www.vinvk.com.ua/2015-07-21-08-02-13/dni-prijomu-gromadyan)

Contractor's communication channels:
Name of the contact person: Melnyk Evhen
Phone number: +38 (098)5088981
email: dbvkm.ksm@gmail.com

Vinnytsyaoblvodokanal Utility RPMU

№	Name	Position	Name	E-mail	Phone number
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7	Shvydyuk E.	Legal Adviser of the Procurement and Supply Department	RPMU legal specialist	rgup@vinvk.com.ua	+38 0432 53-73-98
8	Korol L.	Economist of Category I of Procurement and Supply Department	RPMU procurement specialist; RPMU environmental and social issues	rgup@vinvk.com.ua	+38 0432 53-73-98

Annex 2. General information on the project and the site

INFORMATION AND ADMINISTRATIVE DATA			
Country	Ukraine		
Project title	Urban Infrastructure Project - 2		
Scope of project and works	The subproject's purpose is the improvement of the quality and efficiency of sanitation services provided in Vinnytsya by implementing the number of measures, increasing the energy efficiency of the city's economic sector, improving the sustainability and reliability of the city's water supply system, improving water quality and the overall ecological situation in the region. This ESMP is project specified ESMP and covers issues related to the implementation of the project "Reconstruction of main water supply network in Vinnitsa city (from Pyrogova Str. to Lebedynskogo Str.)" The activities and work proposed under the project will not have significant negative social or environmental consequences. In addition, a positive expected environment effect due to improving the efficiency of Vinnytsya water supply system, including reducing of energy consumption and water losses in water supply networks. However, in order to prevent social and environmental risks, careful monitoring of the implementation of the measures is envisaged. The purpose of the reconstruction of the main water supply network from Pyrogova str to Lebedynskogo str in Vinnitsa is the restoration of the operational characteristics of a self-absorbed water conduit. The implementation of the measures proposed below will ensure: reliable water supply of Vinnytsya, reduction of water leakages in water supply system, reduction of electricity and reagent consumption, and appropriate reduction of operating costs		
Institutional structure (names and contacts)	*WB (Project Team leader) Appointed by WB*	*Project Management - CPMU)*	*Local colleagues and/or recipients - RPMU*
SITE DESCRIPTION			
Site title	Industrial zone Territory of residential development (network)		
Description of site location	Vinnytsya		
Description of geographical, physical, biological, geological, hydrographic and social-economic aspects	Vinnytsya - administrative Center of Vinnytsya district and Vinnytsya region, an economic and cultural Center, Center of Vinnytsya agglomeration. As of 2019, city population is 369.8 thousand people. City area is 113.2 km^2 According to DSTU-N B. V. 1.1-27: 2010 the site of planned construction is located in the I-th - North-West architectural and construction climate area and it is located in the Podilsko-Pobuzhsky steppe region. The climate is temperate continental. The average annual air temperature is 7.2°C, the average January temperature is -5.8°C, July 19.2°C. The absolute maximum air temperature (July, August) is 38 °C , the absolute minimum air temperature in January is -33 °C .		

	Annual precipitation is 570mm. The soil freezing depth is 90 cm. The average wind speed is 3-4 m/s. The terrain of the route, the reconstruction of which is envisaged, has been changed by man-made activity. Groundwater for the period of survey, detected by wells at a depth of 3.0m. The main source of groundwater feeding is the infiltration of precipitation, inflows from the watershed, and Pivdenny Bug River. During visual survey, no negative engineering-geological processes were detected on the site of planned activity, except of granite bedrock exposure on the left bank of Pivdenny Bug River. The works will be carried out in an urbanized area. During the reconstruction of water supply networks, work is planned on: on the territory of roadways (partially); on the territory of the green zones in the lane of easement area of the roadways; on the territory of the pedestrian zone; Constant environmental impact is not expected. Design areas are a built-up area of engineering communications, most of which pass underground. Laying of water supply networks is carried out on the existing route. Along all the main route of the water supply network, the reconstruction of which is planned, there is a residential building area, which is a dense urban development area. Project decision, partially the selection of construction route of the specified network based on technological requirements and possibility of laying communications.
Disposition and distance to the sources of materials, especially filling materials, water and stone	The objects are located in urban areas with a developed system of engineering services
LEGISLATION	
Specify national and local legislation and authorizations required for activity within the project	Start of construction works requires: – Declarations on start of construction works; – Authorization from the city authority for start of works; Authorization for trenching, from the City Council's Planning and Improvement Department; – Contractor's license for construction works; – Contractor's licenses for execution of increased-risk works.
PUBLIC CONSULTATION	
Specify national and local legislation and authorizations required for activity within the project	Public engagement plan will be developed and implemented after Contract signing
INSTITUTIONAL CAPACITY BUILDING	
Will there be institutional capacity building?	Second Urban Infrastructure Project financed by World Bank provides the implementation of the institutional capacity building at the local level to

	improve water resource management process and support improving water service provision at the local level for Vinnytsyaoblvodokanal Utility. Thus, in order to ensure comprehensive environmental protection, optimization of the social component, compliance of the project activity with the requirements of national legislation and World Bank safeguard operational policies' requirements, an institutional structure responsible for the implementation of the project was created. It consists of following elements: – Regional Project Management Unit (RPMU) responsible for project implementation of local level, includes key Vinnytsyaoblvodokanal Utility specialists; – Central Project Management Unit (CPMU). It reports directly to the Ministry of Communities and Territories Development and World Bank; – World Bank SUIP team. The RPMU is leading by Vinnytsyaoblvodokanal Utility Head of Procurement and Supply Department manager who is responsible for overall supervision and monitoring of ESMP implementation, endorsements and reporting, he is supporting by 7 specialists. Taking into account possibility of a negative impact on environmental and social sphere during process of reconstruction, mitigation measures plan and relevant monitoring plan are added to this ESMP. This will allow to provide monitoring of implementation of provided mitigation measures to ensure the mitigation of identified adverse impacts. Among other general functions related to SUIP implementation, in particular, development of institutional capacity and trainings, the scope of the Client's competence should include such measures as: – Selection of the personnel according to the developed requirements; – conduction of relevant training programs; – development and implementation of internal control and quality management plans; – development and implementation of environmental monitoring program in accordance with the current legislation of Ukraine and World Bank requirements; – development and implementation of public engagement plan. Contractors responsible are responsible for: – reporting and submission of required documents related to social and environmental measures implementation during project implementation; – monitoring of implementation of provided mitigation measures to ensure the mitigation of identified adverse impacts. ESMP envisages that state institutions (i.e., the State Service for Food Safety and Consumer Protection and the State Inspection for Environmental Protection, Fire Safety Service, State Labour Service of Ukraine) perform their monitoring functions within the limits of their competencies.

	To monitor and effectively implement the project Utility laboratory will carry out constant monitoring of water quality for compliance with state standards both at the stage of execution of works and at the stage of operation. In order to ensure the successful implementation of the Project, the Central Project Management Group, which consists of key stakeholders, should be involved at all stages of the Project. It has to be noted that contractors responsible for carrying out of works (with the concluded agreements) must report on the health and safety provisions, carrying out of mitigation measures plan once a month and once a quarter and submit it to the CPMU for monitoring control. The CPMU safeguard specialist is obliged to visit in order to monitor the implementation of the requirements of the ESMP not less than once per every quarter and every time incident occurs.