MINISTRY OF REGIONAL DEVELOPMENT, CONSTRUCTION AND HOUSING AND COMMUNAL SERVICES OF UKRAINE
THE WORLD BANK PROJECT
"UKRAINIAN DISTRICT HEATING ENERGY EFFICIENCY PROJECT"

PUBLIC UTILITY OF HEATING NETWORKS
"TERNOPILMISKTEPLOKOMUNENERHO"
OF TERNOPIL CITY COUNCIL

ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN
(ESMP)

TERNOPIL-2018
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<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>AbRAP</td>
<td>Abbreviated Resettlement Action Plan</td>
</tr>
<tr>
<td>ASC (SCADA)</td>
<td>Automated system of communication and control</td>
</tr>
<tr>
<td></td>
<td>Supervisory Control And Data Acquisition</td>
</tr>
<tr>
<td>CTF</td>
<td>Fund of Clean Technologies</td>
</tr>
<tr>
<td>CPMU</td>
<td>Central Project Management unit</td>
</tr>
<tr>
<td>CHS</td>
<td>Central Heating Substations</td>
</tr>
<tr>
<td>DH</td>
<td>District Heating</td>
</tr>
<tr>
<td>Derzhprodspozyvsluzhba</td>
<td>State Service of Ukraine for Food Safety and Consumer Protection</td>
</tr>
<tr>
<td>EA</td>
<td>Environmental Assessment</td>
</tr>
<tr>
<td>EIA</td>
<td>Environmental Impact Assessment</td>
</tr>
<tr>
<td>ESMP</td>
<td>Environmental and Social Management Plan</td>
</tr>
<tr>
<td>FM</td>
<td>Financial Management</td>
</tr>
<tr>
<td>GHG</td>
<td>Green House Gases</td>
</tr>
<tr>
<td>GRM</td>
<td>Grievance Redress Mechanism</td>
</tr>
<tr>
<td>IFC</td>
<td>International Financial Corporation</td>
</tr>
<tr>
<td>IHS</td>
<td>Individual Heating Substations</td>
</tr>
<tr>
<td>Minpryrody</td>
<td>Ministry of Ecology and Natural Resources of Ukraine</td>
</tr>
<tr>
<td>Minregion</td>
<td>Ministry of Regional Development and Utilities Sector of Ukraine</td>
</tr>
<tr>
<td>MM</td>
<td>Mass Media</td>
</tr>
<tr>
<td>MPU</td>
<td>Municipal Public Utility</td>
</tr>
<tr>
<td>NGPA</td>
<td>Non-governmental public association</td>
</tr>
<tr>
<td>NPA</td>
<td>Notice on Planned Activity</td>
</tr>
<tr>
<td>NAP</td>
<td>National Association on planning</td>
</tr>
<tr>
<td>OP 4.01</td>
<td>World Bank Policy on Environmental Assessment</td>
</tr>
<tr>
<td>PAP</td>
<td>Project Affected Person</td>
</tr>
<tr>
<td>PLESA</td>
<td>Program Level Environmental and Social Management Plan</td>
</tr>
<tr>
<td>Acronym</td>
<td>Description</td>
</tr>
<tr>
<td>---------</td>
<td>-------------</td>
</tr>
<tr>
<td>POM</td>
<td>Assessment</td>
</tr>
<tr>
<td>PIU</td>
<td>Project Implementation Unit</td>
</tr>
<tr>
<td>PA</td>
<td>Planned Activity</td>
</tr>
<tr>
<td>PAS</td>
<td>Public Association</td>
</tr>
<tr>
<td>Project/ UDHEEP</td>
<td>Ukraine District Heating Energy Efficiency Project</td>
</tr>
<tr>
<td>RPIU</td>
<td>Regional Project Implementation Unit</td>
</tr>
<tr>
<td>SEP</td>
<td>Stakeholders Engagement Plan</td>
</tr>
<tr>
<td>VRU</td>
<td>Verkhovna Rada of Ukraine (Parliament)</td>
</tr>
<tr>
<td>WB</td>
<td>World Bank</td>
</tr>
</tbody>
</table>
1. INTRODUCTION
1.1 General information on the PROJECT

The project "Ukraine District Heating Energy Efficiency Project " (here in after referred to as the "Project") aims to increase energy efficiency and quality of servicing selected heat supply companies, increase their financial viability and improve the environment. The global goal is to reduce greenhouse gas emissions by preventing heat generation by increasing the efficiency of heat production, reducing heat losses in heat transfer and distribution systems, and reducing the consumption of heat in the residential sector.

The main beneficiaries are the heat supply company. Additional beneficiaries are residential customers who will benefit from more reliable, high-quality services provided by participating companies.

For the consumers of Ternopil city, implementation of the Project will ensure a stable supply of heating and hot water throughout the year. The implementation of the Project will allow the MPU «Ternopilmiskteplokomunenerho» to modernize the heat supply system as a whole, introduce energy and resource saving materials and technologies, implement dispatching and automated control systems for the entire company, and improve the system of measuring consumption. The project implementation should become a gradual step in the supply of heat and hot water in Ternopil city.

Institutional Arrangements the Minregion is the line ministry responsible for implementation of projects in the municipal sector, including project preparation, supervision, and monitoring and evaluation as well as for review of projects’ evaluation results. Accordingly, Minregion carries out such functions for this project. A Central Project Management unit (CPMU) was created around an existing PIU in Minregion implementing the CTF Project Preparation Grant. The responsibilities of the CPMU includes: reporting to the Bank; providing procurement and FM support to the local PIUs; aggregating data and reports; checking invoices and delivering them to the Ministry of Finance; supervising quality of service surveys; and monitoring and evaluation. The existing CPMU’s capacity was increased by adding procurement, FM, engineering, safeguards, and accounting specialists.

DH regional company – MPU «Ternopilmiskteplokomunenerho»— is a sub-borrower for the project and shall be responsible for implementing its Energy Efficiency Investments in accordance with POM, PLESA and shall maintain its Regional Project Implementation unit (RPIU) throughout duration of the Project. MPU "Ternopilmiskteplokomunenerho" has established a RPIU, using its existing staff, comprised of a: Director, Procurement Specialist, Financial Management Specialist, Technical Supervisor (engineer), and Safeguards Specialist, accountant. The responsibilities of the RPIU within the DH companies will include: preparing tender documents, preparing technical specifications, leading procurement and FM processes according to World Bank guidelines, supervising physical works, conducting environmental and social assessments, monitoring and evaluation, and preparing progress reports. The RPIU is supervised by Minregion.

Contractor is an independent entity that agrees to render services that meet or exceed stated requirements or specifications, at a mutually agreed upon price and within a specified timeframe to another independent entity called contractee, principal, or project owner. The contractor will be selected by the RPIU according to the procurement procedures of WB.
Subcontractor is a junior or secondary contractor who contracts with a prime contractor (and not the principal or owner of the project) to perform some or all the prime contractor's contractual-obligations under the prime contract.

Construction Supervision Consultant is the entity assigned by the RPIU to represent them onsite and to conduct Inspections for Quality Control, Construction Methods, Cost Saving, etc. and to ensure that the Construction is being performed in accordance with the design and contract documents.

Project objective and activities. The main objective of the project is to improve the quality, reliability and availability of heat and hot water supply service from existing resources. The implementation of the components of the investment program will reduce emissions of greenhouse gases (carbon dioxide) and nitrogen oxides due to increased efficiency of the technological process and reduced heat losses in district heating networks.

The project provides:

2. Reconstruction of the district heat supply pipelines network. In total, 2.8 km of obsolete pipes will be replaced.
5. Installation of the SCADA system.
6. Installation of cogeneration units with the installed electric capacity of 1 MW at the boiler house in 3s, Kyivska str. and 0.58 MW capacity at the boiler house in 23, Lemkivska str.

The MPU "Ternopilmiskteplokomunenerho" is a utility company of Ternopil City Council, whose main activity is the production, transportation and sale of heat energy.

The total investment is 24,671,000.00 USD of which 16,532,000.00 USD will be provided by the World Bank and 8,139,000.00 USD – by the CTF.

Anticipated Impacts. Project is expected to have positive social impacts on a broad range of stakeholders and beneficiaries, including the following: residential, public and commercial customers served by MPU “Ternopilmiskteplokomunenerho”, who will directly benefit from upgraded heating system, installed heat and hot water meters and the modernized transmission pipeline section.

Negative social impacts are minimal. Proposed project activities will not result in any physical resettlement /displacement of persons or properties. The works will be conducted on public lands and will be temporary in their nature. But some construction induced impacts are possible. In case the situation will arise, and temporary economic displacement is required, specific Ab-RAP or RAP will be developed/ disclosed/consulted.

1.2 ESMP development objective.

The ESMP give an overview of environmental impacts of the proposed district heating rehabilitation programme and their management.
The mitigation plan below provides a description of proposed measures to abate the anticipated impacts of the project during the construction and operation stages. The plan also indicates responsibilities with respect to mitigation measures application.

In order to ensure efficient implementation of the mitigation measures proposed, including the respect of environmental obligations during the construction stage, a program of monitoring activities has been developed and presented below in a tabular form.

The main ESMP tasks are as follows:

- identification of site-specific major environmental and health and safety impacts (including emissions, earthworks, vegetation clearance, waste amounts etc.);
- identification of complex of measures to reduce negative and increase positive environmental and social influence;
- identification of complex of measures on monitoring and control;
- identification of institutional structure, that will be responsible for ESMP implementation;
- identification of schedule of works performance and their cost;
- development of institutional capabilities.

2. LEGISLATIVE BASIS, LICENSES AND PERMITS

2.1. List of regulations

Issues of environmental protection related to the implementation of this project are regulated by numerous laws, legal acts and norms. The basic laws and legal acts regulating the issues of environmental protection are as follows:

Land Code of Ukraine (issued on October 25, 2001, VRU);

Law of Ukraine "On Environmental Protection" (issued on June 25, 1991, VRU);


Law of Ukraine "On the Protection of Atmospheric Air" (issued on October 16, 1992, VRU);

Law of Ukraine "On Protection of Population and Territories from Man-made and Natural Emergencies" (issued on June 8, 2000, VRU);

Law of Ukraine "On Heat Supply" (issued on June 2, 2005, VRU);

Law of Ukraine "On Waste" (adopted on March 5, 1998, VRU);

Resolution of the Cabinet of Ministers of Ukraine "On approval of the list of types of activities and objects that constitute an increased environmental hazard" (No. 808, issued on August 28, 2013);
Resolution of the Cabinet of Ministers of Ukraine "On Approval of the Regulations on the Procedure for the Implementation of State Accounting for the Protection of the Atmospheric Air" (issued on December 29, 1993);

Resolution of the Cabinet of Ministers of Ukraine "On Approval of the Procedure for the Development and Approval of Standards for Maximum Permissible Emissions of Pollutants from Stationary Sources" (issued on December 28, 2001);

Resolution of the Cabinet of Ministers of Ukraine "On Approval of Standards for Maximum Permissible Levels of Physical and Biological Factors Exposure to Air from Stationary Sources" (issued on March 13, 2002);

Order of the Ministry of Environmental Protection of Ukraine "On Approval of the Instruction on the Procedure and Criteria for Taking on the State Registration of Facilities that Cause or May Have a Harmful Effect on Human Health and the State of the Atmospheric Air, Types and Volumes of Pollutants Emitted into Atmospheric Air" (issued on May 10, 2002);

Order of the Ministry of Environmental Protection of Ukraine "On Approval of the List of Types of Equipment for which Standards for Maximum Permissible Emissions of Pollutants from Stationary sources are Developed" (issued on August 16, 2004);

Order of the Ministry of Environmental Protection of Ukraine "On Approval of Standards for Maximum Permissible Emissions of Pollutants from Stationary Sources" (issued on June 26, 2006);

Order of the Ministry of Environmental Protection of Ukraine "On Approval of Technological Standards of Permissible Emission Levels for Pollutants from Heat-power Plants with a Rated Heat Power Exceeding 50 MW" (issued on June 26, 2006);

Order of the Ministry of Environmental Protection of Ukraine "On Approval of the Methodology for Calculation of the Compensation Size for Damages Caused by the State as a Result of Excessive Emissions of Pollutants into the Atmospheric Air" (issued on December 10, 2008);

Order of the Ministry of Environmental Protection of Ukraine "On Approval of the Regulations on Integrated Environmental Assessment at the Regional Level" (issued on November 14, 2008).

EU Directives

World Bank Operational Policies.

2.2 Enterprise Licenses

The company acts on the basis of the following licenses:

1. Heat energy production (except for the production of heat energy in combined heat and power plants, heat power plants, nuclear power plants and cogeneration plants and plants using non-traditional or renewable energy sources), issued by the National Commission implementing state regulation in the field of public utilities 13.06.2012.

2. Supply of heat energy, issued by the Ternopil Regional State Administration on 07.06.2012.

3. Transportation of heat energy by main and local (distribution) heating networks, issued by the Ternopil Regional State Administration on 07.06.2012.
4. Heat production at combined heat and power plants and plants using non-traditional or renewable energy sources, issued by the National Electricity Regulatory Commission of Ukraine on April 15, 2010.

5. **License for combined heat and power generation**, issued by the National Electricity Regulatory Commission of Ukraine on March 23, 2010. The production of electric energy is used only for the needs of the enterprise.

According to the Law of Ukraine "On Licensing Types of Economic Activities" (as amended on 05.09.2017), licenses are granted for an unlimited period of validity and are *timeless*.

The current system of issuing environmental permits in Ukraine is based on an intermediate level of detail with separate regulatory documents for the protection of atmospheric air, water protection and waste management. A valid permit is required for all sources of atmospheric air and water pollution, which determines the maximum permissible values of emissions into the air and discharges into water bodies, as well as establishes requirements for monitoring.

**List of permits MPU "Ternopilmiskteplokoumurerho" Table №1.**

<table>
<thead>
<tr>
<th>Title of the permit document</th>
<th>Legislative act of Ukraine</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Permission for emissions of pollutants into the atmospheric air by stationary sources</td>
<td>Law of Ukraine &quot;On the Protection of Atmospheric Air&quot;</td>
</tr>
<tr>
<td>2. Permit for construction works performance</td>
<td>Law of Ukraine &quot;On Regulation of Urban Development&quot;</td>
</tr>
</tbody>
</table>

The specialized enterprise, which has an accredited laboratory for environmental protection, carried out the inventory of stationary sources of pollutant emissions into the atmosphere at the PU "Ternopilmiskteplokoumurerho"

3 boiler houses have power over 50 MW and according to Law of Ukraine "On the Protection of Atmospheric Air" belong to the 1st group: **3s, Kyivska str., 3a, Kurbasa str., 23, Lemkivska str.**

In accordance with the received permits for the emission of pollutants into the air, the utility has established measures to control compliance with the approved norms of the permissible emission of pollutants by carbon monoxide (NO) and oxides of nitrogen (NOx) for boiler houses operating on gas and sulfur dioxide (SO2), solid particles for solid fuel boiler houses.

In order to carry out the established control measures on PU "Ternopilmiskteplokomunenerho", a specialized laboratory conducts control measurements at the emission sources, which are reflected in the reports on the results of monitoring compliance with the permissible emission of pollutants into the atmosphere of PU "Ternopilmiskteplokomunenerho".

List of measures for monitoring the compliance with the approved norms of the maximum allowable emissions of pollutants and measures to reduce the emissions of pollutants for stationary sources of the 1st group in tables below.
1. **Boiler house at 3s, Kyivska str.**

_**Table №2. Measures to introduce the best available production technologies that do not require excessive costs and the best available technologies and control methods.**_

<table>
<thead>
<tr>
<th>Code of production and technological process, technological equipment</th>
<th>Name of the measure</th>
<th>Total expenditures at estimated cost, UAH thousand.</th>
<th>Expected reduction of pollutant emissions into the atmospheric air after the implementation of the measure, t/year</th>
</tr>
</thead>
<tbody>
<tr>
<td>110203, district heating systems, incinerators &lt;50 MW (boiler units)</td>
<td>Replacement of existing burners on water heating boilers PTVM-30M-4 (3pcs.) for burners with the reduction of pollutants emissions into the atmospheric air</td>
<td>7200.0</td>
<td>Nitrogen oxides (oxide and nitrogen dioxide) in terms of nitrogen dioxide - 4.76; Oxide of carbon - 2.00</td>
</tr>
</tbody>
</table>

_**Table №3. List of measures to monitor compliance with established maximum permissible emissions and conditions of the emission allowance**_

<table>
<thead>
<tr>
<th>№ of emissions sources</th>
<th>Name of the pollutant</th>
<th>The approved maximum permissible emission mg / m³</th>
<th>Frequency of measurement</th>
<th>Method of measuring performance</th>
<th>Sampling point</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Nitrogen oxides (oxide and dioxide nitrogen) converted to nitrogen dioxide</td>
<td>211.97</td>
<td>1 time a year starting from December 29, 2014</td>
<td>Metrologically certified methods of measuring performance</td>
<td>Straight section of the flue</td>
</tr>
<tr>
<td></td>
<td>Carbon monoxide</td>
<td>105.75</td>
<td>1 time a year starting from December 29, 2014</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Nitrogen oxides (oxide and dioxide nitrogen) converted to nitrogen dioxide</td>
<td>182.96</td>
<td>1 time a year starting from December 29, 2014</td>
<td>Metrologically certified methods of measuring performance</td>
<td>Straight section of the flue</td>
</tr>
<tr>
<td></td>
<td>Carbon monoxide</td>
<td>110.4</td>
<td>1 time a year starting from December 29, 2014</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. **Boiler house at 3a, Kurbasa str.**

_**Table №4. List of measures for the protection of the atmospheric air in case of emergency situations of man-made and natural nature, the elimination of the air pollution effects**_
Table №5. Measures to monitor compliance with established maximum permissible pollutant emissions and conditions of the emission allowance

<table>
<thead>
<tr>
<th>No. of emissions sources</th>
<th>Name of the pollutant</th>
<th>The approved maximum permissible emission mg / m3</th>
<th>Frequency of measurement</th>
<th>Method of measuring performance</th>
<th>Sampling point</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Nitrogen oxides (oxide and dioxide nitrogen) converted to nitrogen dioxide</td>
<td>222.23</td>
<td>1 time a year starting from October 6, 2016</td>
<td>Metrologically certified methods of measuring performance</td>
<td>Pipe</td>
</tr>
<tr>
<td>2</td>
<td>Carbon monoxide</td>
<td>101.86</td>
<td>1 time a year starting from October 6, 2016</td>
<td>Metrologically certified methods of measuring</td>
<td>Pipe</td>
</tr>
</tbody>
</table>
3. **Boiler house at 23, Lemkivska str.**

*Table №6. List of measures for the protection of the atmospheric air in case of emergency situations of man-made and natural nature, the elimination of the air pollution effects*

<table>
<thead>
<tr>
<th>Name of potentially dangerous facility</th>
<th>The location of a potentially dangerous facility</th>
<th>The name, weight, category of hazardous substance, or group of substances used or manufactured, processed, stored or transported to the facility</th>
<th>Name or category of hazardous substance or group of dangerous substances under which the facility was identified</th>
<th>The name of the pollutants, which in the event of an emergency, man-made or natural, may come into the atmospheric air</th>
<th>Name of measures for the protection of the atmospheric air in the case of emergencies</th>
<th>Name of measures for the elimination of the consequences of the atmospheric air pollution in the case of an emergency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boiler house</td>
<td>Ternopil city 23, Lemkivska str.</td>
<td>Natural gas (minerals)</td>
<td>Flammable gas</td>
<td>Nitrogen oxides (oxide and nitrogen dioxide) in terms of nitrogen dioxide; carbon oxide; mercury and its compounds in terms of mercury and greenhouse gases.</td>
<td>Measures for the protection of the atmospheric air are carried out in accordance with the plan of localization and elimination of emergency situations and accidents at the boiler house, which has been developed and approved in the established order</td>
<td>Measures for the elimination of the consequences of pollution are carried out in accordance with the plan of localization and elimination of emergency situations and accidents at the boiler house, which has been developed and approved in the established order</td>
</tr>
</tbody>
</table>

*Table №7. Measures to monitor compliance with established maximum permissible pollutant emissions and conditions of the emission allowance*

<table>
<thead>
<tr>
<th>No. of emissions sources</th>
<th>Name of the pollutant</th>
<th>The approved maximum permissible emission mg / m³</th>
<th>Frequency of measurement</th>
<th>Method of measuring performance</th>
<th>Sampling point</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Carbon monoxide</td>
<td>108,68</td>
<td>1 time a year starting from October 6, 2016</td>
<td>Metrologically certified methods of measuring performance</td>
<td>Pipe</td>
</tr>
<tr>
<td></td>
<td>Nitrogen oxides (oxide and dioxide nitrogen) converted to nitrogen dioxide</td>
<td>199,55</td>
<td>1 time a year starting from October 6, 2016</td>
<td>Metrologically certified methods of measuring performance</td>
<td>Pipe</td>
</tr>
</tbody>
</table>
3. CHARACTERISTICS OF EXISTING HEAT SUPPLY SYSTEM

The utility company of heating networks MPU "Ternopilmskteplokomunenerho" of the Ternopil city council provides heat supply to about 85% of the housing stock, cultural and social facilities of the city of Ternopil.

The district heating company includes 41 boiler houses, the total heat capacity of which is 615.8 Gcal/h, 45 central heating points (CHP), including those with the preparation of hot water (so-called boiler rooms), 82 individual heating points (IHP), as well as about 151.6 km of main and distribution heat networks (trench length is in two-pipe dimension). As fuel for the production of heat in the district heat supply system of Ternopil city, natural gas is used in 40 boiler houses and wood in 1 boiler house.

During the heating season, the heat supply is provided around the clock. Hot water is supplied 7 days a week according to the approved schedule (on Monday, from 17.00 to 23.00, on Tuesday from 06.00 to 10.00 and from 16.00 to 23.00, on Wednesday from 16.00 to 23.00, on Thursday from 06.00 to 10.00 and from 16:00 to 23:00, on Friday from 16:00 to 23:00, on Saturday from 7:00 to 23:00, on Sunday from 7:00 to 12:00 and from 16:00 to 23:00).

The production and transportation of heat energy by the district heating company is not energy efficient due to:

A high percentage of disconnections, which leads to a decrease in the heat load and inefficient operation of the boiler equipment;

Obsolete equipment base of the heating system;

Absence of automatic control;

Low-temperature schedule of the heating system (95/70 ºC);

Low efficiency of electricity consumption.

In Ternopil city there is a high percentage of disconnections. About 40% of consumers are disconnected from the district heat supply system. In addition, all new multi-apartment buildings that are being built or planned to be built are equipped with autonomous boiler houses or individual heating systems.

In 41 boiler houses of the Company 133 boilers with a total heat capacity of 615.8 Gcal/h are installed. Most of the boiler houses of the enterprise are equipped with boilers with a wide capacity range (from 0.5 to 35 Gcal/hour). The lifetime of 70 boilers is over 20 years. 24 of them with a total heat capacity of 94 Gcal/h function less than 10 years, and their efficiency is less than 90%. 78 boilers with a total heat capacity of 94 Gcal/h are in operation for less than 10 years, and their efficiency is greater than 91%.

District heat supply system structurally consists of 4 heating districts. Each of the districts includes several boiler houses, CHP, heating networks.

The majority of heat energy is produced in boiler houses with the following types of boilers:

PTVM-30,
The following most significant conclusions can be made regarding the sources of heat supply:

Specific consumption of electricity for the production of heat energy is too high.

In most boiler houses mechanical equipment is obsolete and physically demolished.

Electrical equipment of boilers is in satisfactory condition.

Automation of gas supply systems in boiler houses is outdated and needs to be updated.

Pumping equipment in most boiler-houses has significant energy losses.

The water treatment process can be considered satisfactory, despite the fact that the equipment is obsolete and needs to be reconstructed.

The state of most buildings with boiler houses is satisfactory.
4. CHARACTERISTICS OF THE PROJECTED ACTIVITY AND LOCATION FOR WHICH THE PROJECT IS IMPLEMENTED

The long-term program of restoration and modernization includes all necessary measures for the restoration of physically demolished pipelines and the construction of heating networks, increasing the efficiency of the district heating system to meet the current level requirements, and introducing a multi-fuel mode for the production of heat energy.

Long-term strategic plan steps are as follows:

Modernization of heat supply systems with the installation of automated individual heating points (IHP).

Modernization of existing gas boilers.

Restoration of pipelines of heating networks with the use of modern technologies of heating isolation.

Installation of energy-efficient pumping units and the introduction of automatic control of pump performance using frequency converters.

Install the SCADA system.

The long-term program of restoration and modernization includes measures that characterize various values of the economic attractiveness of investments associated with their implementation. The overwhelming majority of projects for the restoration of physically demolished pipelines of heating networks are characterized by long simple payback periods due to investments, therefore, such projects were not included in the long-term investment program.

The components of the investment plan were selected according to the criteria listed below:

High technical feasibility of the component implementation

Investment costs are relatively low

Some of the proposed components are absolutely necessary investments in technical support

Economy can be measured

The implementation time of the components is rather short

The savings effect is felt immediately

The proposed investment program is aimed at modernizing the system, increasing the efficiency of district heating and reducing losses in the distribution of heat.

3.1 IHS installation

This component involves the installation of an individual heating substations system. In general, it is planned to install 432 units.

The system of the district heat supply system "Ternopilmiskteplokomunenerho" structurally consists of 4 heating districts. The new IHS are supplied with heat carrier by boiler houses located at the following addresses:

1. 4, L.Ukrainky str.
2. 9, Prosvity str.
3. 9a, Druzhby str..
4. 12, Zhyvova str..
5. 23, Lemkivska str..

Individual heating substations will be installed during 2018-2019 the investment costs are 5.9 million US dollars.

The installation of an IHS will save on gas, electricity and water through improved system performance. In addition, due to the implementation of the component administrative costs will be reduce and consumer comfort will be increased through more accurate regulation of heat.

3.2 Reconstruction / Modernization of boiler houses

The project envisages the reconstruction of 8 outdated boiler houses.

Brief description of the current state.

1. Boiler house at 3s, Kyivska str.

![Fig. 1 Boiler house at 3s, Kyivska str.](image)

Boiler house at 3s, Kyivska str. is located in the eastern part of the city of Ternopil. The total installed boiler house capacity is 136.5 Gcal / h. There are no other entities on the territory of the boiler house.

The territory of the boiler house (Ternopil city, 3s, Kyivska str.) The utility enterprise of the heating networks "Ternopilmiskteplokomunenerho" borders on:

- from the north - the territory of the Regional Utility Enterprise "Ternopilmiskteplokomunenerho" - 23 m;
- from the east - residential building - 67 m;
- from the south – Kyivska str., residential building - 120 m;
- from the west - the territory of PE "Victoria-M" - 120 m

The boiler house area is large and allows the arrival of large-sized cars without blocking the road.

2. Boiler house at 40, Halytska str.

Fig. 2 Boiler house at 40, Halytska str.

Boiler house at 40, Halytska str. is located in the north-eastern part of the city of Ternopil. The total installed boiler house capacity is 29.6 Gcal/h.

The territory of the boiler house (Ternopil city, 40, Halytska str.) The utility enterprise of the heating networks "Ternopilmiskteplokomunenerho" borders on:
- from the north - residential building, building residential area - 72 m;
- from the east - residential building - 90 m;
- from the south - residential building in 11, Nad Yarom str. - about 50 m;
- from the west - garages - 40 m.
The boiler house area is large and allows the arrival of large-sized cars without blocking the road.


Boiler house at 23, Lemkivska str. is located in the north-eastern part of the city of Ternopil. The total installed boiler house capacity is 60.0 Gcal/h. Around the boiler house there are residential buildings (private and multi-story building), the distance to which is: 60 m - to the east, 125 m to the west, 100 m to the north and 27 m to the south. The boiler house area is large and allows the arrival of large-sized cars without blocking the road.

Boiler house at 4, Bahata str. is located in the southern part of the city of Ternopil. The total installed boiler house capacity is 21,30 Gcal / h. Around the boiler house there are residential buildings, the distance to which is: 10m - to the east, 200m - to the west, 21m - to the north and 10 m to the south. The territory of the boiler house (Ternopil city, 4, Bahata str.) The utility enterprise of heating networks "Ternopil'miskteplokomunenergo" borders on:

A two-way road is laid to the boiler house. When transporting equipment and temporarily blocking of one lane, traffic will not be stopped, but an Traffic Management Plan will be developed for unloading.

5, Boiler house at 16, Franka str.
Boiler house at 16, Franka str. is located in the northern part of the city of Ternopil. The total installed boiler house capacity is 24.90 Gcal/h. Around the boiler house there are residential buildings, the distance to which is: 30m - to the east, 20m - to the west, 25m - to the north and 40 m to the south. A two-way road is laid to the boiler house. When transporting equipment and temporarily blocking of one lane, traffic will not be stopped.

Fig. 6 Boiler house at 12, Zhyvova str.

Boiler house at 12, Zhyvova str. is located in the southern part of the city of Ternopil. The total installed boiler house capacity is 46.20 Gcal/h. Around the boiler house there are residential buildings, the distance to which is: 25m - to the east, 64m - to the west (kindergarten), 12m - to the north and 31m to the south. A two-way road is laid to the boiler house. When transporting equipment and temporarily blocking of one lane, traffic will not be stopped.

7. Boiler house at 9a, Druzhby str.
Fig. 7 Boiler house at 9a, Druzhby str.

Boiler house at 9a, Druzhby str. is located in the western part of the city of Ternopil. The total installed boiler house capacity is 26.0 Gcal/h. Around the boiler house there are residential buildings, the distance to which is: 20m - to the east, 20m - to the west, 15m - to the north and 20m to the south. A two-way road is laid to the boiler house. When transporting equipment and temporarily blocking of one lane, traffic will not be stopped.

8. Boiler house at 9, Prosvity str.
Boiler house at 9, Prosvity str. is located in the western part of the city of Ternopil. The total installed boiler house capacity is 54.80 Gcal/h. Around the boiler house there are residential buildings, the distance to which is: 30m - to the east, 50m - to the west, 40m - to the north and 30m to the south. A two-lane road is laid to the boiler house. When transporting equipment and temporarily blocking of one lane, traffic will not be stopped.

The main advantage of this component is improving the service provision quality, reducing the cost of current and emergency repairs, optimizing tariffs.

**Planned measures for modernization of the boiler houses. Table №8**

<table>
<thead>
<tr>
<th>No.</th>
<th>Facility</th>
<th>List of measures</th>
</tr>
</thead>
</table>
| 1   | Boiler house at 3s, Kyivska str. | - in case of necessity, installation of new smoke pipes (when substantiating one for each boiler);  
- reconstruction of gas boilers PTVM-30 - 2 pcs. with the installation of burners with reduced emissions and automation of cascade control of boilers’ entry into operation;  
- replacement of boiler KVGM-30 for a boiler with efficiency of > 93%, capacity of 19-20 MW, maximum heat carrier temperature of 150, pressure of 16 bar with burner (range of regulation from 30% to 100% of nominal power) with frequency control of fan speed and automation of cascade control of boilers’ entry into operation;  
- installation of systems of automatic control of heat carrier temperature at the output from the boiler house, depending on the |
<table>
<thead>
<tr>
<th>No.</th>
<th>Facility</th>
<th>List of measures</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>temperature of the outside air, the given temperature schedule and time of day;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- installation of a new modern automated system of chemical preparation of boiler water;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- replacement of existing supply pumps for low-power pumps, equipped with shut-off valves, control cabinets and frequency regulators;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- installation of frequency regulators on draft-blow units;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- installation of technical means, cabinets for controlling the dispatching system and visualization with the output of signals regarding the operation of equipment and the occurrence of an accident through GSM communication to the SCADA system;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- to provide the possibility of boiler operation in cascade mode.</td>
</tr>
<tr>
<td>2.</td>
<td>Boiler house at 40, Halytska str.</td>
<td>- in case of necessity, installation of new smoke pipes (when substantiating one for each boiler);</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- replacement of obsolete boilers TVG-8M - 2 pcs.; KVG-7.56-150 - 1 pce. for energy-efficient gas water boilers with efficiency not less than 93% and the maximum heating temperature 110, with pressure of 10 bar;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- installation of modern modular burners on the boilers (range of regulation from 30% to 100% of nominal power) and automation of cascade control of boilers’ entry into operation;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- installation of systems of automatic control of heat carrier temperature at the output from the boiler house, depending on the temperature of the outside air, the given temperature schedule and time of day;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- installation of a new modern automated system of chemical preparation of boiler water;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- replacement of existing supply pumps for low-power pumps, equipped with shut-off valves, control cabinets and frequency regulators;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- installation of technical means, cabinets for controlling the dispatching system and visualization with the output of signals regarding the operation of equipment and the occurrence of an accident through GSM communication to the SCADA system;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- the operation of the boiler house is provided in the automatic mode, without the constant presence of the service personnel.</td>
</tr>
<tr>
<td>3.</td>
<td>Boiler house at 23, Lemkivska str.</td>
<td>- reconstruction of gas boilers KV-GM-20 with the installation of burners with reduced emissions and automation of cascade control of boilers’ entry into operation;</td>
</tr>
</tbody>
</table>
|     |          | - in case of necessity, installation of new smoke pipes (when
<table>
<thead>
<tr>
<th>No.</th>
<th>Facility</th>
<th>List of measures</th>
</tr>
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<tbody>
<tr>
<td></td>
<td></td>
<td>substantiating one for each boiler);</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- installation of systems of automatic control of heat carrier temperature at the output from the boiler house, depending on the temperature of the outside air, the given temperature schedule and time of day;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- installation of a new modern automated system of chemical preparation of boiler water;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- replacement of existing supply pumps for low-power pumps, equipped with shut-off valves, control cabinets and frequency regulators;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- installation of technical means, cabinets for controlling the dispatching system and visualization with the output of signals regarding the operation of equipment and the occurrence of an accident through GSM communication to the SCADA system;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- to provide the possibility of boiler operation in cascade mode.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- the operation of the boiler house is provided in the automatic mode, without the constant presence of the service personnel.</td>
</tr>
<tr>
<td>4.</td>
<td>Boiler house at 12, Zhyvova str.</td>
<td>in case of necessity, installation of new smoke pipes (when substantiating one for each boiler);</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- replacement of obsolete boilers TVG-8M - 4 pcs. for energy-efficient gas water boilers with efficiency not less than 93% and the maximum heating temperature 110, with pressure of 10 bar;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- installation of modern modular burners on the boilers (range of regulation from 30% to 100% of nominal power) and automation of cascade control of boilers' entry into operation;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- installation of systems of automatic control of heat carrier temperature at the output from the boiler house, depending on the temperature of the outside air, the given temperature schedule and time of day;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- installation of a new modern automated system of chemical preparation of boiler water;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- replacement of existing supply pumps for low-power pumps, equipped with shut-off valves, control cabinets and frequency regulators;</td>
</tr>
<tr>
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<td>- installation of technical means, cabinets for controlling the dispatching system and visualization with the output of signals regarding the operation of equipment and the occurrence of an accident through GSM communication to the SCADA system;</td>
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<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>- the operation of the boiler house is provided in the automatic mode,</td>
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<tr>
<td>No.</td>
<td>Facility</td>
<td>List of measures</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>without the constant presence of the service personnel.</td>
</tr>
<tr>
<td>5.</td>
<td>Boiler house at 16, I.Franka str.</td>
<td>- in case of necessity, installation of new smoke stack (when substantiating one for each boiler);</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- replacement of obsolete boilers TVG-8M - 3 pcs. for energy-efficient gas water boilers with efficiency not less than 93% and the maximum heating temperature 110, with pressure of 10 bar;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- installation of modern modular burners on the boilers (range of regulation from 30% to 100% of nominal power) and automation of cascade control of boilers' entry into operation;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- installation of systems of automatic control of heat carrier temperature at the output from the boiler house, depending on the temperature of the outside air, the given temperature schedule and time of day;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- installation of a new modern automated system of chemical preparation of boiler water;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- replacement of existing supply pumps for low-power pumps, equipped with shut-off valves, control cabinets and frequency regulators;</td>
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<td>- installation of technical means, cabinets for controlling the dispatching system and visualization with the output of signals regarding the operation of equipment and the occurrence of an accident through GSM communication to the SCADA system;</td>
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<td></td>
<td>- to provide the possibility of boiler operation in cascade mode.</td>
</tr>
<tr>
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<td></td>
<td>- the operation of the boiler house is provided in the automatic mode, without the constant presence of the service personnel.</td>
</tr>
<tr>
<td>6.</td>
<td>Boiler house at 4, Bahata str.</td>
<td>- in case of necessity, installation of new smoke pipes (when substantiating one for each boiler);</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- replacement of obsolete boilers KVG-7,56-150 - 2 pcs., TVG-8M – 1pc. for energy-efficient gas water boilers with efficiency not less than 93% and the maximum heating temperature 110, with pressure of 10 bar;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- installation of modern modular burners on the boilers (range of regulation from 30% to 100% of nominal power) and automation of cascade control of boilers' entry into operation;</td>
</tr>
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<td></td>
<td>- installation of systems of automatic control of heat carrier temperature at the output from the boiler house, depending on the temperature of the outside air, the given temperature schedule and time of day;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- installation of a new modern automated system of chemical preparation of boiler water;</td>
</tr>
<tr>
<td>No.</td>
<td>Facility</td>
<td>List of measures</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>- replacement of existing supply pumps for low-power pumps, equipped with shut-off valves, control cabinets and frequency regulators;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- installation of technical means, cabinets for controlling the dispatching system and visualization with the output of signals regarding the operation of equipment and the occurrence of an accident through GSM communication to the SCADA system;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- to provide the possibility of boiler operation in cascade mode;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- the operation of the boiler house is provided in the automatic mode, without the constant presence of the service personnel.</td>
</tr>
<tr>
<td>7.</td>
<td>Boiler house at 9a, Druzhby str.</td>
<td>- in case of necessity, installation of new smoke pipes (when substantiating one for each boiler);</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- replacement of obsolete boilers KVG-7,56-150 - 4 pcs. for energy-efficient gas water boilers with efficiency not less than 93% and the maximum heating temperature 110, with pressure of 10 bar;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- installation of modern modular burners on the boilers (range of regulation from 30% to 100% of nominal power) and automation of cascade control of boilers' entry into operation;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- installation of systems of automatic control of heat carrier temperature at the output from the boiler house, depending on the temperature of the outside air, the given temperature schedule and time of day;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- installation of a new modern automated system of chemical preparation of boiler water;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- replacement of existing supply pumps for low-power pumps, equipped with shut-off valves, control cabinets and frequency regulators;</td>
</tr>
<tr>
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<td></td>
<td>- installation of technical means, cabinets for controlling the dispatching system and visualization with the output of signals regarding the operation of equipment and the occurrence of an accident through GSM communication to the SCADA system;</td>
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<td></td>
<td></td>
<td>- to provide the possibility of boiler operation in cascade mode;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- the operation of the boiler house is provided in the automatic mode, without the constant presence of the service personnel.</td>
</tr>
<tr>
<td>8.</td>
<td>Boiler house at 9, Prosvity str.</td>
<td>- in case of necessity, installation of new smoke pipes (when substantiating one for each boiler);</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- reconstruction of gas boilers KV-GM-20 with the installation of burners with reduced emissions;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- replacement of an obsolete boiler TVG-8 for an energy-efficient gas water boilers with efficiency not less than 93% and the maximum heating temperature 110, with pressure of 10 bar;</td>
</tr>
<tr>
<td>No.</td>
<td>Facility</td>
<td>List of measures</td>
</tr>
<tr>
<td>-----</td>
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<td>-----------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>temperature 110, with pressure of 10 bar;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- installation of modern modular burners on the boilers (range of regulation from 30% to 100% of nominal power) and automation of cascade control of boilers’ entry into operation;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- installation of systems of automatic control of heat carrier temperature at the output from the boiler house, depending on the temperature of the outside air, the given temperature schedule and time of day;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- installation of a new modern automated system of chemical preparation of boiler water;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- replacement of existing supply pumps for low-power pumps, equipped with shut-off valves, control cabinets and frequency regulators;</td>
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<td>- installation of technical means, cabinets for controlling the dispatching system and visualization with the output of signals regarding the operation of equipment and the occurrence of an accident through GSM communication to the SCADA system;</td>
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<td>- to provide the possibility of boiler operation in cascade mode;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- the operation of the boiler house is provided in the automatic mode, without the constant presence of the service personnel.</td>
</tr>
</tbody>
</table>

### 3.3 Installation of main heat pump and frequency converters in boiler houses

This component involves replacing network pumps and installing frequency converters in boiler houses. In total, it is expected to install 40 units. Installation of the main heat pump and frequency converters in boiler houses at 4, Bahata str., 16, I. Franka str., 12, Prosvity str., 12, Zhyvova str., 9a, Druzhby str.

The advantage of the component is reducing the cost of electricity by improving the efficiency of the equipment.

### 3.4 Reconstruction of heat supply networks

This component involves the reconstruction of the district heat supply pipelines network. In total, 2.8 km of obsolete pipes will be replaced.

Characteristics of sections of the heating networks on which reconstruction is planned.

<table>
<thead>
<tr>
<th>No.</th>
<th>Name of site, object, address</th>
<th>Name of district</th>
<th>New / Existing</th>
<th>Length of heating network in two-pipe, m</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>The site of the heating network from the boiler house at 3s, Soniachnyi</td>
<td>Existing</td>
<td>110</td>
<td></td>
</tr>
<tr>
<td>Number</td>
<td>Description</td>
<td>Network Type</td>
<td>Status</td>
<td>Code</td>
</tr>
<tr>
<td>--------</td>
<td>------------------------------------------------------------------------------</td>
<td>--------------</td>
<td>-----------</td>
<td>-------</td>
</tr>
<tr>
<td>2.</td>
<td>The site of the heating network from the boiler house at 3s, Kyivska str. from HC 21 to HC 74a to 15th Kvitnia str.</td>
<td>Soniachnyi HD-1</td>
<td>Existing</td>
<td>455</td>
</tr>
<tr>
<td>3.</td>
<td>The site of the heating network from the boiler house at 3s, Kyivska str. from HC 17 to HC 30</td>
<td>Soniachnyi HD -1</td>
<td>Existing</td>
<td>261</td>
</tr>
<tr>
<td>4.</td>
<td>The site of the heating network from the boiler house at 3s, Kyivska str. from HC 74a to HC 133 and from HC 73 to HC 151</td>
<td>Soniachnyi HD -1</td>
<td>Existing</td>
<td>443</td>
</tr>
<tr>
<td>5.</td>
<td>The site of the heating network from the boiler house at 40, Halytska str. from HC 11 to HC 17</td>
<td>Soniachnyi HD -1</td>
<td>Existing</td>
<td>303</td>
</tr>
<tr>
<td>6.</td>
<td>The site of the heating network from the boiler house at 3a, Kurbasa str. from UT 72 to UT 53A</td>
<td>Soniachnyi HD -1</td>
<td>Existing</td>
<td>334</td>
</tr>
<tr>
<td>7.</td>
<td>The site of the heating network from the boiler house at 23, Lemkivska str. from HC 1 to HC 2</td>
<td>Skhidnyi HD -2</td>
<td>Existing</td>
<td>34</td>
</tr>
<tr>
<td>8.</td>
<td>The site of the heating network from the boiler house at 46b, Bryhadna str. from HC 2 to UT 1</td>
<td>Kutkivtsi HD -4</td>
<td>Existing</td>
<td>102</td>
</tr>
<tr>
<td>9.</td>
<td>The site of the heating network from the boiler house at 9, Prosvity str. from HC 1 to HC 14</td>
<td>Druzhba HD -4</td>
<td>Existing</td>
<td>585</td>
</tr>
<tr>
<td>10.</td>
<td>The site of the heating network from the boiler house at 9a, Druzhby str. from the boiler house to HC 4</td>
<td>Druzhba HD -4</td>
<td>Existing</td>
<td>225</td>
</tr>
</tbody>
</table>
Description of land plots

The reconstruction of heating networks will be carried out in existing channels of heating networks.

1. The site of the heating network from the boiler house at 3s, Kyivska str. from HC 13 to HC 17

Scheme 1. The site of the heating network from the boiler house at 3s, Kyivska str. from HC 13 to HC 17 Note: A black section is selected for replacement

The land plot is located in Kyivska str., near the territory of a residential building # 12 and shopping malls. There is also a cafe with a summer terrace, which will be dismantled.

The owners of the summer terrace have been consulted on the Project implementation/ signed an agreement No. 22 / 11-3 / 1 dated 22.11.2018 on the joint use of the land. Appendix № 1).

On the territory of the site there are 3 trees and shrubs that will be cut down before the work is started. After the work is complete, the green plantations will be restored/ re-planted.

2. The site of the heating network from the boiler house in 3s, Kyivska str. from HC 21 to HC 74a to 15th Kvitnia str.
Scheme 2. The site of the heating network from the boiler house in 3s, Kyivska str. from HC 21 to HC 74a to 15th Kvitnia str. Note: A black section is selected for replacement

The land plot is located on a green area from the Kyivska str. to 15th Kvitnia str. and passes through the parking lot of the “Silpo” supermarket. The heating system area passes along the residential building (18, Kyivska str.), where there are offices, shops, and salons on the ground floor.

Photo 2. Residential building at 18, Kyivska str.
Also, work will be carried out next to the children polyclinic (12, Kyivska str.), trade booths, catering facilities (Cafe “Hermes”), which will be notified in advance of the start of works. Passages will be established to provide access to institutions.

Photo 3. The passage between the children polyclinic and the trade booths

There are 19 trees and shrubbery on the territory of the plot, which will be cut down before the work is started. After the work is complete, the green plantations will be restored.

3. The site of the heating network from the boiler house at 3s, Kyivska str. from HC 17 to HC 30

Scheme 3. The site of the heating network from the boiler house at 3s, Kyivska str. from HC 17 to HC 30. Note: A black section is selected for replacement
The land plot starts from the yard of the residential building in 12, Kyivska str., passes through a children playground, which will be moved from the place of construction (the new location of the playground will be pre-agreed with the community during carrying out of reconstruction), and ends on the territory of the lyceum (the former kindergarten). When carrying out work on the replacement of the network, measures will be taken to fence the construction site, like following:

- prior to beginning of works, fencing the site of work performance with continuous guarding protective shields having height of 1.2 m and installation of warning signs;
- organization of safe routes for walking through and along open trenches, where such walking routes are necessary for further use and provision of access to highways, roads, public transport stops, streets and adjacent territories;
- installation of foot bridges with handrails for pedestrians (having width not less than 0.75 m with handrail height of 1.0 m) in the places of land excavation;

There are 11 trees and shrubbery on the territory of the site, which will be cut down before the work is started. After the work is complete, the green plantations will be restored.

Photo 4. The site of the heating network, which passes through the yard of residential buildings
1. The site of the heating network from the boiler house in 3s, Kyivska str. from HC 74a to HC 133 and from HC 73 to HC 151.

*Scheme 4.1* The site of the heating network from the boiler house at 3s, Kyivska str. from HC 74a to HC 133. *Note: A black section is selected for replacement*
The site of the heating network from the boiler house at 3s, Kyivska str. from HC 74a to HC 133 and from HC 73 to HC 151.

Note: A black section is selected for replacement.

The land plot begins from a green zone near the church of St. Arch. Michael, then passes across the road (there will be no blocking of traffic, because the tube will be laid in an existing protective case) to the yard of a multi apartment building in 4, 15th Kvitnia str. Children playground is nearby. When carrying out repair works, measures will be taken to fence the construction site.

There are 5 trees and shrubbery on the territory of the site, which will be cut down before the work is started. After the work is complete, the green plantations will be restored.

2. The site of the heating network from the boiler house in 40, Halytska str. from HC 11 to HC 17
Scheme 5 The site of the heating network from the boiler house at 40, Halytska str. from HC 11 to HC 17. Note: A black section is selected for replacement

The land plot starts from HC 11 in the green zone near a multi apartment building in 39 and 41, Halytska str, farther on the territory of the filling station, then across the road to HC 17 (there will be no blocking of traffic, as the pipe will be laid in the existing protective case).

There are 3 trees on the territory of the area (including the maples that are part of the alley) and shrubbery that will be cut down before the work is started. After the work is complete, the green plantations will be restored taking into account the “green ensemble”

3. The site of the heating network from the boiler house in 3a, Kurbasa str. from PA 72 to PA 53A
Scheme 6. The site of the heating network from the boiler house in 3a, Kurbasa str. from UT 72 to UT 53A. Note: A black section is selected for replacement.

The land plot starts from HC-UT 72 along the road through the green zone, the road-arrival to the yard in 2, V.Velykoho, farther through the parking lot of the supermarket, then crosses the road in Kurbasa str. to HC-UT 53 (there will be no blocking of traffic, because the pipe will be laid in the existing protective case).

There are 8 trees and shrubbery on the territory of the area that will be cut down before the work is started. After the work is complete, the green plantations will be restored.

4. The site of the heating network from the boiler house in 23, Lemkivska str. from HC 1 to HC 22
Scheme 7. The site of the heating network from the boiler house at 23, Lemkivska str. from HC 1 to HC 2. Note: A black section is selected for replacement

The land plot is located on the territory of the boiler house in 23, Lemkivska str. The plot does not border on any buildings except the building of the boiler house itself.

There are no trees, flower beds on the selected plot.

5. The site of the heating network from the boiler house at 46b, Bryhadna str. from HC 2 to UT1

Scheme 8 The site of the heating network from the boiler house at 46b, Bryhadna str. from HC 2 to UT 1 Note: A black section is selected for replacement

The land starts from the territory of the boiler house at 46b, Bryhadna str. and passes through the green zone on the territory of the abandoned country houses. Any temporary economic resettlement or displacement is not required.

There are no trees, flower beds on the selected plot.
6. The site of the heating network from the boiler house in 9, Prosvity str. from HC 1 to HC 14

![Scheme 9 The site of the heating network from the boiler house at 9, Prosvity str. from HC 1 to HC 14 Note: A black section is selected for replacement](image)

The land plot starts from HC 1, which is located on the territory of the boiler house in Prosvity str., passes through the footpath along the green zone at the territory of TNPU named after I. Hnatiuk to the hostel of the TNPU, then through the green zone to a playground, parking lot near a residential building in 2a, Prosvity str. to the warehouse of the “Silpo” supermarket (the dismantling is not required, the works may be conducted by pipes-ramming method). There is also a cafe with a summer terrace, which will be dismantled (The owners of the summer terrace signed an agreement No. 23 / 10-3 / I dated 23.10.2018 on the joint use of the land. Appendix № 1). It passes farther through the summer terrace of the catering establishment (the outbuilding is illegally placed, and for the period of...
the replacement of the heating network it is to be dismantled) and goes to HC 14 near the kindergarten.

When carrying out repair works, measures will be taken to fence the construction site.

There are 10 trees and shrubbery on the territory of the area that will be cut down before the work is started. After the work is complete, the green plantations will be restored.

7. The site of the heating network from the boiler house at 9a, Druzhby str. from the boiler house to HC 4

![Scheme 10. The site of the heating network from the boiler house at 9a, Druzhby str. from the boiler house to HC 4 Note: A black section is selected for replacement](image)

The land plot starts begins from a boiler house at 9a, Druzhby str. in the green zone and passes through the basement of a multi apartment building in 3a, Myru str. Then it crosses the yard road. Nearby there is a children playground, so, when carrying out repair works, measures will be taken to fence the
construction site. Also, the site of the heating system passes through the green zone and again crosses the road in Myru str. and ends in the yard of residential buildings in 4, Myru str. and 3, Myru str.

There are 6 trees and shrubbery on the territory of the area that will be cut down before the work is started. After the work is complete, the green plantations will be restored.

The main advantages of the component are provided by reducing the consumption of gas, electricity and water by reducing losses and energy efficiency enhancing.

3.5 **Installation of the SCADA system at boiler houses and IHP**

This component involves the automation of new boiler houses and IHP with the installation of the SCADA system.

The benefits of the component are provided through effective control, collection and storage of information, recording of events related to the technological process, the immediate notification of emergencies, etc.

3.6 **The installation of cogeneration units**

This component involves the installation of gas cogeneration units with an electrical capacity of 1 MW and 0.6 MW, respectively. The cogeneration units will be installed in boiler houses at 3s, Kyivska str. and in 23, Lemkivska street.

Taking into account the specificity of the operation of cogeneration stations and proximity of boiler houses to residential buildings, the EIA section will be developed taking into consideration cumulative impact from all components for these objects, as modernization and networks reconstraison, a statement of intentions and consequences of the project activity will be posted in the media, public discussions on this issue will be conducted in accordance with the requirements of the current legislation.

The mini CHPP (cogeneration units) are intended for parallel operation with electric networks (power grid "Ternopiloblenerho") and maintenance of own needs of boiler houses in electric power. Parallel operation of generators with the grid (without extraction) will be implemented together with the transformer substation.

The main and auxiliary equipment of each mini CHPP will have a modular performance in the form of functionally interconnected power units.

The main advantages of the component are provided by reducing the cost of electricity through its own electricity generation. However, new electricity production will increase fuel costs and maintenance.
4. CHARACTERISTICS OF PROJECTED ACTIVITY IMPACTS ON ENVIRONMENT AND SOCIAL SPHERE

4.1 Environmental impact

The main objective of the implementation of this Project is to increase the efficiency of heat energy consumption. The elements of this Project, namely modernization of boiler houses by installing new boilers, providing boilers with modern control systems, reconstruction of heating networks and heat pipelines, improving heating insulation of heat pipelines and equipping heat distribution systems with individual heating points, will contribute to fuel economy. Accordingly, emissions of $\text{CO}_2$ and pollutants in the atmosphere will be reduced. It is also expected to improve the quality and reliability of services, thus, this Project will contribute to raising the level of social well-being of Ternopil city.

The Project envisages the reconstruction of boiler houses, heating networks, equipment modernization and the installation of new IHPs, and the rest. It is important to provide for measures to minimize any significant environmental impacts.

The following can be attributed to the negative impacts of the project during the implementation of the project activity:

1. Impact on the atmospheric air.

Due to the use of machinery and equipment on the construction sites, temporary air pollution in the area is expected. In addition, the intensification of traffic, as well as its forced slowdown near the construction and dismantling sites located on the roads, will (to a certain extent) affect the increase in air pollution. At the same time, the increase in the volume of air pollution will be temporary, and the level of pollution will not exceed the established standards. The main pollutants of air are dust, NOx and CO. The negative impact on the quality of atmospheric air will be observed mainly in the immediate vicinity of the construction and dismantling areas, as well as along the roads leading to these areas.

The main sources of air pollution during the execution of works are:

- exhaust fumes from the work of construction equipment, vehicles and other mechanisms,
- processes of dust formation and suspended matter when pouring bulk materials;
- emission of pollutants in paintwork;
- emission of pollutants into the atmosphere during welding operations.

Point sources
Point sources are discrete, stationary, identified emission sources that emit pollutants into the atmosphere. They are usually located at processing or manufacturing enterprises. Within a given point source, there may be several individual "emission points" that contain an exact source.

Point sources are characterized by the emission of air pollutants, which are usually associated with the combustion of fossil fuels, such as nitrogen oxides (NOx), sulfur dioxide (SO2), carbon monoxide (CO) and particulates (PM), as well as other air pollutants, including certain volatile organic compounds (VOCs) and metals that may also be associated with a wide range of industrial activities.

It is necessary to avoid emissions from point sources and to control them accordingly to the best international industry practice (good international industry practice (GIIP)) applicable to the relevant industry sector, depending on environmental conditions, through the combined application of process changes and emission control.

**Fugitive sources**

Emissions into the atmosphere that do not depend on the source of air are emissions that are distributed in a wide area, rather than limited to a specific point of dumping. They come from operations where the exhaust fumes are not captured and not transmitted through the exhaust pipe. Unorganized emissions have the potential for much more impact on land than stationary emissions, since they are emitted and scattered near the ground. The two main types of fugitive emissions are Volatile Organic Compounds (VOCs) and Particulate Matter (PM). Other pollutants (NOx, SO2 and CO) are mainly related to the combustion processes, therefore the emissions described should determine the need for environmental quality assessment and monitoring practices.

Open burning of solid waste, both hazardous and nonhazardous, is not considered to be a good practice and should be avoided since the generation of pollutant emissions from this type of source cannot be effectively controlled.

Welding works will be carried out at all directions of the Project. Emissions from welding works, exhaust fumes from construction machinery, vehicles and paintwork will be negligible and temporary and will not affect the surface layer of the atmosphere.

During the construction of cogeneration stations and the conversion of pipelines of heating networks, excavation will be carried out, which will lead to a dusting process that will have a negative impact on people living nearby.

In the process of operation of cogeneration stations, carbon monoxide, nitrogen dioxide, mercury and gases of the greenhouse effect (methane, carbon dioxide and diazotide oxide) will be emitted into the atmosphere, which are generated by combustion of natural gas in heat-generating modules.

**Mobile sources - ground-based**

Like in other combustion processes, emissions from vehicles include CO, NOx, SO2, PM and VOCs. Emissions from road and off-road vehicles must comply with national or regional standards. In the absence of these conditions, the following approach should be considered:

• Regardless of the size or type of vehicle, owners / drivers of the vehicle must implement the engine maintenance programs recommended by the manufacturer;
• Drivers should receive guidance on the benefits of driving, which reduces both the risk of accidents and fuel consumption, including measuring acceleration and driving at safe speeds.

**Particulate matter** The most common pollutant involved in fugitive emissions is dust or particulate matter (PM). Which are allocated during some operations, such as transportation and open storage of solid materials, as well as from open surfaces of soil, including ground roads. Recommended prevention and control of these sources of emissions include:

• Use of dust prevention methods such as covers, water spraying or moisturizing when storing open materials, or controls including air extraction and purification through a bag dust collector or cyclone for material sources such as conveyors and containers;

• Use of water spraying to control bulk materials on asphalt or ground road surfaces. Oil and petroleum products are not the recommended way to control road dust. Examples of additional road surface control parameters include the ones in the table below.

<table>
<thead>
<tr>
<th>Type of control</th>
<th>Type of control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moisture suppression - Irrigation</td>
<td>12% - 98%</td>
</tr>
<tr>
<td>Speed reduction</td>
<td>0% - 80%</td>
</tr>
<tr>
<td>Vacuum blurring</td>
<td>0% - 58%</td>
</tr>
<tr>
<td>Rinse with water / microjet washer blurring</td>
<td>0% - 96%</td>
</tr>
</tbody>
</table>

**Ozone Depleting Substances (ODS)**

Several chemical substances are classified as ozone depleting substances (ODS) and are expected to be phased out in accordance with the Montreal Protocol on Substances that Deplete the Ozone Layer. It is not necessary to establish new systems or processes using chlorofluorocarbons (CFCs), halons, 1,1,1-trichloroethane, carbon tetrachloride, methyl bromide or hydrobromofluorocarbons (PBFCs) hydrochlorofluorocarbons (HCFCs) should only be considered as intermediate / transitional alternatives, determined by the obligations and rules of the host country. (Examples include: chlorofluorocarbons (CFCs), halons, 1,1,1-trichloroethane (methyl chloroform), carbon tetrachloride, hydrochlorofluorocarbons (HCFCs), hydrobromofluorocarbons (HCFCs) and methyl bromide. Currently they are used for various purposes, including: household, commercial and technological refrigeration units (CFCs and HCFCs); internal, commercial and motor air-conditioning (CFCs and HCFCs); for the production of foam products (CFCs); for use in solvent cleaning (CFCs, HCFCs, methyl chloros and carbon tetrachlorides); like aerosol fuels (CFCs), in fire extinguishing systems (halonium hydrofluorocarbons)).

**Monitoring**

The air quality monitoring program will be consider the following elements:

• Parameters of monitoring:
For combustion processes, the parameters of the indicators usually include the quality of the input data.

- Baseline scenario calculations: Before developing a project, a baseline monitoring of ambient air quality in and around the area will be undertaken to assess the background level of the main pollutants in order to distinguish between the existing environmental conditions and the impact of the project.
- Type and frequency of monitoring: Emission data and ambient air quality generated by the monitoring program will reflect the emissions that are emitted during the project in time.

Examples of time-dependent options in the production process, which include periodic production processes and variations in seasonal processes. Emissions from highly variable processes may need to be selected more often or by composite methods. The frequency and duration of emission monitoring may also vary from continuous to some operation parameters, some combustion processes or materials (e.g. fuel quality) to a less frequent, monthly, quarterly or annual test.

- Observation sites: monitoring of the quality of the air can consist of monitoring outside the site or fence by the sponsor of the project, or by a competent government body or joint work between them. The location of the air quality monitoring stations will be established on the basis of the results of scientific methods and mathematical models for assessing the potential impact on the terrain, taking the air stream from the source, considering such aspects as the location of the potentially affected communities and the prevailing wind directions.
- Selection and analysis methods: monitoring programs will use national or international sampling and analysis methods, such as publications by the International Organization for Standardization, 26 European Standardization Standards, 27 or the United States Environmental Protection Agency.
- Agency.28 Sampling will be carried out under the guidance of trained persons. The analysis will be carried out by entities that are allowed or certified for this purpose.
- Sampling and quality assurance / quality control (QA/QC) analysis have to be applied and documented to ensure that the quality of the data is sufficient to use the planned data (for example, the limits of detection of the method below anxiety level). Monitoring reports have to include documentation on quality assurance and quality control.

2. Impact of noise.

The main sources of noise from construction and dismantling work are the movement of vehicles, the use of construction equipment directly at the construction site (dump trucks, excavators, cranes, bulldozers, motor graders, etc.), material handling, installation of new equipment, laying of pipelines.

Noise can negatively affect workers in cases where they do not use appropriate personal protective equipment and thus cause the risk of occupational disease. Also, noise can create discomfort for people who live and work near construction sites and dismantling. For this, it is necessary to provide noise protection screens in the field of work.

Methods of prevention and control of sources of noise emissions depend on the source and proximity of receptors. Proposed noise reduction options include:

- Select equipment with lower sound power.
- Installing silencers for fans.
• Installing the appropriate mufflers on the exhaust fumes of the engine and components of the compressor.
  • Installation of acoustic enclosures on the equipment housing that emit noise.
  • Improvement of acoustic characteristics of built buildings, application of sound insulation.
  • Installation of acoustic barriers without gaps with a constant minimum surface density of 10 kg/m² to minimize sound transmission through them.
  • Installation of vibration isolation for mechanical equipment.
  • Restrictions on the length of operation of certain parts of equipment or operations, especially mobile sources operating in areas of residence.
  • Reinstall noise sources in less sensitive areas to maximize distance and shielding.
  • Using natural topography as a noise buffer when designing an object.
  • Reduce the transport flow of the project through areas where it is possible.

When working on the PROJECT, the impact of noise will be short-lived and insignificant.

3. Impact on water quality, water resources and water regime (surface and groundwater) and soils.

Technological processes, connected with constant direct impact on the water environment, are absent.

But the discharge of sewage into the wastewater treatment system is an indirect impact. Discharge of industrial waste water, sanitary waste water, waste water from municipal services or storm drain for public or private waste water treatment systems should:

Adhere to the requirements for preliminary processing and monitoring of the wastewater system in which it is discharged:
  • Do not interfere directly or indirectly with the operation and maintenance of collection and cleaning systems or create a risk to the health and safety of workers, or negatively affect the characteristics of residues from wastewater treatment.
  • Waste in municipal or centralized sewage treatment systems that have sufficient capacity to meet local regulatory requirements for the treatment of wastewater generated as a result of the project. Preliminary treatment of sewage is required prior to discharge from the project site if the municipal or centralized system receiving waste water from the project does not have sufficient capacity to ensure compliance with the requirements of the legislation.

Surface and groundwater may be contaminated by accidental spillages and fuel leaks from machinery and equipment during the project implementation period, as well as by surface runoff from temporary construction sites containing suspended matter, organic substances and petroleum products.

The impact on ground water is only possible in the case of an accident at the pipeline during operation, when the water flows to the groundwater level and causes an increase in the level and, as a result, flooding of the land.

In order to avoid such exposure, measures are provided to prevent contamination of surface and groundwater during construction and operation.

Soil, groundwater and surface water may be contaminated by accidental spillages and leaks of oils and fuels during their temporary storage, as well as when washing the vehicle on the construction site, as well as from leakage of fuel from machinery and equipment.

4. Handling waste.
In cases when construction and dismantling waste is not maintained properly in production sites, it can lead to soil, groundwater and surface water contamination. Incorrect storage of waste can also result in injury to workers, persons visiting industrial sites, and passers-by, in addition, can damage vehicles.

The following means are used to produce and store waste:

- Establishment of waste management priorities at the beginning of activities based on an understanding of potential risks and impacts on the environment, health and safety (EHS) and consideration of issues related to the generating of waste and its consequences.
- Creating a waste management hierarchy that includes preventing, reducing, reusing, restoring, recycling, moving and, finally, waste disposal.
- Avoiding or minimizing waste production, as far as practicable
- To recover and recycle waste when it is impossible to avoid waste generating, but it has been minimized.

To process, destroy and dispose waste in an environmentally safe way if it cannot be restored or reused.

During the dismantling of old equipment, various types of waste will be formed, the improper storage of which may lead to soil and groundwater contamination, as well as injuries to workers, persons visiting industrial sites and passers-by.

**A general list of waste types that can be generated during the Project implementation**

Table № 11

<table>
<thead>
<tr>
<th>Waste</th>
<th>Class of hazardous waste</th>
<th>Temporary storage conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spent fluorescent lamps</td>
<td>1</td>
<td>Placing in the packaging of the manufacturer, storage in the warehouse</td>
</tr>
<tr>
<td>Oils and lubricating-oil, transmission worked out</td>
<td>2</td>
<td>Store in sealed barrels (for example, in the manufacturer's container) with the appropriate marking</td>
</tr>
<tr>
<td>Oiled waste (rags, sand, soil, gaskets contaminated with oil products, seals)</td>
<td>3</td>
<td>Use closed container</td>
</tr>
<tr>
<td>Tank after paint</td>
<td>3</td>
<td>Use the container</td>
</tr>
<tr>
<td>Spent incandescent lamps</td>
<td>3</td>
<td>Use closed container</td>
</tr>
<tr>
<td>Ferrous metal scrap</td>
<td>3</td>
<td>In a specially designated place with asphalt covering</td>
</tr>
<tr>
<td>Waste PVC cable insulation</td>
<td>3</td>
<td>Store in a container</td>
</tr>
<tr>
<td>Material</td>
<td>Code</td>
<td>Storage Details</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>------</td>
<td>----------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Non-ferrous metal scrap</td>
<td>3</td>
<td>Store in a container</td>
</tr>
<tr>
<td>Fiberglass waste</td>
<td>3</td>
<td>Store in a container</td>
</tr>
<tr>
<td>Waste rubberoid</td>
<td>3</td>
<td>Store in a container</td>
</tr>
<tr>
<td>Asbestos or asbestos-containing materials</td>
<td>4</td>
<td>Store in a plastic container or in strong plastic disposable bags labelled</td>
</tr>
<tr>
<td>(Materials and products of construction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>containing asbestos are spoiled)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Refractory scrap</td>
<td>4</td>
<td>In a specially designated place with asphalt covering</td>
</tr>
<tr>
<td>Construction waste</td>
<td>4</td>
<td>In a specially designated place with asphalt/concrete covering</td>
</tr>
<tr>
<td>Waste plastic packaging</td>
<td>4</td>
<td>Store in a container</td>
</tr>
<tr>
<td>Waste communal mixed</td>
<td>4</td>
<td>Store in a closed container</td>
</tr>
<tr>
<td>Cardboard used, spoiled</td>
<td>4</td>
<td>Store in a closed container</td>
</tr>
<tr>
<td>Waste wood</td>
<td>4</td>
<td>Store in a closed container</td>
</tr>
<tr>
<td>Cullet</td>
<td>4</td>
<td>Store in a container</td>
</tr>
<tr>
<td>Waste received during the cleaning process</td>
<td>4</td>
<td>Store in a container</td>
</tr>
</tbody>
</table>

The revised list and quantitative indicators will be specified in each individual subproject in the project documentation.
Waste storage

Hazardous waste is stored in such a way as to prevent or control accidental emissions into the air, soil and water in an area where:

- The waste shall be stored in such a way as to prevent the connection or contact between the incompatible waste and to allow inspection between the containers for leakage monitoring and spill monitoring. For example: Sufficient space between incompatible properties or physical separation, such as walls or protective walls
- Store in containers protected from direct sunlight, wind and rain.
- Secondary containment systems must be constructed of materials that are suitable for waste storage and acceptable to prevent harm to the environment.
- Systems of secondary containment are included at a time when liquid waste is stored in volumes over 220 liters. The available secondary defender volume should be at least 110 percent of the largest storage container or 25 percent of the total capacity (whichever is greater) in that particular location
- Ensure adequate ventilation when volatile waste is stored.

Hazardous waste management measures are also subject to special management actions carried out by staff who have received special training in the handling and storage of hazardous waste:

- Providing readily accessible information for workers on chemical compatibility, including labelling of each container to determine its content.
- Restrictions on access to hazardous waste storage facilities to workers who have received appropriate training
- Clearly identify (designate) and demarcate the area, including documentation about its location on the object map or site plan
- Carrying out periodic inspections of waste storage areas and documenting the results;
- Preparation and implementation of emergency and accident prevention plans to eliminate accidental release of waste (additional information on emergency plans provided for in section 3 of this document);
- Avoid the use of underground tanks and underground pipelines for hazardous waste.

Monitoring

Monitoring activities related to the management of hazardous and safe waste includes the following:

1. Regular visual inspection of all collection and storage sites for confirmation of accidental emissions and verification of the correct labelling and waste storage. When significant quantities of hazardous waste are generated and stored locally, monitoring activities should include:
   - Inspections on leaks, droplets or other signs of loss
• Detection of cracks, corrosion or damage to tanks, protective equipment, floor contamination or monitoring stations (air, soil or water vapor)
• Documenting any changes in the repository and any significant quantitative changes in the materials in stock

2. Regular inspections of insulation and waste collection

3. Tracking trends in the generating of waste by type and amount of waste generated by objects

4. Characteristics of waste at the beginning of the formation of a new waste stream and periodic documentation of the characteristics and proper management of waste, especially with hazardous waste

5. Storage of a declaration or other documents that document the amount of waste and its destination

6. A third-party (contractors/subcontractors) periodic audit and disposal services, including reuse and recycling facilities, when third parties manage a significant amount of hazardous waste. Wherever possible, audits should include visits to the place of waste storage and disposal

7. Regular monitoring of groundwater quality in cases of storage and / or pre-treatment and disposal of hazardous waste

8. The protocols for the monitoring of hazardous waste collected, stored, stored or disposed of must include:
   - Name and identification number of material (materials) that constitute hazardous waste
   - Physical state (i.e. solid, liquid, gas, or combination of one or more of them)
   - Quantity (e.g., kilograms or litres, number of containers);

9. Tracking documentation for waste shipment, which includes the number and type, date of departure, date of transport and date of receipt, record of the sender, consignee and transporter

10. Method and date of storage, repacking, handling or utilization at the facility, interspersed with the specific numbers of documents of the declaration and which are applied to hazardous waste

11. The location of each hazard in the facility and the number at each location

The list and the quantitative indicators will be indicated in each individual subproject in the project documentation.

5. Doing harm to people's health as a result of exposure to asbestos-containing materials

Old insulating materials of boilers and pipes may contain asbestos, which can adversely affect the health of workers, especially during their dismantling, as well as during construction work. The Contractor shall take steps to:

   - organize on a specific site of construction / dismantling, the temporary accumulation and storage of asbestos-containing waste in such a way as to prevent improper handling of such materials or the use of such materials, as well as post appropriate warning signs in the appropriate places;

   - transport asbestos-containing materials to landfills intended for their storage, in addition, take necessary measures to minimize the possible negative impact in order to prevent further use of such
materials or potential contamination with such materials (i.e. waste that was taken to the landfill must be covered with soil layers);

- provide the necessary means of personal protection (respiratory masks, safety glasses, protective clothing, etc.).

6. Emergency warning

Failure to observe safety and health regulations can result in injuries to workers and visitors in construction and dismantling areas.

Increasing the risks associated with fires and explosions cannot be ruled out, especially in cases of non-observance of established norms and safety rules. This can result into injuries to workers and persons who visit or drive past a production site, as well as damage to property.

Incorrect placement of supporting structures during deep excavations can lead to landslides that pose a danger to workers and structures located nearby. In areas of open ground, due to the implementation of earthworks, there is an increased risk of soil erosion, especially in cases of heavy rain and showers during the carrying out of such works.

Dangers encountered by the public when accessing project objects may include:

- Physical injury associated with the destruction of building structures
- Burns and smoke from fires
- Injuries that arose due to falling or contact with heavy equipment
- Difficulty breathing from dust, smoke or harmful odours
- Impact of hazardous substances

Reducing potential hazards is best achieved at the design stage, when it is easier to adapt the design, layout and modification of the site.

The following questions should be considered and, if necessary, included in the planning, placement and design stages:

Use of buffer strips or other methods of physical separation around project objects to protect the public from the major hazards associated with hazardous materials or process failures, as well as issues related to noise, odour or other emissions.

- The application of safety precautions to prevent natural hazards caused by earthquakes, tsunamis, wind, floods, landslides and fires. To this end, all design structures should be regulated or internationally recognized building norms to provide design and construction of structures in accordance with architectural and engineering practices, including aspects of fire prevention and response.
- Engineers and architects responsible for the design and construction of facilities, buildings, installations and other facilities must certify the applicability and compliance of the applicable structural criteria.

In the event of non-observance of the established safety norms and regulations, there may be any situation associated with fires and explosions. This can result in injury to workers and persons visiting the
production area or passing through and damaging property. Emergency measures at Project sites are listed in section 6, Safety and health at work.

7. Impact during transportation.

Increasing the intensity of heavy machinery and trucks in the direction of construction and dismantling areas and in the reverse direction increases the risk of road accidents. The cause of road accidents may also be the inadequate organization of the production process.

In cases where construction and dismantling waste is not removed and utilized properly, it can lead to soil and groundwater and surface water contamination at waste disposal areas and also constitute a danger to human health along wastes transportation routes.

The growth of heavy equipment and trucks transport to construction sites and dismantling increases the risk of road accidents. The cause of traffic accidents may also be the wrong organization of production processes.

The safety of movement must be provided by all project staff when moving to the workplace and from the workplace, as well as when moving project equipment on private or public roads. Prevention and control of road traffic injuries and traffic deaths should include safety measures that protect project staff and road users, including those most vulnerable to road accidents. Initiatives that are proportional to the scale and nature of the road safety project should include:

Adoption of the best methods for ensuring transport safety in all aspects of project operations in order to prevent road accidents and minimize injuries to project staff and the public.

Activities should include the following:

Focusing on safety aspects among drivers.

Improving driving skills and the need for driver licensing;

Acceptance of limits for the duration of the trip and the drawing up of a working schedule of drivers, in order to avoid fatigue;

Avoiding dangerous routes and light time of day to reduce the risk of accidents;

Use of speed control devices (regulators) on trucks and remote monitoring of driver's actions.

Regular maintenance of vehicles and use of components approved by the manufacturer to minimize potentially serious accidents that may be caused by equipment malfunction or premature failure.

If the project can contribute to a significant increase in traffic along existing roads or where road transport is an important component of the project, the recommended measures include:

• minimizing the interaction of pedestrians with construction vehicles;

• working with local communities and authorities to improve signage, visibility and overall road safety, especially along areas near schools or other places where children can attend. Collaboration with local communities in the field of pedestrian safety education and safety education (for example, in school education campaigns);

• coordination with emergency rescue services in emergency situations in order to provide first aid in case of accidents;
• use local materials if necessary to minimize transport distances. Organization of the delivery of workers from appropriate facilities, such as labour camps, located close to the workstations, to minimize external traffic.

• use of safe traffic control measures, including road signs and flags, to prevent hazardous conditions.

8. Impact on human health

Failure to observe safety and health regulations may result in injury to workers in construction and dismantling areas. The negative effects on the health of people during their dismantling operations are with old insulating materials of boilers and pipes containing asbestos. When conducting welding and dyeing works also possible negative impact on human health.

Solid particles from a wide range of industrial operations and/or liquid chemical aerosol may result in eye damage or blindness when exposed to the worker.

Open or faulty electrical devices such as circuit breakers, panels, cables, cords and hand tools can be a serious hazard for workers. Air wires can be struck by metallic devices such as pillars or ladders, as well as metal arrows of vehicles.

Vehicles or grounded metal objects that are in close proximity to the air wires can lead to an arc between the wires and the object.

Projects should implement risk management strategies to protect the community from physical, chemical or other hazards associated with sites where construction and disassembly will be carried out. Risks may result from unintentional or deliberate disturbance, including potential contact with hazardous materials, contaminated soils and other natural environments, vacant or under construction, or excavations and structures that may pose a risk of collapse and burial. Risk management strategies may include:

• Restricting access to a site by combining organizational and administrative controls, with particular attention to structures or areas of high risk, depending on the situation, at specific locations, including fencing, signage and risk communication for the local community.

The removal of hazardous conditions on construction sites that cannot be adequately controlled with restrictions on access to facilities, for example, the closure of openings in small enclosed spaces, providing means for access to large openings such as trenches or excavations, or locks of premises where hazardous materials are stored.

Failure to observe safety and health regulations can result into injuries to workers and visitors in construction and dismantling areas.

Incorrect handling and disposal of hazardous waste can also pose risks to human health.

The main measures to minimize the possible negative impact include:

1. Preparation at the stage of detailed elaboration of a project-specific plot for subprojects that will identify potential environmental problems and specific measures to minimize potential negative impacts.

2. Summoning by the performers at the tender stage to conclude an agreement on the requirement to include in the proposals measures to minimize the possible negative impacts on the environment.
4.2 *Influence on the social sphere*

It is not expected to have a permanent negative impact on industrial, residential and commercial facilities, surface and underground structures, cultural landscapes, and this will not lead to resettlement. Although during the project implementation, temporary negative impacts on the community and the environment are possible, such as temporary restrictions on access to public places, restrictions on access to public places, noise, small emissions, etc.

Proposed project activities will not result in any physical resettlement /displacement of persons or properties. The works will be conducted on public lands and will be temporary in their nature. In case the situation will arise, and temporary economic displacement is required, specific Ab-RAP or RAP will be developed/disclosed/consulted.

Total expected project effect for the consumer:
- improvement of the quality of services provided to the population from district heating and hot water supply;
- improvement of the environment in the city, due to the reduction of the negative impact on it;
- reduction of pressure on raising tariffs for heat supply services as a result of lowering the cost of production, transportation and supply of heat energy and reducing operating costs of the enterprise.

The implementation of all areas of the Project is aimed at ensuring the reliability and quality of the provided heat supply services to the Ternopil city population, as well as stabilizing the value of utility payments. Another important objective of this Project is to reduce the losses of heating in the network and to avoid accidents in district heating networks, which may be due to pipe damage. Implementation of the project will ensure:

- Reduction of natural gas consumption
- Reducing emissions of harmful substances
- Reduction of heat losses in the network
- Reduced water loss
- Reduced operating costs.

Construction of cogeneration stations will allow to partially cover the electricity demand for boilers during the heating period, increase the reliability of electricity, additional heat energy from the waste gas utilization as a result of the work of cogeneration modules and increase the efficiency of the heat source in general. In addition, due to the own generation of electricity at the heat source, the article "cost of purchasing electricity" at energy supply organization will be reduced.

As a result of the reconstruction of 8 boiler houses, the Utility Company will improve the quality of heat supply services and will receive the following economic effect:

* Reduction of consumption of fuel (natural gas) and energy resources due to the replacement of obsolete equipment.
• Reduction of future maintenance costs associated with the devaluation of the main and auxiliary boiler equipment, as well as the installation of equipment that does not require significant maintenance and repair costs.

• Flawless operation of equipment.

• Providing consumers with uninterrupted and high-quality services.

The installation of heat meters and other mechanical and electrical equipment at the heating points of residential buildings and individual heating points in residential buildings will allow commercial accounting of heat at the heating points of multi-apartment buildings and increase the efficiency of heat energy use and the quality of heat supply services.

As a result of the implementation of SCADA, it is planned to achieve greater efficiency of operational control over the processes of production, transportation and distribution of heat energy at the lowest costs and improving the quality of services for the population.

Replacement of pipelines does not have significant social impact, since the proposed reduction measures will minimize negative impacts and will be short-term.
5. SAFETY AND LABOUR PROTECTION TECHNOLOGY

This section identifies the importance of avoiding or reducing the negative impacts of projects on the health and safety of contractors and citizens.

Activities, equipment and infrastructure of projects can increase the risks and the likelihood of negative effects on the health and safety of contractors and citizens, in particular in connection with the construction, operation and decommissioning or transportation of equipment and materials.

A number of issues related to the submission of the Project are governed by numerous national laws, legal acts and norms, which are indicated below:

✓ The law of Ukraine "On labour protection" (dated 14.10.1992 with amendments)
✓ The Law of Ukraine "On Vacations" (dated 11.15.1996 with amendments)
✓ Safety rules for gas supply systems (SRARP 0.00-1.76-15)
✓ Rules for the construction and safe operation of steam and hot water boilers (SRARP 0.00-1.60-66)
✓ Rules for the safety and safe operation of pressure vessels (SRARP 0.00-1.59-70)
✓ Rules for the construction and safe operation of cranes (SRARP 0.00-1.01-07)
✓ Rules for the construction and safe operation of lifts (SRARP 0.00-1.36-03)
✓ Rules of labor protection when performing work at heights (SRARP 0.00-1.15-07)
✓ Rules for the construction and safe operation of steam and hot water pipelines (SRARP 0.00-1.11-98)
✓ Rules for safe work with tools and devices (SRARP 0.00-1.30-01)
✓ Rules for the safe operation of heating and mechanical equipment of power plants and heating networks (SRARP 40.1-1.02-01)
✓ Fire safety rules in Ukraine (NAPB A.01.001-2004)
✓ Rules for the safe operation of electrical installations of consumers (SRARP 0.00-1.21-98)
✓ The law of Ukraine "On the Sanitary-Epidemiological Well-being of the Population" (dated February 24, 1994 with amendments)
✓ The law of Ukraine "On Objects of Increased Danger" (dated January 18, 2001 with amendments)
✓ The Law of Ukraine "On Heat Supply" (dated 02.06.2005 with amendments)
✓ Labour safety guidelines developed by the company.

The contracting organization bears primary responsibility for ensuring safe and healthy conditions for its employees, their information, training, control and consultation on occupational safety and health. Contractor’s employees are required to actively cooperate with the employer, take care of their own health and safety, as well as health and safety of others.
Responsibility for the observance of the safety requirements of norms, rules of labor protection and safety at all stages of the process in the construction of new, reconstruction and technical re-equipment of heat supply systems is assigned to the Contracting Organization in accordance with the contract.

Prior to the commencement of work, the Contracting Organization shall provide the MPU "Ternopilmiskteplokomunenerho" utility company with approved work safety measures with the specified executor of works and terms of execution that are carried out by the contracting (subcontracting) organization:

1. Instructive labour safety.
2. Provision of workers with PPE.
3. Provision of workers with working and testing equipment.
4. An unsafe zone to be fenced with a special tape in accordance with the established limits.
5. Not admitting to a dangerous area of outsiders.
6. Compliance with internal labor regulations.
7. At the time of execution of the work of increased danger to issue a work-permit in accordance with the current regulations on labor protection and the term of work (dismantling, installation).

Prior to commencement of work, a contracting organization, together with the MPU "Ternopilmiskteplokomunenerho", is obliged to identify hazardous areas on the construction site and designate them with appropriate signs.

MPU "Ternopilmiskteplokomunenerho" shall monitor observance of the requirements on labor protection by the Contracting Organization, and monitor observance by the employees of the Contracting Organization of decisions on labour protection issues.

Observance of safe working conditions during execution of installation and special construction works, execution of fire-prevention measures, observance of labor safety legislation are the responsibilities of a contracting organization.

Before starting work on the territory the MPU "Ternopilmiskteplokomunenerho" and the Contracting Organization are required to make an act of permission. Responsibility for the non-fulfilment of measures stipulated by the act of permission, is borne by the heads of the contracting organization and the existing enterprise.

Before commencing work, the contracting organization must identify areas which are hazardous to people, in which there is a permanent impact or there may be a potential impact of hazardous factors that are related or not related to the nature of the work being performed.

The MPU "Ternopilmiskteplokomunenerho" should undertake measures to identify and prevent accidents, injuries and illnesses among workers and citizens that are the result of the project or related or arising during the implementation of the project.

The MPU "Ternopilmiskteplokomunenerho" has to provide the affected workers and citizens with relevant information, advice and training on hazards in the field of occupational health and safety, risks, protective measures and emergency plans that are necessary to ensure their safety throughout the project.
In the case of an accident, injury or illness in the course of work related to the project, or the possibility of such an event, the Contracting Organization shall conduct an investigation and undertake measures to prevent the re-occurrence of such an event.

When performing the work on the construction site, the Contracting Organization must provide the workers with sanitary facilities (cloak rooms, washing rooms, rooms for eating and resting, for women's personal hygiene, toilets, etc.), drinking water and medical care in accordance with the current regulations. Sanitary facilities and equipment should be put into operation before the start of works.

The Contracting Organization should monitor the health of its employees, advise them on occupational safety and health, and encourage them to participate in solving these issues. This includes, in particular, aspects such as accident investigation, risk assessment and job selection.

If certain types of work involve such risks that may result into negative health and safety risks for workers at high risk by age, gender, disability, short-term or long-term health impairment, Contract Organization must carry out risk assessment and undertake measures to prevent injury and illness.

The company and Contractors should consider occupational safety and safety at the stages of design, construction, operation, and decommissioning of structural elements, taking into account the risks to the safety of third parties and citizens affected by the project.
6. MITIGATION MEASURES PLAN

To reduce the negative impact of the PROJECT on the environment and the social sphere, mitigation measures have been developed that should be implemented during the implementation of the PROJECT in order to reduce the potential negative impact on the natural environment at the stages of construction, dismantling and operating.

**Atmospheric air**

Construction work can be a source of dust, which creates discomforts for local residents and the risk of harm to the health of construction personnel.

In order to reduce the degree of this influence, measures to ensure the continued use of the appropriate personal protective equipment by the personnel will be taken.

In the course of the work in the premises to provide the necessary ventilation, when performing excavation works under adverse conditions that cause increased dust, or to minimize dust emissions by spraying water if it is needed, to reduce emissions of exhaust gases from vehicles, due to:

- carrying out regular car inspection
- control of flue gases;
- optimization of work schedules for minimizing engine operating time.

**Noise**

To reduce noise and vibration the following measures are undertaken:

- the main and auxiliary equipment according to the technical specifications of the manufacturing plants has a structure that provides sound and vibration levels on permanent working places in accordance with the applicable standards;
- when loading and transporting wooden substrates under the structures in the assembly units should be used;
- when applying the cranes to bring the structures to the installation site, it is necessary to use hemp rope taglines to facilitate the guidance and elimination of the rolling of the structure. Stairs and ladders for the work of the installation personnel should be placed before lifting them;
- measurements of noise level near residential development in cases where the design documentation (or preliminary analysis) has established the possibility of exceeding the permissible noise level;
- install soundproofing screens if necessary (determined by design documentation or direct measurement).

Works should be performed during working hours. Workers should be provided with personal protective equipment (headphones, silent liners).

**Soils**

During construction work there is a mechanical effect on the fertile ground layer (laying the foundations for the construction of cogeneration stations, the construction of modular boiler houses,
and the reconstruction of the heating networks). When organizing a construction, construction materials are placed on areas with a hard coating that prevents soil contamination. The vehicle is driven off by existing, hard-coated roads to avoid the spill of fuel and lubricants on the surface of the soil.

In the course of work do not allow the leakage of fuel from vehicles. If such accidents occur, ensure the collection of poured oils or fuel and the removal of the top layer of soil contaminated with oil or fuel with subsequent disposal. Prevent washing of transport on the construction site.

The project stipulates the restoration of road asphalt concrete coatings and the implementation of the green zone improvement in the places of excavation of the traffic area of the streets.

**Waste management**

In the course of work waste collection in sealed containers installed in specially prepared places for temporary storage and separate collection of waste, for which there are technologies of recycling/recovering and waste disposal to the landfill in Ukraine or a specialized enterprise in specially equipped transport that excludes the possibility of waste losses, creating an emergency situation, causing damage to the environment and people's health, will be ensured.

There will be compliance with the necessary domestic and sanitary-hygienic requirements, the availability of places for the implementation of personal hygiene. There will be organization of portable toilets at the objects of performing work.

**Emergency situations prevention**

In order to prevent emergencies, it is necessary to comply with labor safety regulations and work schedules.

The staff involved in the work must complete training and have a certificate for high risk work, as well as undergo an instruction before the work begins. It is necessary to carry out regular fire and emergency trainings with personnel and carry out instruction on first aid.

Warning and preventing signs should be set on the sites of performing work, special attention should be paid to ensure safety when performing work on adjacent areas, near playgrounds. The area should be further fenced and lighted.

**Influence on flora objects**

To reduce the negative impact on flora and fauna when carrying out excavation works on the PROJECT, the fertile layer of earth should be removed and taken out to a specially designated area. Restoration of the soil layer, greening of the adjacent territory, arrangement of lawns and landing of fast-growing plantations shall be carried out after completion of works. Measures to reduce the negative impact on the flora objects will be described at the development of the ESMP for each particular object.

**Influence during transportation**

In order to reduce the negative impact during transportation it is foreseen to develop a Traffic management plan on the construction site, which includes:
- drawing up of transport routes, determining the maximum speed of the traffic, time of delivery of building materials, removal of construction waste to the landfill, etc.;
- drawing up instructions for builders and permanent workers (for example, speed limitation, alcohol ban, etc.);
- instructions for contractors (e.g., drivers, suppliers);
- setting of speed limit signs;
- prevention of residents of the city about future construction activities;
- information about traffic safety;
- information trainings;

To ensure safe passage for pedestrians on the plots where work is performed.

**Influence on human health**

**Influence when performing work**

To reduce the negative impact on people's health from toxic materials (asbestos) or their waste, provide workers with personal protective equipment (glasses, gloves, respirators) and overalls.

Works with asbestos-containing materials are to be carried out in isolation from other premises using fabric or plastic coatings to prevent the spread of asbestos dust.

Collection of asbestos-containing wastes in hermetically sealed containers, temporarily storing them in a specially designated place that has asphalt covering, fences, markings and access roads. Provide regular damp cleaning of places for asbestos and adjacent areas. Waste disposal is carried out by the organization having the appropriate licenses (under the terms of the contract).

When carrying out welding and paint works a negative influence on human health is also possible. Work performed by the personnel should be carried out only in overalls, in special footwear, in helmets and with the use of personal protective equipment in cases of necessity.

**Influence on health when performing excavation works**

When carrying out excavation works, the personnel is to be provided with personal protective equipment, to reduce the negative influence of dust on human health, measures to spray water and moisturize the soil are to be undertaken.

**Influence on health at operation**

After the implementation of the Project and the introduction of new equipment, the emission of pollutants from the emission sources will be monitored and the state of atmospheric air in the surface layer at the boundary of the SPZ or near residential development will be monitored.

In order to reduce the negative impact on human health during the period of operation, the personnel should be provided with overalls and against noise personal protective equipment. The staff is required to observe the rules of occupational safety for the prevention of injuries.

**Assessment of social impact**

To reduce the negative impact on the social sphere and to inform the population about planned work during the period of the project implementation, a set of measures has been developed:

1. Publication of information about the planned activities and the current state of work on the Project at the company's website https://teplo.te.ua/blog-single.php?id_news=147
2. On the plots of performing work announcements with planned activities in the project will be posted after consultation with the community.

3. Carrying out prior to the work public consultations with the population and agreement of places to which trees, flower beds, playgrounds, gazebos for rest, waste collection sites will be moved to, if they are located on a designated land.

4. Arranging information in places of public access (bulletin boards, etc.) during the period of works implementation on all components of the Project regarding:
   - start of works and their completion;
   - contractors and subcontractors of the Project;
   - people responsible for carrying out works and for technical supervision (with indication of contact information)
   - company phone numbers and information about coordinating centers for public appeals and complaints.

During the period of construction works and works on the replacement of heating networks that may create temporary restrictions for the city's residents, the following measures will be applied to ensure the safety of the population:
   - places of work are fenced;
   - information about the work being carried out is posted.
   - temporary routes of the traffic (traversal scheme) are organized and laid, as well as passages for pedestrians;
   - road signs are set;
   - providing illuminating of work places in the darkness;
   - red warning lights are set up during night work.

Before starting construction work and during the construction phase inspections of buildings located along the perimeter of the construction for the presence of damage are to be carried out with periodicity once a week.

During the implementation of the Project there is no provision for the additional purchase of land plots (private or communal) that can be leased for entrepreneurship, small business or resettlement. However, In case the situation will arise, and temporary economic displacement is required, specific Ab-RAP or RAP will be developed/ disclosed/consulted prior to the start of the work.
## MITIGATION MEASURES PLAN

<table>
<thead>
<tr>
<th>Influence</th>
<th>Mitigation Measures</th>
<th>Responsibility for the installation</th>
<th>Responsibility for the operation</th>
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<td><strong>1. PHASE – BEFORE THE CONSTRUCTION</strong></td>
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</table>
| Waste management | 1. To identify and prepare places for temporary storage of waste. Temporary storage sites should have non-transparent bases.  
2. To prepare sealed containers for waste collection.  
3. To prepare storage areas for asbestos materials.  
4. To prepare places for temporary storage of asbestos waste, having a non-transparent basis, fences and access roads.  
5. To prepare sealed marked containers for asbestos waste collection.  
6. To make contracts with enterprises for waste utilization. | Contractor organization             |                                 |
| Influence during transportation | 1. Enclosure of the construction site from the territory of general use.  
2. To develop a traffic management plan on the construction site.  
3. To ensure safe passage for pedestrians. | Contractor organization             |                                 |
| Influence on people’s health | 1. To ensure the personnel with personal protective equipment.  
2. To instruct before works begins | Contractor organization             |                                 |
| Influence on the social sphere | To agree works performing and moving of trees, playgrounds, waste collection sites, fences, gazebos for rest, flowerbeds with the communities (school, etc.) | Contractor organization MPU “TMTKE” |                                 |

2. **PHASE - CONSTRUCTION**

2.1 General Measures
<table>
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<th>Influence</th>
<th>Mitigation Measures</th>
<th>Responsibility for the installation</th>
<th>Responsibility for the operation</th>
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</thead>
</table>
| Influence on the atmospheric air      | 1. To ensure minimization of dust emissions during construction (spraying water).  
2. To ensure regular cleaning of open surfaces on the site of performing work and adjacent areas from dust, moisture of access roads and excavation areas, cleaning of the site after completion of work.  
3 Provision of proper technical condition of all transport, mechanisms, equipment.  
4. To ensure minimization of emissions from vehicles.  
5. To carry out regular car inspection. (1 per 3 months)  
6. To control flue gases (CO, NOₓ)  
7. To prohibit the burning of waste garbage on the site.  
8. Priority should be given to new equipment and new technologies with a low level of pollutant emissions. New equipment must meet the emission standards established in Ukraine. | Contractor organization              | -                                  |
| Noise influence                       | 1. To ensure performance of work during working hours.  
2. To provide timely notification of residents (in 10 business days) about the need for high-noise work at night.  
3. To provide workers with personal protective equipment for hearing (headphones, silent liners)  
4. If necessary, to install noise-protecting screens | Contractor organization              | -                                  |
| Influence on the soil                 | 1. To carry out regular inspections and proper maintenance of vehicles for leakage of oil / fuel.  
2. To prohibit the washing of machines | Contractor organization              | -                                  |
<table>
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<tr>
<th>Influence</th>
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<tr>
<td></td>
<td>and mechanisms on the territory of construction.</td>
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<td></td>
<td>3. To provide carrying out of maintenance of vehicles and mechanisms in a specially designated area</td>
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<td></td>
<td>4. To ensure the collection of poured oils or fuel and removal of the upper layer of soil, the temporary storage of contaminated soil in sealed containers and recycling at a special enterprise.</td>
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<tr>
<td></td>
<td>5. Ensure restoration of damaged road surface.</td>
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<tr>
<td>Waste management</td>
<td>1. To provide collection of waste (scrap metal, thermal insulation, solid household waste, construction, etc.).</td>
<td>Contractor organization</td>
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<td>2. To ensure the export of waste for disposal.</td>
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<td></td>
<td>3. To limit access to areas of construction work and places of temporary storage of waste of people who are not related to the performing of these works.</td>
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<td></td>
<td>4. To ensure the collection of asbestos-containing waste in special sealed dense packages.</td>
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<td></td>
<td>5. To ensure that works with asbestos-based materials are isolated from adjacent areas and performed using fabric or plastic coatings.</td>
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<td></td>
<td>6. To ensure the regular removal of waste containing asbestos for recycling and regular wet cleaning of work and adjacent areas.</td>
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<tr>
<td>Emergency situations prevention</td>
<td>1. To ensure compliance with the requirements of fire safety.</td>
<td>Contractor organization</td>
<td>Contractor organization</td>
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<tr>
<td></td>
<td>2. To ensure the development of an emergency plan in case of a fire.</td>
<td>MPU “TMTKE”</td>
<td>MPU “TMTKE”</td>
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<tr>
<td></td>
<td>3. To ensure regular fire and emergency training.</td>
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<tr>
<td>Influence</td>
<td>Mitigation Measures</td>
<td>Responsibility for the installation</td>
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</tr>
</tbody>
</table>
| Influence on flora objects                   | 1. To carry out the cutting of the fertile soil layer and export to the urban beautification.  
2. To ensure leveling of the surface, restoration of the soil layer, greening of the adjacent territory, arrangement of lawns and landing of fast-growing plantations after finishing works. | Contractor organization             | -                               |
| Influence during transportation              | 1. To develop traffic management plan on the construction site.                     | Contractor organization             | -                               |
2. Establishing safe speed limits for the period of work. |
| Influence on people’s health                 | 1. To ensure compliance with safety rules.                                           | Contractor organization             | -                               |
2. To provide workers with PPE (glasses, gloves, respirators) and overalls when performing work with asbestos-based materials and other work in case of need.  
3. Installing protective shields and shields on the sites of carrying out welding work. Providing workers with weld masks.  
4. To provide employees with "sanitary facilities" (portable toilets) and amenity space | - | - |
<p>| 2.2 Specific measures for the reconstruction of boiler houses | 1. At carrying out of works on reconstruction of the boiler house in 4, Bahata Str. the delivery of equipment will lead to a short-term overlapping of traffic in the street, therefore it is necessary to warn the inhabitants of the adjacent residential buildings and the administration of enterprises, to set warning road signs, to organize by-pass routes (preliminary agreed with the competent authorities). (not later than 10 days prior to commencement of works) | Contractor organization | - |</p>
<table>
<thead>
<tr>
<th>Influence</th>
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<th>Responsibility for the installation</th>
<th>Responsibility for the operation</th>
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<tbody>
<tr>
<td><strong>2.3. Specific measures for the reconstruction of heating networks</strong></td>
<td>When performing works in Kyivska Str. at the site from TK13-TK17 near the house 12 and separately standing non-residential premises to undertake the following measures:</td>
<td>- UC TMTKE</td>
<td></td>
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<tr>
<td>- To inform the private business, which is located in separately standing non-residential premises (to post newsletters no later than 10 working days).</td>
<td></td>
<td>- Contractor organization</td>
<td></td>
</tr>
<tr>
<td>- To provide access to the warehouse premises of the shop (installing passages through a trench by a passage of not less than 80 cm in width, equipped with railing or fence of 150 cm).</td>
<td></td>
<td>- Contractor organization</td>
<td></td>
</tr>
<tr>
<td>- To install a passage of not less than 120 cm in width, equipped with railing or fence of 150 cm near the children's clinic</td>
<td></td>
<td>- Contractor organization</td>
<td></td>
</tr>
<tr>
<td>- To restore the pavement and restore green damaged plantations after having completed all excavation works.</td>
<td></td>
<td>- Contractor organization</td>
<td></td>
</tr>
<tr>
<td><strong>2. When performing works on the site of the heating network from the boiler house in 3c, Kyivska Str., between TK 21 and TK 74a to April 15 Str. to undertake the following measures:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- To inform the private business, which is located along the heating network (to post newsletters, no later than</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Influence</td>
<td>Mitigation Measures</td>
<td>Responsibility for the installation</td>
<td>Responsibility for the operation</td>
</tr>
<tr>
<td>-----------</td>
<td>---------------------</td>
<td>-------------------------------------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td></td>
<td>10 working days)</td>
<td>UC TMTKE</td>
<td>Contractor organization</td>
</tr>
<tr>
<td></td>
<td>- To provide access to commercial buildings (by installing passages through a trench of not less than 120 cm in width, equipped with railing or fence of 150 cm). - To restore the pavement and restore green damaged plantations after having completed all excavation works, as well as to restore the parking lot (asphalt pavement) at the shopping mall.</td>
<td>Contractor organization</td>
<td>Contractor organization</td>
</tr>
<tr>
<td>3</td>
<td>When performing works on the site of the heating network from the boiler house in 3c, Kyivska Str. between TK 17 and TK 30 to undertake the following measures:</td>
<td>MPU ‘TMTKE” Contractor organization</td>
<td>Contractor organization</td>
</tr>
<tr>
<td></td>
<td>- In writing, with an official letter to inform the educational institution, the Halytskyi College, that the works on replacing the heating network will be performed. - To dismantle the children playground for the time of the works performance and after their completion to restore it in a place approved by the community (local building-utilities administrator offices, known as ZhEK, apartment building co-owners association). - To restore the pavement and restore green damaged plantations after having completed all excavation works.</td>
<td>MPU ‘TMTKE” Contractor organization</td>
<td>Contractor organization</td>
</tr>
<tr>
<td>4</td>
<td>When performing works on the site of the heating network from the boiler house in 3c, Kyivska Str. between 74a and TK 133 and between</td>
<td>Contractor</td>
<td>Contractor organization</td>
</tr>
<tr>
<td>Influence</td>
<td>Mitigation Measures</td>
<td>Responsibility for the installation</td>
<td>Responsibility for the operation</td>
</tr>
<tr>
<td>-----------</td>
<td>---------------------</td>
<td>-------------------------------------</td>
<td>---------------------------------</td>
</tr>
<tr>
<td>TK 73 and TK 151 to undertake the following measures:</td>
<td></td>
<td>Contractor organization</td>
<td>Contractor organization</td>
</tr>
<tr>
<td>- To install a fence of not less than 150 cm high near the children playground</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- To restore the pavement and restore green damaged plantations after having completed all excavation works.</td>
<td>UC TMTKE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 When performing works on the site of the heating network from the boiler house in 40, Halytska Str. between TK 11 and TK 17 to undertake the following measures:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- To inform the owners of the gas station, (to post the newsletters no later than 10 working days), and to enclose the site of excavation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- To restore the pavement and restore green damaged plantations after having completed all excavation works, to save maple wayside trees (to replant the maples).</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 When performing works on the site of the heating network from the boiler house in 3c, Kurbasa Str. between TK 72 and TK 53 to undertake the following measures:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- To restore the parking lot (asphalt covering) at the trade facility.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- To restore the pavement and restore green damaged plantations after having completed all excavation works.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
7 When performing works on the site of the heating network from the boiler house in 9, Prosvity Str. between TK1 and TK 14 to undertake the following measures:

- To set a passage of not less than 120 cm in width, equipped with a railing and a fence of 150 cm height through the pedestrian path.
- To dismantle the children playground for the time of the works performance and after their completion to restore it in a place approved by the community (local building-utilities administrator offices, known as ZhEK, apartment building co-owners association), (but not in the security zone of the heating network).
- To restore the parking lot (asphalt pavement) at the residential buildings in 2a, Prosvity Str.
- To inform the owners of the food facility, about the necessity of dismantling the outdoor performance stage during the works performance.
- To restore the pavement and restore green damaged plantations after having completed all excavation works.

8 When performing works on the site of the heating network from the boiler house in 9a, Druzhby Str. to the TK 4 to undertake the following measures:

- To inform the inhabitants of the contractor organization.
<table>
<thead>
<tr>
<th>Influence</th>
<th>Mitigation Measures</th>
<th>Responsibility for the installation</th>
<th>Responsibility for the operation</th>
</tr>
</thead>
</table>
| building in 3a. Myru Str. (to post newsletters no later than 10 working days) | - To install a fence of not less than 150 cm high near the children playground  
- To restore the pavement and restore green damaged plantations after having completed all excavation works.                                                                 | UC TMTKE                            | Contractor organization          |
<p>|                                                                          |                                                                                                                                                                                                                       | Contractor organization             | UC TMTKE                         |
|                                                                          |                                                                                                                                                                                                                       | Contractor organization             | Contractor organization          |</p>
<table>
<thead>
<tr>
<th>Influence</th>
<th>Mitigation Measures</th>
<th>Responsibility for the installation</th>
<th>Responsibility for the operation</th>
</tr>
</thead>
</table>
| Influence on the atmospheric air              | 1. To develop, set norms of the maximum permissible concentrations of emissions into atmospheric air. To get permission to emit pollutants into the atmosphere by stationary sources.  
2. To monitor the level of pollutants in the influence area of sources of emissions.                                                                 | -                                   | UC “TMTKE”                       |
| Noise influence                               | 1. To provide workers with personal protective equipment against noise effects.  
2. To prevent the spread of noise at the highest possible level - using special structures, soundproofing mats and fabrics near sources of noise.                                    | -                                   | UC “TMTKE”                       |
| Waste management                              | 1. To ensure regular updates of waste disposal plans.  
2. To provide waste sorting based on maximum expediency.  
3. To ensure the regular removal and disposal of waste.                                                                                         | -                                   | UC “TMTKE”                       |
| Emergency situations prevention               | 1. To ensure compliance with relevant fire prevention rules and regulations, instructions.  
2. To develop an emergency plan for the occurrence of a fire.  
3. To ensure training for simulating emergencies.                                                                                                  | -                                   | UC “TMTKE”                       |
| Influence on people’s health                  | To ensure compliance with safety rules                                                                                                                                                                                | -                                   | UC “TMTKE”                       |
7. MONITORING PLAN

The purpose of the monitoring is to conduct environmental state observation and to implement measures to reduce the potentially negative impact on the environment and the social sphere.

The main tasks of the monitoring are:
- fulfilment of the requirements of the current legislation in the field of the environmental monitoring organization of the natural environment and social sphere components;
- receipt and accumulation of information on the sources of pollution and the state of the components of the environment in the zone of influence of the facility;
- analysis and comprehensive assessment of the current state of various components of the environment;
- information provision of the management of the facility for the adoption of planned and emergency management decisions;
- drafting, maintenance and registration of accounting documents on the results of environmental monitoring;
- obtaining data on the effectiveness of environmental measures, the development of recommendations and proposals for the elimination and prevention of negative environmental and social impacts.
- keep records of complaints received from affected communities and employees during the project activity implementation.

Monitoring is carried out in order to prevent violations of requirements in the field of environmental protection and labour protection to reduce the negative impact during the works performance at the facilities of the PROJECT, as well as timely removal of violations detected.

The monitoring task includes:
- detection of violations of environmental legislation and labour protection requirements during field work, assessment of their scale, as well as prevention of violations;
- ensuring the proper implementation of measures to reduce the negative impact on the environment and the social sphere;
- ensuring the fulfilment by construction organizations of the requirements of the current legislation of Ukraine;
- ensuring the implementation by construction organizations of design decisions in the field of environmental protection;
- control over the works on environmental protection after the completion of the construction phase.

The control is carried out in the form of inspections, in accordance with the monitoring plan, which is given in the table №13.
### Monitoring Plan

<table>
<thead>
<tr>
<th>Monitoring parameters</th>
<th>Place of the monitoring</th>
<th>Type of equipment, during monitoring</th>
<th>Frequency of monitoring</th>
<th>Reason for monitoring</th>
<th>Responsibility for installation</th>
<th>Responsibility for operation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. PHASE – BEFORE THE CONSTRUCTION</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percentage of population that falls under the influence of the Project</td>
<td>Settlement</td>
<td>Public opinion poll</td>
<td>Determination of the baseline before construction begins</td>
<td>Determination of service quality improvement</td>
<td>Contractor organization</td>
<td>UC «TMTKE»</td>
</tr>
<tr>
<td>Places of temporary storage of waste</td>
<td>Near the construction site</td>
<td>Visually</td>
<td>Before construction begins</td>
<td>Prevention of negative impact on soils</td>
<td>Contractor organization</td>
<td>Contractor organization</td>
</tr>
<tr>
<td>Traffic environment management</td>
<td>Construction site</td>
<td>Visually</td>
<td>Before construction begins</td>
<td>Staff safety</td>
<td>Contractor organization</td>
<td>Contractor organization</td>
</tr>
<tr>
<td>Places of temporary storage of asbestos-containing waste and materials</td>
<td>Construction base of the contractor. Construction site</td>
<td>Visually</td>
<td>Before construction begins</td>
<td>Staff safety</td>
<td>Contractor organization</td>
<td>Contractor organization</td>
</tr>
<tr>
<td><strong>2. PHASE - CONSTRUCTION</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use of personal protective equipment (PPE) of respiratory organs</td>
<td>Construction site</td>
<td>Visually</td>
<td>Permanently</td>
<td>Staff safety</td>
<td>Contractor organization</td>
<td>UC «TMTKE»</td>
</tr>
<tr>
<td>Use of PPE of hearing organs. Use of PPE for eyes during welding, cutting and works with increased dust pollution. Use of overalls, gloves, special footwear</td>
<td>Construction site</td>
<td>Visually</td>
<td>Permanently</td>
<td>Staff safety</td>
<td>Contractor organization</td>
<td>UC «TMTKE»</td>
</tr>
<tr>
<td>Spill of oil/fuel on the soil surface</td>
<td>Construction site</td>
<td>Visually</td>
<td>Permanently</td>
<td>Prevention of negative impact on soils</td>
<td>Contractor organization</td>
<td>UC «TMTKE»</td>
</tr>
<tr>
<td>1. Places for temporary storage</td>
<td>Construction site</td>
<td>Visually</td>
<td>Permanently</td>
<td>Prevention of negative impact on</td>
<td>Contractor organization</td>
<td>UC «TMTKE»</td>
</tr>
</tbody>
</table>
## 2. Documentation on the removal and disposal of waste.

<table>
<thead>
<tr>
<th>Compliance with fire safety requirements and inspection of documentation</th>
<th>Construction site</th>
<th>Visually</th>
<th>Once a month</th>
<th>Staff safety</th>
<th>Contractor organization</th>
<th>UC «TMTKE»</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction site</td>
<td>In accordance with the rules of fire safety</td>
<td>Permanently</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction site</td>
<td>Before the works start Upon completion of construction</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## 1. Cutting of the fertile soil layer and its removal

<table>
<thead>
<tr>
<th>Traffic environment management and inspection of documentation</th>
<th>Construction site</th>
<th>Visually</th>
<th>Permanently</th>
<th>Safety of public health</th>
<th>Contractor organization</th>
<th>UC «TMTKE»</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction site</td>
<td>According to the plans of transport engineering and special equipment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## 2. Restoration of the soil layer and planting of the adjoining territory

<table>
<thead>
<tr>
<th>1. Safe handling</th>
<th>Construction site</th>
<th>In accordance with safety regulations</th>
<th>Permanently</th>
<th>Safety of public health</th>
<th>Contractor organization</th>
<th>UC «TMTKE»</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location of asbestos waste. Storage place for hazardous material.</td>
<td>Visually</td>
<td>once a month</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## 2. Handling of toxic wastes and materials (asbestos)

<table>
<thead>
<tr>
<th>3. PHASE-OPERATION</th>
<th>Settlement</th>
<th>Public opinion poll</th>
<th>2 times per year</th>
<th>Determination of service quality improvement</th>
<th>UC «TMTKE»</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exhaust pipe of the boiler</td>
<td>Devices, express</td>
<td>once a year</td>
<td>Execution of the Law of</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<p>| Control over emissions of | Exhaust pipe of the boiler | Devices, express | once a year | Execution of the Law of | UC «TMTKE» |</p>
<table>
<thead>
<tr>
<th>Issue Description</th>
<th>Location/Method</th>
<th>Frequency</th>
<th>Compliance Description</th>
<th>Responsible Party</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pollutants by stationary sources</td>
<td>house. method</td>
<td></td>
<td>Ukraine “On the Protection of Atmospheric Air”</td>
<td>General Directorate of the State Food Products Safety and Consumer Protection Services of Ternopil region</td>
</tr>
<tr>
<td>Control over NO₂, CO in the surface layer of the atmosphere</td>
<td>One sampling point at the border with a residential area; Devices, methodology</td>
<td>once a year</td>
<td>Compliance with the requirements of sanitary welfare of the population</td>
<td>UC «TMTKE»</td>
</tr>
<tr>
<td>1. Use of PPE hearing organs</td>
<td>Workplaces in the control room of the boiler house; 1. Visually 2. Noise-level meter ShV</td>
<td>Permanently</td>
<td>Compliance with labour protection requirements</td>
<td>UC «TMTKE»</td>
</tr>
<tr>
<td>2. Noise level</td>
<td>Territory of the boiler house; 1. Visually 2. In accordance with the requirements of environmental legislation</td>
<td>Once a quarter</td>
<td>Compliance with environmental requirements</td>
<td>UC «TMTKE»</td>
</tr>
<tr>
<td>1. Places for temporary storage of waste material</td>
<td>Boiler house; In accordance with the rules of fire safety</td>
<td>Permanently</td>
<td>Safety of working personnel</td>
<td>UC «TMTKE»</td>
</tr>
<tr>
<td>2. Documentation on the removal and disposal of waste.</td>
<td>Workplaces; In accordance with safety regulations</td>
<td>Permanently</td>
<td>Safety of public health</td>
<td>UC «TMTKE»</td>
</tr>
<tr>
<td>Compliance with fire safety requirements and inspection of documentation</td>
<td>Location of asbestos waste; In accordance with the requirements of environmental</td>
<td>Once a quarter</td>
<td>Safety of public health</td>
<td>UC «TMTKE»</td>
</tr>
</tbody>
</table>
4. PHASE - COMMISSIONING

1. The presence of waste.
2. Documentation on waste disposal.
3. Recultivation works performance.

<table>
<thead>
<tr>
<th>Facility of decommissioning</th>
<th>In accordance with the requirements of environmental legislation</th>
<th>After decommissioning</th>
<th>Compliance with environmental requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>UC «TMTKE»</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*The utility company of heating networks “Ternopilmiskteplokomunenerho” of Ternopil City Council, receives the reports on monitoring the implementation of the Reduction measures plan from the Contractor, conducts its own random control and, accordingly, receives reports on elimination of violations by the Contractor.

During the periodic inspections, the implementation of measures to reduce the negative impact, organization of waste management, availability of environmental documentation, production documentation of construction organizations performing works at the facility, as provided by the Plan of environmental and social management, is inspected. The Regional Project Management Unit is responsible for monitoring the Project facilities. The frequency of monitoring is once a month and unscheduled in the case of receiving signals from the population.

According to the results of each inspection an act that is signed by the representatives of the Employer, is drafted.

The inspection is carried out by means of a physical examination of the site of the construction facility, as well as adjacent territories.

The compliance of the performed works, the methods of their implementation with the requirements of the Ukrainian legislation in the field of environmental protection, as well as the implementation of the environmental measures provided by the project, is checked.

Also, the tasks of full-on examination of the construction site include the impact of environmental and social problems associated with the construction and demanding immediate operational intervention; issuance of practical recommendations for optimization of construction works to reduce the negative impact on the environment and the affected community.

The violations, detected in the course of the inspection, are recorded, if necessary, by taking photos.

At the next stages of monitoring, the control over elimination of previously detected violations is carried out, as well as the inspection of the territory of the construction facility for the purpose of detecting new violations that have not been encountered here before.

The fact of eliminating (or not eliminating) the violation, if necessary, is also recorded by taking photos.

All violations are recorded in the Environmental Compliance Review Act, which is drafted on the day of the inspection.

**Control over the atmospheric air**

Observation of the atmospheric air is carried out in order to assess the impact of the performed works on the state of the surface layer of atmospheric air.
The performed works in all directions of the PROJECT will not affect the state of the surface layer of the atmosphere. Control over the use of personal protection equipment of respiratory organs by workers during the performance of dust works.

During the operation of the boiler houses which have been rehabilitated, random monitoring of the surface layer of the atmosphere (NO, CO) is carried out once a year at 1 point, considering the “wind rose”. It is not necessary to conduct systemic analytical control for other substances (dust or SO2). This can be provided at the request of the persons concerned.

The list of boiler houses, where the random control over the surface layer of the atmosphere will be conducted, is given in Table №14.

The location of the sampling points is given in the Situational layouts for the location of the relevant facilities, on the fig. №1 - №8.

Table №14. The list of boiler houses, where the random control of the surface layer of the atmosphere will be conducted.

<table>
<thead>
<tr>
<th>No</th>
<th>Facility, address</th>
<th>Name of the district</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>boiler house at 3s, Kyivska str.</td>
<td>Soniachnyi</td>
</tr>
<tr>
<td>2.</td>
<td>boiler house at 40, Halytska str.</td>
<td>Canada</td>
</tr>
<tr>
<td>3.</td>
<td>boiler house at 23, Lemkivska str.</td>
<td>Canada</td>
</tr>
<tr>
<td>4.</td>
<td>boiler house at 12, Zhyvova str.</td>
<td>Centre</td>
</tr>
<tr>
<td>5.</td>
<td>boiler house at 16, Franka str.</td>
<td>Centre</td>
</tr>
<tr>
<td>6.</td>
<td>boiler house at 4, Bahata str.</td>
<td>Centre</td>
</tr>
<tr>
<td>7.</td>
<td>boiler house at 9a, Druzhby str.</td>
<td>Druzhba</td>
</tr>
<tr>
<td>8.</td>
<td>boiler houses at 9, Prosvity str.</td>
<td>Druzhba</td>
</tr>
</tbody>
</table>

The sampling and analysis of atmospheric air samples is carried out by a laboratory accredited in the relevant field. The sampling of atmospheric air is carried out by a specialist of the accredited laboratory of the General Directorate of the State Food Products Safety and Consumer Protection Services of Ternopil region, in accordance with the requirements of RD 52.04.186-89.

During the sampling of atmospheric air, the main meteorological factors that determine the transfer and dispersion of hazardous substances in the atmospheric air are considered. The sampling of air is accompanied by observations over the main sources of emissions and meteorological parameters, among which are the following: speed and direction of the wind, temperature and humidity of air, atmospheric phenomena, weather conditions and geological substrate, cloudiness.

**Noise-level control**

Control over the use of personal protective equipment for hearing organs by the workers when performing works.
Control over the noise-level when performing construction works in the places adjacent to residential buildings is carried out once a quarter, in the industrial zone it is carried out once in half year.

During the operation of the boiler houses which have been rehabilitated, the random monitoring of the noise-level is carried out once a year in the control room of the boiler house.

Measurements of the levels of harmful physical influences (noise) are carried out by specialists of the accredited laboratory of the General Directorate of the State Food Products Safety and Consumer Protection Services of Ternopil region and carried out with the help of measuring devices with valid certificates of state verification.

The list of boiler houses, where the random control over the noise-level will be conducted, is given in Table №15.

**Table №15. The list of boiler houses, where the random control over the noise-level will be conducted.**

<table>
<thead>
<tr>
<th>No.</th>
<th>Facility, address</th>
<th>Name of the district</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>boiler house at 3s, Kyivska str.</td>
<td>Soniachnyyi</td>
</tr>
<tr>
<td>2.</td>
<td>boiler house at 40, Halytska str.</td>
<td>Canada</td>
</tr>
<tr>
<td>3.</td>
<td>boiler house at 23, Lemkivska str.</td>
<td>Canada</td>
</tr>
<tr>
<td>4.</td>
<td>boiler house at 12, Zhyvova str.</td>
<td>Centre</td>
</tr>
<tr>
<td>5.</td>
<td>boiler house at 16, Franka str.</td>
<td>Centre</td>
</tr>
<tr>
<td>6.</td>
<td>boiler house at 4, Bahata str.</td>
<td>Centre</td>
</tr>
<tr>
<td>7.</td>
<td>boiler house at 9a, Druzhby str.</td>
<td>Druzhba</td>
</tr>
<tr>
<td>8.</td>
<td>boiler houses at 9, Prosvity str.</td>
<td>Druzhba</td>
</tr>
</tbody>
</table>

**Soils control**

Visual examinations of the soil surface layer for oil/fuel spill at the construction/dismantling sites.

**Waste management control**

Particular attention is paid to the places of temporary disposal of waste, to the management of waste generated at the construction sites of the facility and to the documentation on the removal and disposal of waste, namely:

- inspection of the installation of containers for separate collection of waste on impenetrable basis;
- inspection of the installation of containers for the collection of solid household waste on impenetrable basis;
- control over the removal of all possible types of industrial waste and solid household waste;
- control of the absence of littering of the territory with wastes production and consumption.

The control is carried out visually during the construction period - permanently, during operation – once a quarter.
Control over compliance with fire safety requirements

The visual control over the works performance places and verification of compliance with the fire safety requirements of Ukraine are carried out.

Control over recultivation works performance

The visual control over the territory with the restoration of soil landscape, planting of grasses, trees after the completion of the relevant plan of works under the PROJECT is carried out.

Control over the management of vehicles

Control over the movement of vehicles at construction sites is carried out in accordance with the plans for the traffic environment and special equipment organization. Also, the control over the installation of speed limit signs is carried out, the documentation is checked.

Control over the compliance with safety regulations

Particular attention is paid to the safety issues during works performance, to the personal protection equipment, handling of toxic materials and their waste, verification of the documentation.
8. DEVELOPMENT OF INSTITUTIONAL CAPACITY AND EDUCATION

In order to implement the project at the “Ternopilmiskteplokomunenerho” utility enterprise, the Energy Efficiency Project Management Service, which performs the functions of the RPIU, was established in accordance with the Operational Manual. The RPIU is responsible for the day-to-day management and implementation of the Project at the local level and coordinates its activities with the CPIU.

Composition of RPIU and positions are listed in Chart № 16

Chart №16

<table>
<thead>
<tr>
<th>№</th>
<th>NAME</th>
<th>POSITION</th>
<th>CONTACTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Tetyana Sahat</td>
<td>Head of RPIU, Deputy Director of Finance</td>
<td>tel.: +38 050 339 59 97 e-mail: <a href="mailto:sahattanya@ukr.net">sahattanya@ukr.net</a></td>
</tr>
<tr>
<td>2</td>
<td>Bogdan Myskiv</td>
<td>Deputy head of RPIU, Deputy Director of Consumers, Sales and Economic Security</td>
<td>tel. +38 050 437 30 06 e-mail: <a href="mailto:bohdan.myskiv@gmail.com">bohdan.myskiv@gmail.com</a></td>
</tr>
<tr>
<td>3</td>
<td>Mykhailo Horban</td>
<td>Engineer, Head of Production and Technical Department</td>
<td>tel.: +38 050 550 22 76 e-mail: <a href="mailto:raf170177@gmail.com">raf170177@gmail.com</a></td>
</tr>
<tr>
<td>4</td>
<td>Valerii Kalytka</td>
<td>Procurement specialist, Analyst on Financial and Economic Security</td>
<td>tel.: +38 066 481 75 18 e-mail: <a href="mailto:kalitkavp@gmail.com">kalitkavp@gmail.com</a></td>
</tr>
<tr>
<td>5</td>
<td>Mariana Zakharkiv</td>
<td>Specialist in Financial Management, Investment Analyst</td>
<td>tel.: +38 050 550 13 94 e-mail: <a href="mailto:marianazakharkiv31@gmail.com">marianazakharkiv31@gmail.com</a></td>
</tr>
<tr>
<td>6</td>
<td>Sofiia Dyshkant</td>
<td>Ekologist, Engineer on Organization, Operation and Repair of Production and Technical Department</td>
<td>tel.: +38 096 667 83 50 e-mail: <a href="mailto:piu.tmtke@gmail.com">piu.tmtke@gmail.com</a></td>
</tr>
</tbody>
</table>

The copy of the order and responsibilities of RPIU are listed in Annex №7

The duties of an environmentalist include the following:
- identification and analysis of potential impacts from work within the relevant part of the PROJECT;
- ensuring the availability of necessary documentation (EIA, ESMP and others) for the works being carried out within the relevant part of the PROJECT;
ensure that all necessary measures are undertaken to reduce and oversee financial plans of the utility enterprise “Ternopilmiskteplomunenerho”;

- agreement with contractors on a complete list of mandatory environmental requirements to be met before work starts;

- verification of compliance by contractors within the relevant part of the utility enterprise PROJECT with environmental requirements and identifying gaps that are not covered by environmental and / or budget reduction measures;

- checking (if necessary making changes) environmental provisions that will be laid down in contracts with contractors;

- ensuring the implementation of a monitoring plan for each of the contracts within the relevant part of the utility PROJECT, including the establishment of baseline indicators and the effectiveness of reduction measures;

- preparation of environmental reports according to the forms established by the World Bank and CPIU.

The state control bodies in the field of ecology and sanitary-hygienic safety will monitor the environmental status at all stages of the implementation of the PROJECT. The list of state environmental control bodies is provided in the Table №17.

Table №17. State control bodies in the field of ecology and sanitary-hygienic safety.

<table>
<thead>
<tr>
<th>Name of the state control body</th>
<th>Scope of activity</th>
<th>Periodicity of supervision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department of Ecology and Natural Resources of the Ternopil Regional State Administration</td>
<td>Giving permission for emissions into the atmosphere, special water use, wastewater discharges.</td>
<td>-</td>
</tr>
<tr>
<td>State Environmental Inspection in the Ternopil region</td>
<td>Conducting inspections to comply with the environmental legislation of Ukraine.</td>
<td>Planned (according to schedule)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Unplanned (by customer's request)</td>
</tr>
<tr>
<td>State Ecological Inspection</td>
<td>Conducting inspections to comply with the environmental legislation of Ukraine.</td>
<td></td>
</tr>
<tr>
<td>The Main Department of the State Consumer Service in Ternopil region</td>
<td>Observance of the safety of the environment of life</td>
<td></td>
</tr>
</tbody>
</table>

State sanitary and epidemiological services within the respective administrative territories are responsible for the following measures:

- development (review), examination, approval and publication of sanitary norms;
- implementation of hygienic regulation and state registration of factors harmful to human life and health;
- implementation of sanitary and epidemiological expertise;
- approval of projects, land allocation documents for the location and construction of water supply and wastewater treatment facilities, and the location of industrial and production facilities;
- coordination of design and technical documentation for the construction, reconstruction, commissioning of new and restoration of existing industrial facilities, sanitary protection zones;
- inspection of construction sites and issuance of conclusions regarding their compliance with sanitary norms when commissioned;
- issuance of permits for special water use.

The territorial bodies of the State Environmental Inspectorate in accordance with the tasks entrusted to them:
- generalize the practice of applying legislation on matters within their competence, prepare and make proposals in the prescribed manner to the State Inspection of Ukraine regarding its improvement;
- carry out state supervision (control) of compliance with the territorial authorities of central executive authorities, local executive authorities, enterprises, institutions and organizations irrespective of the form of ownership and management, citizens of Ukraine, foreigners and stateless persons, as well as legal entities - non-residents of the requirements of the ecological legislation of Ukraine.
- draw up protocols on administrative violations and consider cases on administrative offenses, impose administrative penalties in cases stipulated by law.
- submit proposals to the Head of the State Inspection of Ukraine regarding: issuance, termination or cancellation of permits, limits and quotas for the special use of natural resources, emissions and discharges of polluting substances into the environment, waste placement, handling of hazardous chemicals, transboundary movement in the manner established by the legislation; objects of plant and animal life, including aquatic living resources, as well as establishment of norms of permissible levels of harmful influence on the state of the environment environment.
- appoint public environmental inspectors and issue them a certificate, organize their work, provide them with methodological and practical assistance, take measures to eliminate the identified shortcomings and violations in their activities.

The monitoring of compliance with the recommendations and requirements of the ESMP by the utility enterprise "Ternopilmiskteplokomunenerho" at the stage of construction and operation relies on the ecologist from the RPIU with the involvement of experts in the ecology of the production and technical service of the utility enterprise "Ternopilmiskteplokomunenerho".

During the construction phase, the Contracting Organization must appoint a responsible person for compliance with the requirements of the ESMP and the conduct of safety instructions for workers involved in the construction.

Responsibility for training of the personnel of the utility enterprise and conducting advanced training courses is for the service of labor protection, safety and personnel training.
The control of the noise levels in the workplace is assigned to the contracting organization.

The control of measurements of pollutants in the atmosphere by stationary sources is assigned to a contracting organization.

The control of the surface layer of the atmosphere will be performed by a contracting organization.
9. PUBLIC PARTICIPATION, INFORMATION AND CONSULTATION

In accordance with the requirements of the World Bank and Ukrainian legislation, the necessary consultations with the groups of persons under the influence of this project and other stakeholders of the project on the environmental and social impacts of the project should be conducted and taken into account when preparing an environmental and social impact assessment.

The main purpose of conducting public consultations is:

- presentation of the planned project,
- the results of work on the assessment of the impact on the environment and the social sphere,
- discussing the positive and negative impacts associated with the implementation of the planned project;
- The main tasks of consulting with the public are:
  - ensuring openness of environmental documentation (EIA, ESMP reports) to the public. The EIA sections are being developed in the design documentation, and for the boilers of over 50 MW capacity, the EIA procedure is being implemented;
  - discussing various issues and problems with the groups affected by this project, raising public awareness of the potential negative impacts and problems that may arise during the implementation of investment projects;
  - ensuring feedback from the competent authorities and local groups affected by this project in the process of assessing environmental and social impacts and identifying potential positive and negative impacts and proposed measures to minimize such impacts.

To invite (representatives) of local stakeholders in local / regional newspapers, using television and radio, as well as telephone and facsimile communications, the place and date of public consultations should be made public.

The main participants in public consultations are:

- Recipients of a loan (municipal energy companies);
- Local residents;
- Main research organizations and organizations assessing the impact on the environment and the social sphere;
- Local State Administration;
- State authorities (environmental authorities and sanitary and epidemiological service); Non-governmental organizations (NGOs)
- The responsible persons (representing the Consultant and the recipients of the grants) are appointed separately for each placement.

The utility enterprise “Ternopilmiskteplokomunenerho” accepts written comments and suggestions to the postal and e-mail address (tmteke@gmail.com.). All written comments and questions raised in the process of consulting with the public should be considered, summarized and integrated
into the appraisal of environmental and social impacts. Only after this assessment of the impact on the environment and the social sphere can be considered accomplished. The information on the assessment of the impact on the environment and the social sphere should be proclaimed by post in electronic format on the website of the company and the city administration and in paper form at an accessible location (office of the enterprise).
10. THE GRIEVANCE REDRESS MECHANISM

During the implementation of the project, there may be questions related to its negative impact on the social sphere and the environment.

The enterprise has developed and implemented a program of communication with the public, in order to ensure continuous information to the public on key environmental and social aspects during the future implementation of the project (including construction and operation stages).

The company created a service for dealing with citizens' applications, which is responsible for timely consideration and answers to citizens' requests in accordance with the Law of Ukraine "On Citizens' Appeal". During the implementation of the PROJECT, the relevant applications from citizens will be accepted, registered and sent for the relevant work in due time.

Citizens will be able to send their remarks also by e-mail to:

tmtke@gmail.com.

or leave a message on the company's website: https://teplo.te.ua/.

The company operates an information and reference service, calling the number 25-25-39, citizens can leave their comments, appeals or messages.

For obtaining operational information on heat and hot water supply, you can call the dispatch service of the company at (0948) 52-70-60.

All incoming grievance are subjected to registration electronically on registration and control cards. When an automated registration of an appeal, the following data are recorded: the date of the appeal obtaining; surname, name, patronymic, category (social status) of the applicant; from where the appeal is received, date, index, control; issues raised, short contents, indexes; the contents and date of the resolution, the registrar's name, executor, term of execution; date of submission, index and contents of the document, decisions made, date of withdrawal from the control; number of the case on the range.

Each appeal is considered obligatory and an answer is sent.

If the submitted application is not related to the project's ongoing work, it is redirected to the unit that solves the problem and is notified to the person who requested it.

In the case of sending an appeal to an e-mail address, the response to the request is sent by e-mail to the address from which the application was received, or, in the case of indication of the postal address - by ordinary mail.

The general deadline for responding to complaints does not exceed 1 month from the date of obtaining the complaint.

The appeal procedure will, if necessary, change during the implementation of the PROJECT.

The construction contractor must also implement the "Rapid Response" procedure in order to maximally efficiently and promptly respond to urgent complaints of interested parties at the site.

If no understanding or peace agreement is reached or if the person who is negatively affected does not receive an answer, the person may apply to the CPIU, where a specialist who registers the
claims and complaints is appointed, and will try to resolve them at the local level, about what the World Bank office will be notified.

At public meetings, people who are negatively affected will receive contact information to contact this specialist. If a person who is negatively affected by the project will be dissatisfied with the decision received, she will be able, as a last resort, to apply to the court with due jurisdiction.

The company may consider creating a conflict resolution commission (with the participation of representatives of the enterprise, representatives of the city council and other persons) to solve complex issues raised in complaints.

The purpose of the appeal procedure and the conflict resolution commission is to promptly and efficiently respond to the problems of stakeholders and the local population directly, thus avoiding the escalation of the problem to the level of administrative and judicial authorities.
11. NON-TECHNICAL SUMMARY FOR PUBLIC

The district heat supply sector in Ukraine is in a very difficult technical and financial situation, and therefore requires significant investments in energy efficiency, improving the quality of services provided to consumers, and strengthening the financial sustainability of utilities infrastructure companies.

Therefore, the Government of Ukraine in 2012 initiated the Project "Energy Efficiency Improvement in the District Heat Supply System of Ukraine", which will be implemented at the expense of borrowings from the International Bank for Reconstruction and Development (IBRD) and the Clean Technology Fund (CTF).

On May 26, 2014, between Ukraine and the World Bank, the loan agreements No. 8387-UA (between Ukraine and the IBRD for the amount of 332 million USD) and No. TF016327 (between Ukraine and CTF for the amount of 50 million USD) were signed for the implementation of the project between Ukraine and the World Bank. "Increasing energy efficiency in the district heat supply system of Ukraine", in addition, on August 18, 2014 Ukraine-IBRD and CTF signed the Project Implementation Agreement.

A number of enterprises in the housing and utility services sector, including the utility enterprise "Ternopilmiskteplokomunenerho" of Ternopil city council, were selected to participate in the project.

The decision of the session of the Ternopil City Council was to support the participation of the “Ternopilmiskteplokomunenerho” heat utility network of the Ternopil City Council in the Project "Energy Efficiency in the District Heat Supply System of Ukraine" and empowering the Head to sign the relevant Agreements.

The main problems of the heat supply system in the city of Ternopil are:
- Operation of obsolete and physically demolished boiler equipment;
- Unbalanced hydraulic mode of heating networks;
- Low level of automation in the entire sequence of technology of production, transportation and consumption of heat;
- Lack of monitoring system for monitoring the technology of production and transportation of heat energy;
- Poor technical condition of heat networks
- Operation of non-energy efficient pumping equipment in most boiler houses;
- A high percentage of disconnections from the district heat supply system, and as a result, the installed capacity of boiler houses significantly exceeds the connected load.

The objective of the Project implementation at the “Ternopilmiskteplokomunenerho” municipal utility network of the Ternopil City Council is to increase energy efficiency and reliability of the district and decentralized heat supply system by updating basic production facilities, automating production processes, reducing fuel and energy consumption, reducing heat losses and inappropriate consumption of heat energy at consumers, improving the quality and reliability of the services
provided, strengthening the company's financial sustainability, greenhouse gas emission reductions in the environment, etc.

The project "Energy Efficiency in the District Heat Supply System of Ukraine" consists of the following components that are planned to be implemented in Ternopil city:


2. Reconstruction of the district heat supply pipelines network. In total, 2.8 km of obsolete pipes will be replaced.


5. Installing the SCADA system.

6. Installation of cogeneration units.

This project corresponds to the state program in the field of heat power engineering and social policy reform, as well as the existing municipal programs of Ternopil city.

Details:

Customer's address: 46001, Ukraine, Ternopil city, 16, I.Franka str.
Manager: Head - Chumak Andrii Konstantynovych, tel.: (0352) 25-25-39
Comments and suggestions to send:
- to the address: 46001, Ukraine, Ternopil city, 16, I.Franka str.
- to the e-mail of the company zvern.kptmtke@ukr.net

The site of the “Ternopilmiskteplokomunenerho” utility enterprise of the Ternopil City Council - www.teplo.te.ua.
Анекс

Анекс 1. Сервітуєнські угоди з громадськими закладами харчування

ДОГОВІР № 22/11-3-1
про користування земельною ділянкою

м. Тернопіль

“22” жовтня 2018 р.

Комунальне підприємство теплових мереж
“Тернопільське теплове сервісу”, Тернопільської міської ради, в особі директора підприємства Чумака Андрія Костянтиновича, який ліє на підставі
Статуту, надалі Сторона — 1 з однією сторони;

Підприємство безпеки Філіпа Викторовича

який(а) ліє на підставі трансферту надалі Сторона — 2 з другої сторони;

Наводячи на тексту Договір іменується Сторони, у зв'язку з отриманням Стороною — 2 у користування земельної ділянки площею 0,00 га, дата видачі сертифікату — 20 грудня 2018 р., яка знаходиться за адресою: індекс 46000,
м. Герсінь, вул. Герсінька, 10, на якій розташована охоронна зона мереж централізованого опалення, в тому числі споруда мереж централізованого опалення, яка знаходиться на цих мережах (наводячи на тексту — інженерні мережі), що перебувають на балансі та обслуговувані Сторони — 1, або через яку здійснюється доступ до цих інженерних мереж, укладені згідно Договір про наступне:

1. Платформа договору

1.1 Предметом даного Договору є право доступу (підоходового проходу та проїзду на транспортних засобах) Сторони — 1 до інженерних мереж, через земельну ділянку Сторони — 2, зазначену в прямокуті цього Договору.

1.2 Доступ Сторони — 1 до інженерних мереж, через земельну ділянку Сторони — 2, зазначену в прямокуті цього Договору, здійснюється з порядку і на умовах, визначених цим Договором та чинним законодавством України.

1.3 Розміщення та кордони земельної ділянки (із навеснів охоронної зони та інженерних мереж) зазначені на плані земельної ділянки, який є необхідним додатком до даного Договору.

2. Права та обов'язки сторін

2.1 Сторона — 1 має право безперешкодного доступу (підоходного проходу та проїзду на транспортних засобах) через земельну ділянку Сторони — 2 до інженерних мереж Сторони — 1.

2.2 Сторона — 1 має право безперешкодно користуватися земельною ділянкою Сторони — 2 для проведення робіт, пов’язаних із виконанням утримання та експлуатацією інженерних мереж, в тому числі для проведення поточного і капітального ремонту інженерних мереж, для запобігання та ліквідації
аварійних ситуацій на інженерних мережах, для заміни інженерних
мереж.
2.3 Сторона - 1 за попереднім поточним із Сторони-2, має право
розготовувати обладнання та транспортні засоби, необхідні для
проведення робіт, зазначених в п. 2.2 даного Договору при цьому
Сторона-1 не повинна чинити перешкод у діяльності Сторони-2.
У разі здійснення перешкод Стороно-2 вправлі одною сторінкою порядку
припинити умови даного договору і відшкодувати завдані збитки.
2.4 Сторона-1 має право вимагати від Сторони-2 відшкодування збитків,
завдані всією внаслідок порушень Сторони-2 умов даного Договору.
2.5 Сторона-1 зобов'язана користуватися земельною ділянкою Сторони-2
в порядку і на умовах, визначених цим Договором та чинним
законодавством України.
2.6 Сторона-1 зобов'язана ремонтні роботи та ліквідацію аварійних ситуацій
на інженерних мережах здійснювати у максимальному ефективному
порядку, відповідно до вимог чинного законодавства України.
2.7 Сторона-1 зобов'язана після проведення поточного чи капітального
ремонту та аварійно - відповідно наведених робіт на інженерних мережах
здійснювати зворотню зачистку місця розкопки та вирівнювання території
розвідок, відновити електрику, міського освітлення, асфальтову покриття,
брускі, та зону зелених насаджень до попереднього стану, що був до
проведення поточного чи капітального ремонту та аварійно -
відповідно наведених робіт на інженерних мережах.
2.8 Сторона-1 зобов'язана при виконанні робіт, пов'язаних з експлуатацією
та утриманням інженерних мереж, виконати всі необхідні заходи з метою
поглиблення травматизму, спригання школи та недопущення
матеріальної шкоди Сторони-2.
2.9 Сторона-1 зобов'язана повідомити Сторону-2 про проведення планових
ремонтних робіт на інженерних мережах не менше, як за 7 (сім) робочих
днів до початку проведення робіт, а позашляхових не менше як за добу.
2.10 Сторона-1 має право вимагати від Сторони-2 користуватися земельною
ділянкою виключно в порядку і на умовах, визначених цим Договором та
чинним законодавством України.
2.11 Сторона-1 має право вимагати від Сторони-2 відшкодування збитків,
завдані всією внаслідок порушень Сторони-1 умов даного Договору.
2.12 Сторона-1 зобов'язана забезпечити Стороні-1 безперешкодний доступ
(підходні прохіді та проїзд на транспортних засобах) через свою
земельну ділянку до інженерних мереж.
2.13 Сторона-1 зобов'язана забезпечити Стороні-1 безперешкодне
користування земельною ділянкою Сторони-1 для проведення робіт,
пов'язаних з штучними утвореннями та експлуатацією інженерних мереж,
в тому числі для проведення поточного і капітального ремонту
інженерних мереж, для запобігання та ліквідації аварійних ситуацій на
інженерних мережах за умови, що це не буде перешкоджати діяльності
Сторони-2.
У разі здійснення перешкод Сторони-2 вправлі одною сторонкою порядку
припинити умови даного договору і відшкодувати завдані збитки.
2.14 Сторона 2 зобов'язана забезпечити Стороні 1 можливість безперервного розташування на своїй земельній ділянці обладнання та транспортних засобів, необхідних для проведення робіт, пов'язаних з наданням утримання та експлуатації інженерних мереж, в тому числі для проведення поточного і капітального ремонту інженерних мереж, а також забезпечення та ліквідації аварійних ситуацій на інженерних мережах за умови, що це не буде перешкоджати діяльності Стороні 2.
У разі здійснення перешкод Стороні 2 вправі в односторонньому порядку припинити умови даного Договору і відшкодувати завдані збитки.
2.15 Сторона 1 зобов'язана у випадку необхідності проводити розшукання та випробування трубопроводів теплових мереж або виконання робіт поблизу них на інженерних мережах виключно з дозволу Сторони 2.
2.16 Сторона 1 зобов'язана у разі виявлення попокаження інженерних мереж нестабільної повідомити про це Сторону 2 та здійснити всі можливі заходи щодо запобігання негативних наслідків цього показання. Ліквідація показань виконується Сторонами на умовах дозволу Сторони 2.
2.17 Сторона 1 зобов'язана у разі використання у ліквідації аварійних ситуацій та проведення ремонту інженерних мереж Сторони 2, в тому числі, у випадку необхідності, демонтуючи системи відповідної території з метою уникнення їх пошкодження Сторони 2, виповнювати умови даного Договору.

3. Відповідальність сторін

3.1 За невиконання своїх зобов'язань по даному Договору Сторони несе відповідальність згідно умов Договору та чинного законодавства України.
3.2 Сторона 2 не несе відповідальності перед Стороною 1 та третіми особами за збитки, спричинені в результаті порушення Стороною 1 режиму охоронної зони інженерних мереж та неістотного виконання умов даного Договору.
3.3 Сторона 2 не несе відповідальності перед Стороною 1 та третіми особами за збитки, спричинені в результаті порушення Стороною 1 порядку користування земельною ділянкою Сторони 1, встановленого даним договором та чинним законодавством України.
3.4 Сторона 1 відшкодовує збитки Стороні 2, що вину виникли в результаті земельної ділянки Сторони 2, після проведення Стороною 2 робіт, пов'язаних з наданням утримання та експлуатацією інженерних мереж, в тому числі з проведением поточного чи капітального ремонту інженерних мереж, з його затримками та ліквідаційними аварійними ситуаціями на інженерних мережах, від зміни інженерних мереж.

4. Дія Договору

4.1 Датоїй Договор набрасяє чинністі з моменту його підписання Сторонами і діє безстроково.
4.2 У випадку зміни власника земельної ділянки, Сторона 2 забороняється повідомити (висновкою під розписку чи шляхом надсилання)
5. Інші умови

5.1 Даний Договір складений українською мовою в двох ідентичних примірниках по одному примірнику для кожної Сторони, кожний з яких має ошарову першістю силу.

5.2 Всі спори, які можуть виникнути під час виконання умов цього Договору вирішуються Сторонами на договірних умовах, а при неможливості такого вирішення, спір передається на розгляд суду.

5.3 Сторони погодилися, що первональні дани, які стали відомі Сторонам в зв'язку з підписанням цього Договору, включаються до баз первональних даних Сторін. Підписані дані Договір. Сторони дають згоду (дозвіл) на обробку первональних даних, з метою підтвердження виконання суб'єкта на укладення, зміну та розірвання Договору, забезпечення реалізації податкових відносин, відносин у сфері бухгалтерського обліку та статистики.

5.4 Нсвідомою частиною даного Договору є план земельної ділянки, на якому відображено розташування та кордони земельної ділянки (із шпленцем охоронної зони та інженерних мереж).

6. Форс-мажор

6.1 Сторони звільняються від відповідальності за частково або повне невиконання зобов'язань по даному договору, якщо це невиконання є наслідком обставин непереборної сили, що виникли після укладення договору, в результаті подій неповторного характеру, які сторона не могла від передбачити, а які подолати разумними заходами (форс-мажор).

6.2 Сторона, для якої зпокійняння зобов'язань стало неможливим внаслідок дії обставин непереборної сили, повинна негайно, а не пізніше п'яти календарних днів, письмово повідомити іншу сторону про початок, можливий термін її дії та про припинення дії таких обставин.
7. Юридичні адреси та реквізити сторін:

Сторона 1
Комунальне підприємство теплових мереж
"Тернопільськотеплекомуненерго"
Тернопільської міської ради
46001 м. Тернопіль, вул. І. Франка, 16
Код СДРПОУ 14034534
ВАТ «Ощадбанк», МФО 338345
р/р 26009306099
ПІП 140345319188

Директор

А. Ф. Чумак

М. П.

Начальник ЮВ ___________ А. В. Решетука
Додаток
до договору № 22/11-3-1
від 22.11.2018 р.

План про користування земельною ділянкою між КП «ТМТКЕ» та
ООО В.Н. м. Гернопіль вул. Київська, 10 б

Створена: 1

КП «ТМТКЕ»

А. К. Чумак

Мр.

Створена: 2

Мр.
ДОГОВІР № 23/10-311
про користування земельної ділянки

м. Тернопіль, "23" грудня 2018 р.

Комунальне підприємство теплових мереж "Тернопільське комунальне управління" Тернопільської міської ради, в особі директора підприємства Чумацька Андрія Костянтиновича, який лід на підставі статуту, надає Сторони - 1 з одної сторони;

іменом "Рубашка Олена Олексіївна", який(а) лід на підставі

надає Сторони - 2, з іншої сторони;

Надалі по тексту Договору іменуватимуться Сторони, у зв'язку з отриманням Стороною, підкорюють земельну ділянку площею 130 м². Дата видачі сертифікату № 1234567890, що знаходиться за адресою: індекс 46000, м. Тернопіль, вул. Кривошеї, 258, на якій розташована охоронна зона мереж централизованого опалення, в тому числі споруд мереж централизованого опалення, які знаходяться на ній, мережах (надалі по тексту — інженерні мережі), які перебувають на балансі та обслуговуванні Сторони - 1, але через яку здійснюється доступ до цих інженерних мереж, укладає даний Договір про наступне:

1. Предмет договору

1.1 Предметом даного Договору є право доступу (підготовчого проходу та проїзду на транспортних засобах) Сторони - 1 до інженерних мереж, через земельну ділянку Сторони - 2, зазначену в праємбулі цього Договору.

1.2 Доступ Сторони - 1 до інженерних мереж, через земельну ділянку Сторони - 2, зазначену в праємбулі цього Договору, здійснюється в порядку і на умовах, визначених цим Договором та чинним законодавством України.

1.3 Розташування та кордони земельної ділянки (із нанесенням охоронної зони та інженерних мереж) зазначені на плані земельної ділянки, який є певідомленим додатком до даного Договору.

2. Права та обов'язки сторін

2.1 Сторона - 1 має право безперешкодного доступу (підготовчого проходу та проїзду на транспортних засобах) через земельну ділянку Сторони - 2 до інженерних мереж Сторони - 1.

2.2 Сторона - 1 має право безперешкодно користуватися земельною ділянкою Сторони - 2 для проведення робіт, пов'язаних з належним утриманням та експлуатацією інженерних мереж, в тому числі для проведення поточного і капітального ремонту інженерних мереж, для запобігання та ліквідації
аварійних ситуацій інженерних мережах, для заміни інженерних мереж.

2.3 Сторона 1 має право розташувати обладнання та транспортні засоби, необхідні для проведення робіт, зазначених в п. 2.2 даного Договору.

2.4 Сторона 1 має право вимагати від Сторони 2 підключення збитків, завдань її внаслідок порушення Сторонами, з умов даного Договору.

2.5 Сторона 1 зобов'язана користуватися земельною ділянкою Сторони 2 в порядку і на умовах, визначених даним Договором та чинним законодавством України.

2.6 Сторона 1 зобов'язана ремонтувати роботи та ліквідацію аварійних ситуацій на інженерних мережах здійснювати у максимально тривалий строки, відповідно до вимог чинного законодавства України.

2.7 Сторона 1 зобов'язана після проведення поточного чи капітального ремонту та аварійно - відновлювальних робіт на інженерних мережах здійснити зворотню засипку місця розкопки та вирівнівання території розкопок, відновити елементи біягістрою: асфальтове покриття, бруківку та зону зелених газонів.

2.8 Сторона 1 зобов'язана при виконанні робіт, пов'язаних з експлуатацією та утриманням інженерних мереж, вжити усіх необхідних заходів з метою недопущення травматизму та мінімального спричинення шкоди.

2.9 Сторона 1 зобов'язана повідомити Сторону 2 про проведення планових ремонтних робіт на інженерних мережах не менше, як за 3 дні до початку проведення робіт.

2.10 Сторона 1 має право вимагати від Сторони 1 користуватися земельною ділянкою виключно в порядку і на умовах, визначених цим Договором та чинним законодавством України.

2.11 Сторона 1 має право вимагати від Сторони 1 відключення збитків, завдань її внаслідок порушення Сторонами, з умов даного Договору.

2.12 Сторона 1 зобов'язана забезпечити виконання дії, в якій, включаючи, таких обладнання та транспортних засобів, необхідних для проведення робіт, пов'язаних з налаштуванням та експлуатацією інженерних мереж, в тому числі для проведення поточного і капітального ремонту інженерних мереж, для запобігання та ліквідації аварійних ситуацій на інженерних мережах.

2.13 Сторона 1 зобов'язана забезпечити виконання дій, в якій зобов'язана виконання дії, в якій, включаючи, таких обладнання та транспортних засобів, необхідних для проведення робіт, пов'язаних з налаштуванням та експлуатацією інженерних мереж, в тому числі для проведення поточного і капітального ремонту інженерних мереж, для запобігання та ліквідації аварійних ситуацій на інженерних мережах.

2.14 Сторона 1 має право вимагати від Сторони 1 виконання дій, в якій зобов'язана виконання дій, в якій зобов'язана виконання дій, в якій, включаючи, таких обладнання та транспортних засобів, необхідних для проведення робіт, пов'язаних з налаштуванням та експлуатацією інженерних мереж, в тому числі для проведення поточного і капітального ремонту інженерних мереж, для запобігання та ліквідації аварійних ситуацій на інженерних мережах.

2.15 Сторона 1 зобов'язана користуватися земельною ділянкою з дотриманням порядку зон мереж, визначених чинним законодавством України.

2.16 Сторона 1 зобов'язана враховувати, що чинним законодавством України
заборонається розміщування будівель, складування, насадження дерев і багаторічних кущів у межах охоронних зон на відстані менше ніж 3 м. від проекції на поверхню землі краю будівельних конструкцій теплової мережі підземної канальної прокладки та повітряної прокладки або від проекції на землю краю трубопроводів теплових мереж безканальної прокладки.

2.16 Сторона — 2 зобов'язана у випадку необхідності проводити реконструкцію та обміркування граці трубопроводів теплової мережі або виконання робіт поблизу них чи на інженерних мережах виключно з дозволу Сторони — 1.

2.17 Сторона — 2 зобов'язана у разі виявлення наявності інженерних мереж негайно позіджати про це Стороні — 1 та здійснити всі можливі заходи щодо запобігання негативних наслідків цього пошкодження. Ліквідація пошкоджень виконується Стороною — 1.

2.18 Сторона — 2 зобов'язана виконувати у ліквідації аварійних ситуацій та проведення ремонтних робіт на інженерних мережах Сторони — 1, в тому числі, у випадку необхідності, демонтовувати елементи благоустрою території з метою уникнення їх пошкодження Стороною — 1 під час проведення робіт, передбачених вим Договором.

2.19 Сторона — 2 зобов'язана своїми силами та коштами проводити відновлення елементів благоустрою, за винятком тих, що відновлюються Стороною — 1 згодно п. 2.7 даного Договору.

2.20 Сторона — 2 не вимагає зі Сторони — 1 відшкодування збитків, які можуть бути спричинені внаслідок порушення Стороною — 2 режиму охоронної зони мереж.

3. Відповідальність сторін

3.1 За невиконання своїх зобов'язань по даному Договору Сторони несуть відповідальність за згідно умов Договору та чинного законодавства України.

3.2 Сторона — 1 не несе відповідальності перед Стороною — 2 та третіми особами за збитки, спричинені в результаті порушення Стороною — 2 режиму охоронної зони інженерних мереж та неналежного виконання умов даного Договору.

3.3 Сторона — 2 не несе відповідальності перед Стороною — 1 та третіми особами за збитки, спричинені в результаті порушення Стороною — 1 порядку користування земельної ділянкою Сторони — 1, встановленого даним договором та чинним законодавством України.

3.4 У випадку незбіжності Сторони — 2 своїх зобов'язань перед Стороною, відповідальність за несвоєчасну ліквідацію аварій інженерних мережах Сторони — 1, в тому числі, відшкодування збитків, заподіяних Сторони — 1 та треті особам, які завершують свої претензії до Сторони — 1, покладається на Сторону — 2.

4. Дата Договору
4.1 Даній Договір набирає чинності з моменту його підписання Сторонами і діє безстроково.

4.2 У випадку зміни власника земельної ділянки, Сторона 2 зобов'язана повідомити (письмово під росіючи чи шляхом надсилання рекомендаційного листа з повідомленням про вручення) нового власника про зобов'язання власника щодо використання земельної ділянки, визначені даним Договором.

4.3 У випадку передачі Сторонам 1 інженерних мереж, вказаних у цьому Договорі, на баланс чи в користування іншій юридичної чи фізичної особи, до неї переходять права і обов'язки Сторони 2, визначені даним Договором, про те що Сторона 1 зобов'язана повідомити (письмово під росіючи чи шляхом надсилання рекомендаційного листа з повідомленням про вручення) нового власника (балансується).

4.4 Припинення експлуатації та утримання інженерної мережі Сторони 1 є підставою для припинення дії даного Договору, крім випадків передачі інженерної мережі на баланс чи в користування до іншої юридичної чи фізичної особи.

4.5 Данний договір може бути розірваний за згодою Сторін або у іншій спосіб, визначеним чинним законодавством України.

5. Інші умови

5.1 Даній Договір складається українською мовою в двох ідентичних примірниках по одному примірнику для кожної Сторони, кожний з яких має однакову юридичну силу.

5.2 Всі спори, які можуть виникнути під час виконання умов цього Договору вирішуються Сторонами на договорних умовах, а при неможливості такого вирішення, спір передається на розгляд суду.

5.3 Сторони погодилися, що персональні дані, які стали відомі Сторонам в зв'язку з підписанням цього Договору, включаються до баз персональних даних Сторін. Підписані даній Договір, Сторони дають згоду (дозвіл) на обробку персональних даних, з метою підтвердження повноважень суб'єкта на укладення, зміну та розірвання Договору, забезпечення реалізації податкових відносин, відносин у сфері бухгалтерського обліку та статистики.

5.4 Невідповідно частиною даного Договору є план земельної ділянки, на якому відображено розташування та кордони земельної ділянки (із наведенням охоронної зони та інженерних мереж).

6. Форс-мажор

6.1 Сторони звільняються від відповідальності за часткові або повне невиконання зобов'язань по даному договору, якщо це невиконання є наслідком обставин непереборної сили, що виникли після укладення договору, в результаті події надзвичайного характеру, які сторона не могла аж передбачити, ані полюбля розумним заходам (форс-мажор).
6.2 Сторона, для якої виконання зобов'язань стало неможливим наслідком дії обставин непереборної сили, повинна негайно, не пізніше п'яти календарних днів, письмово повідомити іншу сторону про початок, можливий термін їх дії та про припинення дії таких обставин.

7. Юридичні адреси та реквізити сторін:

Сторона 1
Комунальне підприємство
Теплових мереж
“Тернопільськоблокомуненерго”
Тернопільської міської ради
46001 м. Тернопіль, вул. І.Франка, 16
Код ЄДРПОУ 14034534
ВАТ «Ощадбанк», МФО 338545
р/р 26009300099
ПН 140345319188

Директор

Станіслав Сімар

М.П.

Наочник ІОВ А.В.Решетуха
Додаток
до договору № ________ 2018 р.
План про користування земельною ділянкою між КП «ТМТКЕ» та ______
ФСТ Рубан О.Є.
м. Тернопіль вул. Кривого

Сторона — 1
КП «ТМТКЕ»

А. К. Чумацькій
Мп.

Сторона — 2

РУБАН Олег
Опеляна
1401191924
Схема розміщення сезонного об'єкта сфери торгівлі за адресою:
за адресою: вул. Кривоносів, 2Б
ФОП Рудай О.О.
Площа майданчика
M.1:2000

Літній торговий майданчик

Начальник КП "Місто"
М.П.

Дата складання "__" _______ 20___ року

Вик. Підвальний А.П. 25-28-78
Annex №2. Informing the public on work related to the Project.

Ternopil city, Dovzhenka str., 6
ПОВІДОМЛЕННЯ

Для забезпечення високої якості послуг і фінансової стабільності компаній в секторі централізованого теплопостачання в Україні, Міністерство регіонального розвитку, будівництва та житлово-комунального господарства України (Мінрегіон) координує модернізацію та проект відновлення інфраструктури централізованого теплопостачання в м. Тернопіль. Проект фінансується Світовим банком спільно з українським Фондом Часних Технологій (ФЧТ).

Проект спрямовано на покращення роботи системи централізованого теплопостачання та й її ефективності, підвищення якості послуг тепло- та гарячого водопостачання, економії палива, електроенергії, води та інших ресурсів, впровадження автоматизованих сучасних систем управління.

Проект передбачає:
1. Модернізацію котельних по вул. Київська, 3с, вул. Галицька, 40, вул. Деміївська, 23, вул. Багата, 4, вул. І. Франка, 16, вул. Живова, 12, вул. Дружби, 9в, вул. Просвіти, 9.
2. Реконструкцію трубопроводів теплових мереж (2,8км).
3. Встановлення автоматизованих Індивідуальних Теплових Панелей.
4. Установка енергооскарбляючих насосів з частотними перетворювачами у котельних по вул. Багата, 4, вул. І. Франка, 16, вул. Просвіти, 9, вул. Живова, 12, вул. Дружби, 9в.
5. Влаштування системи SCADA.
6. Влаштування когенеративних установок електричної потужністю 1,5 МВт на котельних по вул. Київська, 3с та по вул. Деміївська, 23.

Громадські слухання із запланованого питання відбудуться 12 грудня 2018 р. о 14:30 год за адресою: м. Тернопіль, вул. І. Франка, 16 у приміщенні житлового фонду КП ТМТКЕ.

З повідомлених матеріалами та додатковою інформацією можна ознайомитися на сайті КП ТМТКЕ https://teplo.te.ua/ у розділі Оголошення.

Пропонуютима та зауваження в даного питання просимо направляти у висловленому вигляді на вищевказану адресу, або на електронну пошту підприємства "ТМТКЕ", та зазначити за тел.: (0352) 25-25-39.
Ternopil city, Heroes of Kruty, str., 8
ПОВІДОМЛЕННЯ

Для забезпечення якісної інвестиційної діяльності компанії в секторі централізованого теплопостачання в Україні Міністерство регіонального розвитку, будівництва та житлово-комunalного господарства України (Мінрегіон) керує реалізацію модернізації та проектів відновлення інфраструктури централізованого теплопостачання в м. Тернополі. Проект фінансується Саїтою Комунальної спільності з Українським Фондом Числених Технологій (ФЧТ).

Проект спрямовано на покращення роботи системи централізованого теплопостачання та його ефективності, відносячи якості послуг теплопостачання і водопостачання, енергоносіїв, води та інших ресурсів внаслідок встановлення сучасного обладнання та автоматизованого систем управління.

Проект відбувався:
1. Модернізація котельних на вул. Ківічка 3, вул. Тернопільська 49, вул. Лисенківська 23, вул. Базарна 4, Франція 16, вул. Живцова 12, вул. Друїч 9, вул. Просвіти 9.
2. Реестрування трубопроводів теплових мереж (2,5 км).
3. Встановлення автоматизованих інфраструктурних ТЕПП-пунктів.
4. Установка енергоэффективних насосів з частотними перетворювачами у котельному вул. Базарна 4, Франція 16, вул. Просвіти 9, вул. Живцова 12, вул. Друйча 9.
5. Впровадження системи SCADA.
6. Визначення несприятливих умов у виходних котельних енергією потужністю 1,38 МВт на котельних по вул. Ківічка 3, та по вул. Лисенківська 23.

Громадський склад із міського бюджету відбувся 12 грудня 2018 р. на 14:30 год. за адресою м. Тернополь, вул. Франца 16 у приміщенні видавництв КП "ГМПТКЕ".

З інформаційних матеріалах та детальній інформації можна ознайомитись на сайті КП "ГМПТКЕ" https://teplofe.com.ua у розділі "Оголошення".

Пропонується та заукашано в цьому питанні просить надсилати у письмовому вигляді на вищенаведену адресу, або на електронну пошту (нареченої заходу "lpetrik@ckl.net", а також за тел. (0352) 25-25-39.

Ternopil city, L. Ukrainka, str., 10
Ternopil city, Konovaltsia, str., 16
Згідно плану поточного ремонту у Вашому під'їзді проводиться ремонт еходової клітки.
Просимо Вас погасити заборгованість по квартирній платі.
Тернопіль, Вербицької, 4
Ternopil city, Heroes of Kruty, str., 4
Тернопіль. Г. Репина, 16
Ternopil city, G.Tarnavsky, str., 20
ПОВІДОМлення

Для забезпечення економічної якості послуг і фінансової стабільності компаній в секторі централізованої теплопостачання у Україні Міністерство регіонального розвитку, будівництва та житлово-комунального господарства України (Мінрегіон) координує модернізацію та проект відновлення інфраструктури централізованого теплопостачання в м. Тернопіль. Проект фінансується Скіловим Банком опіково з Українським Фондом Чистих Технологій (ФЧТ).

Проект спрямований на покращення роботи системи централізованого теплопостачання та її ефективності, підвищення якості послуг тепло- та гарячого водопостачання, економії витрат на енергію, воду та інші ресурси, зменшення здешевлення сучасного обладнання та автоматизованих систем управління.

Проект передбачає:
1. Модернізацію котельних по вул. Київська 3а, вул. Галицька, 49, вул. Ломаківська, 23, вул. Багата, 4, вул. Франка, 16, вул. Жирова, 12, вул. Дружби, 9а, вул. Промислова, 9.
2. Реконструкцію трубопроводів теплових мереж (2,8 км).
3. Встановлення автоматизованих індивідуальних теплових пунктів.
4. Установка енергоефективних котлів з застосуванням перегріваного води у котельних по вул. Багата, 4, вул. Франка, 16, вул. Промислова, 9, вул. Жирова, 12, вул. Дружби, 9а.
5. Встановлення системи SCADA.
6. Впровадження когенеративних установок електричної потужністю 1,5 МВт на котельних по вул. Київська 3а та по вул. Ломаківська, 23.

Громадські слухання до запропонованого питання відбуваються 12 грудня 2018 р. в 14:30 год. за адресою: м. Тернопіль, вул. Франка, 16 у приміщенні відділення КП ТМТКЕ.

З цих цілей із запропонованим проектом повинні знати всі жителі м. Тернопіль.

Пропозиції та зміни до цього питання просимо надсилати у адресу КП ТМТКЕ https://teplo.ternohiv.ua у розділі "Охочення".

Тернопільська обласна Державна адміністрація.

Ternopil city, Chaldaeva, str., 6
ПОДІЛЕННЯ

Для забезпечення підвищеного рівня ефективності та фінансової стабільності компаній в секторі спрагового газопостачання в Україні Міністерство регіонального розвитку, будівництва та житлово-комунального господарства України (Мінрегіон) направляє підтримку та проект впровадженні інфраструктури природного газопостачання в м. Тернопіль. Проект фінансується Світовим банком згідно з Українським Фонаром Цінних Технологій (УФТ).

Проект спрямований на покращення роботи систем природного газопостачання та її ефективності, підвищення якості послуг та рівня надійності екології палив, сировини та інших ресурсів використання сучасного обладнання та автоматизованих систем управління.

Проект передбачає:
1. Реконструкцію та оновлення газопроводу фіксії по вул. Ярослава III, вул. Палиця 14, вул. Львівська 25, вул. Багря 4, вул. Степана Бандери 12, вул. Дружби 9, вул. Плеханова 9.
2. Реконструкцію трубопроводів типу 4 (1,8 км).
3. Реструктурування системи комунікацій в м. Тернопіль.
4. Установку електрофіксаційних колонок з частковою перетворюванням у м. Тернопіль на вул. Байраха 4, вул. Франка 14, вул. Просвітницька 8, вул. Жукова 12, вул. Дружби 9.
5. Впровадження системи SCADA.
6. Конструктивне комунікаційне устаткування, що забезпечує потужність 1,5 МВт для встановлення по вул. Палиця 14, вул. Львівська 25, вул. Дружби 9.

Грандиозна сессія інвестиційного проекту буде проведене 12 грудня 2018 р. о 14:30 на базі м. Тернопіль, вул. Франка, 14 у приміщенні акціонерної компанії ECO ENERGY.

З власником поданих матеріалів та базових інформації можна звернутися на сайт маістер-центр https://www.ecoenergy.com у розділі «Звернення».

Тернопіль, вул. Дружби, 9, вул. Радянська 12, вул. Плеханова 9, вул. Паліця 14, вул. Ярослава III.

Ternopil city, Dovzhenko, str., 8
ПОВІДОМЛЕННЯ

Для забезпечення високої якості послуг і фінансової стабільності компанії в секторі централізованого теплопостачання у Україні Міністерство регіонального розвитку, будівництва та національного господарства України (Мінрегіону) використовує модернізацію та проекти впровадження інфраструктури централізованого теплопостачання в м. Тернопіль. Проект фінансується Сівічком Боксом спільно з Українською Фондом Чистих Технологій (ФЧТ).

Профілі проекту спрямовано на позитивне вплив на систему централізованого теплопостачання в м. Тернопіль відповідно до енергетичних норм та ефективності, зменшення «вогнів» пожеж і гарячого водопостачання, суттєвого піднятия енергосистеми, води та інших ресурсів, досягнення зниження екологічного обов'язку та автоматизації систем управління.

Проект передбачає:
1. Модернізацію теплових мереж на вул. Князівська 3в, вул. Зотовка 22, вул. Зотовка 9, вул. Гомонова 40.
2. Реконструкцію теплових мереж на вул. Воскресенська, 12, вул. Прокопівська, 9, вул. Драгобратська, 9а.
3. Встановлення автоматизованих індивідуальних теплових пристрій.
4. Установка енергоекологічних систем у схематичному перетворюванні у теплових мережах на вул. Зотовка, 12, вул. Прокопівська, 12, вул. Драгобратська 9а.
5. Робота системи SCADA.
6. Підвищення енергоекологічних характеристик енергетичного потужності 1,58 МВт на теплоцеху на вул. Князівська 3в та вул. Драгобратська 22.

Громадська сесія та консультативна сесія відбувається 13 грудня 2019 р. в 14.30 год. на адресі м. Тернопіль, вул. Франка, 10 у приміщенні основної залі КП ГМПЕ.

З інформаційних матеріалів та додаткової інформації можна спілкуватися на сайті КП ГМПЕ https://eppe.ternoz.com в рядній особистості.

Протокол та звіт узгоджені з даним тепловим комунальним комітетом міської ради та вищим іншими органами, а також на електронну пошту генерального директора: kpr@tprak.ternoz.com, а також за тел. 0552/25-22-39.

Ternopil city, S. Bandera str., 94
ІНФОРМАЦІЯ

Ternopil city, S. Bandera str., 94
У ДТП загинув чемпіон світу і Європи з армреслінгу Андрій Пушкар
Повідомлення про проект, спрямований на покращення роботи системи централізованого теплопостачання

Для забезпечення високої якості послуг і фінансової стабільності компанії в секторі централізованого теплопостачання в Україні Міністерство регіонального розвитку будівництва та житлово-комунального господарства України (Мінрегіон) координує модернізацію і проект відновлення інфраструктурі централізованого теплопостачання в м. Тернопіль. Проект фінансується Саїтовим банком стільки з Українським Фондом Чистих Технологій (ФЧТ).

Проект спрямований на покращення роботи системи централізованого теплопостачання і її ефективності, підвищення якості послуг тепло- та гарячого водопостачання, економії газу, електроенергії, води та інших ресурсів, залежно від розвитку систем опалення і автоматизованих систем управління.

Проект передбачає:
- модернізацію котельних по вул. Київська, 3с, вул. Галецька, 40, вул. Любомирська, 23, вул. Багатія, 4, і Франка, 16, вул. Жовтна, 12, вул. Друкарська, 9у, вул. Прокоповича, 9;
- реконструкцію трубопроводів теплових мереж (в км);
- встановлення автомобілів з автоматизованими індивідуальними системами підключення;
- встановлення енергоефективних насосів з інтенсивним витратами та частотним регулюванням у котельних на вул. Багатія, 4, і Франка, 16, вул. Просвітницька, 9, вул. Жовтна, 12, вул. Друкарська, 9у;
- планування систем SCADA;
- планування когенераційних установок електричної потужністю 158 МВт на котельних по вул. Київська, 3с та вул. Лемівська, 23.

Громадська спілкування є важливою складовою проекту, яка включає публічні слухання, розміщення інформації на відкритій електронній платформі в мережі інформації. Інформацію можна ознайомитись на сайті КП ТМТКЕ https://teplo.suw.ua у розділі «Оголошення». Пропозиції та запити від громадян та організацій використовується на основі місце та адреси для виходу інформації.

Приміська міська газета "Вільне," 10 жовтня 2018 р.
Annex №4. Printscreen of sites’ pages (Ternopil city council, Ternopilmiskteplocomunenergo, Department of housing and communal services).

Site Ternopil city council.

Site Ternopilmiskteplocomunenergo.

Department of housing and communal services.
План екологічного та соціального управління (ПЕСУ)

Для ефективного використання житлово-сільськогосподарських об'єктів, які є об'єктами розподілення земельних ділянок, національного розпорядження та інших нормативних актів, укладених з органами державної влади, з метою забезпечення доступності і адекватності умов життя вітчизняниму населенню, наведено вибір пріоритетних напрямків розвитку ПЕСУ на період до 2023 року.

1. Підтримка соціальних рівнів життя.
2. Забезпечення екологічної безпеки.
3. Розширення соціальних послуг.

В рамках ПЕСУ плануються реалізація таких ініціатив:

- Закріплення території для соціальної інфраструктури
- Створення зелених зон
- Ремонт та реконструкція населених пунктів

План екологічного та соціального управління (ПЕСУ) має підтримати ефективний розвиток та стабільність регіону, забезпечити багатоосередній розвиток соціально-економічної сфери, а також допомогти вітчизняному населенню вплинути на соціально-екологічну ситуацію в регіоні.
Annex №5. Photo report from public consultation.
Public consultations Report

concerning the reconstruction of heat networks in the city of Ternopil under the UDHEEP

Ternopil June 05, 2019

Present: representatives of the public (inhabitants of adjoining residential houses), private entrepreneurs, a representative of the polyclinic department of the Ternopil city children's communal hospital №4, representatives of the Housing and maintenance office (ZhEK) "Blahoustrii", representatives of the MPU "Ternopilmiskteplocomunenergo", representatives of the Central Project Management Unit (CPMU).

The total number of people present is 18.

Agenda: on replacement work of heat networks under the project "Increasing energy efficiency in the district heating system of Ukraine".

Reported: Representative of Communal Enterprise of Heat Networks "Ternopilmiskteplocomunenergo", deputy director Olexandr Lazarchuk and head of the technical department, Mykhailo Horban, informed the participants on works that will be carried out and the scopes of their implementation, the temporary limitations that may arise due to the work and ways / measures to minimize the impact on the lives of residents of neighboring houses and visitors of communal and public institutions located nearby. Also, the participants were acquainted with the Grievance Redress Mechanism and provided contact information.

Question: Public representatives expressed concern about compliance with schedule of work execution and restoration of coverage, improvement of road fares and restoration of playgrounds.

Representative of the Communal Enterprise of Heat Networks "Ternopilmiskteplocomunenergo" Horban M. assured the attendees that all work will be performed solely within the terms provided by regulatory enactments, and the enterprise will monitor compliance with contractual obligations and mitigating measures in accordance with the Environmental and Social Management Plan.

During the event, all those present were provided with newsletters containing information on the main events that will be implemented as part of the work and contact phone numbers for references. Representatives of the Communal Enterprise of Heat Networks "Ternopilmiskteplocomunenergo" received written consent from private entrepreneurs who carry out commercial activities on the territory adjacent to the site for performance of works (Hairdressing salon "Karina", store "Hermes", Flower shop "Fantasy", ZhEK "Blahoustrii") and assurances that work on the reconstruction of networks will not affect the commercial activity of the above-mentioned establishments and will not require compensation. Representatives of the hairdressing salon "Karina" and the store "Hermes" have no objections to the temporary dismantling of the adjacent accommodations. Written consent was received by representatives of MPU “TMTKE” on this issue.
ЗГОДА НА ПРОВЕДЕНИЯ РОБІТ

Я, Фіртач К. А., заклад/органації ________ підтверджую, що була/ла проінформована/н про проведення робіт із реконструкції теплових мереж, що будуть проводитись за адресою м. Тернопіль, вул. Квітня 105 та заходів, що будуть виконані під час виконання робіт.

Заперечень не маю.

Дата 05.06.2019

Підпис
ЗГОДА НА ПРОВЕДЕНИЯ РОБІТ

Я, [ваше ім'я та фі退税], представник [ваша організація], заснована/зареєстрована в [адреса], відмовляюся, що був провідником/лідером у проведенні робіт з реконструкції теплових мереж, що будуть проводитись з адресою [адреса міста, вулиця, номер будинку]. Тернопіль, вул. [вул.], 18, та заходи, що будуть вжиті під час виконання робіт.

Заперечень не маю.

Дата 06.06.2019

[підпис]

Підпис
Annex №8. Copy of the RPIU order.

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<th>№</th>
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</tr>
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