# KASTAMONU

Drinking Water Distribution Network and Sewerage Network Projects under TEFWER

Environmental and Social Management Plan

JANUARY 2025

Özbek ENGINEERING LTD.

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| | |
|---|---|
| ACM | Asbestos Containing Materials |
| AFAD | Disaster and Emergency Management Presidency |
| CERC | Contingency Emergency Response Component |
| CoC | Code of Conduct |
| Component-1 | Kastamonu (Central) Drinking Water Network Project |
| Component-2 | Kastamonu (Central) Sewerage Network Project |
| DLP | Defect Liability Period |
| DRM | Disaster Risk Management |
| DSI | General Directorate of State Hydraulic Works |
| E&S | Environmental and Social |
| EHS | Environmental Health and Safety |
| ESA | Environmental and Social Assessment |
| ESCP | Environmental and Social Commitment Plan |
| ESD | Environmental and Social Document |
| ESF | Environmental and Social Framework |
| ESMF | Environmental and Social Management Framework |
| ESMP | Environmental and Social Management Plan |
| ESMS | Environmental and Social Management System |
| ESSRA | Environmental Social Screening and Risk Assessment |
| ESSs | Environmental and Social Standards |
| EU | European Union |
| GM | Grievance Mechanism |
| KASKI | Kastamonu Municipality Drinking Water and Sewerage Directorate |
| KASMIB | Kastamonu Union of Local Administrations |
| KPI | Key Performance Indicator |
| LFG | Landfill Gas Electricity Production |
| LMP | Labour Management Procedures |
| LM Plan | Labour Management Plan |
| OHS | Occupational Health and Safety |
| PIU | Project Implementation Unit |

| | |
|---|---|
| PTT | Post Office |
| RF | Resettlement Framework |
| SEP | Stakeholder Engagement Plan |
| SPM | Suspended Particulate Matter |
| SPS | Stadium Pump Station |
| TEFWER | Türkiye Earthquake, Floods and Wildfires Emergency Reconstruction |
| WB | World Bank |
| WBG | World Bank Guidelines |
| WWTP | Wastewater Treatment Plant |

# 1 EXECUTIVE SUMMARY

Floods, wildfires, storms and landslides are common events in Türkiye and cause localized losses. The observed and predicted impacts of climate change, such as heavy rainfall, extreme heat and sea level rise, are expected to increase the risks of natural disasters, resulting in more frequent and intense floods in low-lying areas of river deltas and coastal cities, and other extreme weather events such as storms, hail and hurricanes. Floods in coastal cities will not only threaten human lives, but economic losses are also projected to increase. For long-term sustainable growth in Türkiye, the physical, social, and economic shocks caused by geophysical and climate change induced disasters need to be reduced.

The World Bank has been a leading partner in the thematic areas of Disaster Risk Management (DRM) and urban development in Türkiye for many years. The Türkiye Earthquake, Floods and Wildfires Emergency Reconstruction (TEFWER) Project was developed with the participation of Iller Bankasi A.S. and the World Bank (WB) with the aim of supporting municipalities to undertake emergency repair, structural retrofitting and, if necessary, demolition/reconstruction, rehabilitation or reclamation of their damaged infrastructure, or to build them from scratch, and to implement measures to enhance disaster preparedness and climate adaptation. The project will also support faster response to future disasters by financing the Contingency Emergency Response Component (CERC).

Activities under the Kastamonu drinking water and sewerage subproject will comply with the relevant legislation of the Republic of Türkiye and the World Bank's Environmental and Social Standards (ESSs). ILBANK will ensure that works under the TEFWER Project comply with relevant World Bank policies and procedures and Turkish legislative requirements. Therefore, ILBANK is strengthening its Environmental and Social Management System (ESMS) in accordance with the World Bank's ESS9 requirements. Within the scope of the sub-project, 95.09 km of drinking water network (DN110 - DN500 HDPE PE100 pipe) and 20.4 km of sewerage network (DN300- DN1000 Concrete pipe) will be constructed. The Subproject falls under Component 1: Green and Resilient Rehabilitation, Reconstruction and Construction of Municipal Infrastructure and Actions to Strengthen Municipal Resilience, under the TEFWER Project.

ILBANK prepared an Environmental and Social Management Framework (ESMF), Environmental and Social Commitment Plan (ESCP), Stakeholder Engagement Plan (SEP), Labor Management Procedures (LMP) and Resettlement Framework (RF) for the TEFWER Project and announced it in February 2024.

**Environmental And Social Risk Assessment and Management Process**

The environmental and social risk category of Kastamonu drinking water and sewerage project is determined as ‘Moderate’. This ESMP has been prepared in line with the risk categorization. The main environmental risks of the Project are expected to be typical risks and impacts associated with the construction and operation of the sub-project, including dust and noise emissions, generation and disposal of hazardous waste and non-hazardous waste including Asbestos Containing Materials (ACM), Occupational Health and Safety (OHS) risks, disruption to public services and infrastructure provided by the authorities, traffic safety risks, and vehicle exhaust emissions, ecological impacts and potential risks to nearby receptors and impacts on cultural heritage sites.

The main social risks of the Project are expected to be land use restriction, potential exclusion of vulnerable groups (those who are not legal owners or tenants/low-income groups), labor risks related to OHS, and community health and safety risks arising from ongoing construction works of public infrastructure.

During the preparation of the ESMP for Kastamonu Drinking Water and Sewerage Project, potential environmental and social risks and impacts have been assessed in detail in this ESMP. Mitigation measures proposed to avoid, minimize, or compensate for impacts arising from these activities are identified in this ESMP.

# 2 INTRODUCTION

Floods, wildfires, storms, and landslides are frequent events in Türkiye and result in localized losses. Observed and anticipated climate change impacts, such as more intense precipitation, extreme heat and rising sea level, are expected to lead to increasing risks to natural disasters, including more frequent and intense flooding in low-lying areas of river deltas and coastal cities and other extreme weather events, such as storms, hail, and tornadoes. Long term sustainable growth in Türkiye requires a reduction in the physical, social, and economic shocks associated with geophysical and climate change-induced disasters.

The World Bank has been a leading partner in the thematic areas of Disaster Risk Management (DRM) and urban development in Türkiye for many years. Türkiye Earthquake, Floods and Wildfires Emergency Reconstruction (TEFWER) Project has been developed by the participation of Iller Bankası A.Ş. (ILBANK) and World Bank (WB) to support municipalities to undertake urgent repairs, structural strengthening, and if needed demolition/reconstruction, rehabilitation, or new construction of damaged municipal owned infrastructure and to put in place measures aimed at increasing disaster preparedness and climate adaptation.

In this scope, feasibility study has been prepared by Özbek Engineering Ltd., on behalf of the Kastamonu Municipality for reconstruction of Drinking Water and Sewerage networks for the Central District of Kastamonu including an Environmental and Social Screening and Risk Assessment (ESSRA) which has been conducted in compliance to TEFWER's Environmental and Social Management Framework (ESMF), ILBANK's Environmental and Social Management System (ESMS) and World Bank's Environmental Social Framework (ESF). The ESSRA study revealed that the sub-project has "Moderate" Environmental and Social (E&S) risks (Annex-5 Environmental and Social Screening Form) thus this Environmental and Social Management Plan (ESMP) is prepared to determine the mitigation measures to be taken against possible environmental and social impacts of the construction and operation activities during the implementation of the project and its subprojects.

Within the scope of the subproject, 95.09 km drinking water line and 20.4 km sewerage line will be renewed. Since the current financing is not sufficient for the complete renewal of the entire network, the renewal works will be carried out primarily in two areas of the drinking water network. Kastamonu Municipality is aware of the potential threats of asbestos cement pipes on public health and workers' health and treats this as a priority issue. Planning has been made to improve the areas outside the renovated areas, and it is aimed to replace all asbestos-containing cement pipes over the years, starting from the areas where asbestos-containing cement pipes are located densely.

With these measures, protection and development of natural assets, reduction of resource use, recycling and recovery, prevention of environmental pollution, consideration of environmental and social impacts in planning and decision-making processes, making arrangements that will consider the ecological life cycle in all production processes, environmental protection, and issues such as public participation in the processes of solving environmental problems are aimed.

The Environmental and Social Management Plan serves to highlight specific needs in preventing or improving environmental and social impacts, initiating the right process, and improving monitoring.

# 3 SITE/LOCATION DESCRIPTION

The drinking water network and sewerage network planned to be constructed within the scope of the subproject will be constructed in Kırıkçeşme, Mehmet Akif Ersoy, İnönü, İsmailbey, Candaroğulları, Topçuoğlu, Aktekke, Honsalar, Yavuz Selim, Hepkebirler, Atabeygazi, İsfendiyar, Akmescit, Saraçlar, Budamış, Hisarardı, Beyçelebi, Cebrail and Kuzeykent neighbourhoods in Kastamonu Central district:

- 95.09 km (DN110 to DN500 HDPE PE100 pipe) drinking water network and
- 20.4 km (DN300- DN1000 Concrete pipe) sewerage line.

New network lines will be installed in already disturbed areas where the existing networks are already located in the public lands such as paved roads and streets. There will be no additional land acquisition or expropriation required.

Kastamonu city center is a well-established settlement and the drinking water and wastewater network has been constructed in parts over the years. There are several types of pipes in the existing drinking water network, one of which is asbestos cement pipes (ACP). In Kastamonu City Center, asbestos cement pipes are commonly used in different parts of the drinking water network.

Asbestos cement pipes are used especially in subscriber connections. In this context, an Asbestos Management Plan has been prepared in order to prevent significant health problems that may arise during the renovation of subscriber connections and that may occur as a result of exposure of both project workers and the people living in the region to asbestos dust. During the construction process, the management and implementation principles set out in this plan will be strictly followed.

The application will be carried out by Asbestos Removal Workers who also have course completion certificates under the supervision of Asbestos Removal Specialist with Ministry of Labor and Social Security course completion certificate.

A work plan will be prepared and the Provincial Directorate of Labor and Employment Agency will be notified before starting the works.

## 3.1 Baseline Data

### 3.1.1 Physical Environment

The subproject to be implemented in the central district of Kastamonu is located in the Western Black Sea Region of Türkiye. The central district is neighboured with Taşköprü in the east, Daday and Araç in the west, Tosya and İhsangazi in the south, Seydiler and Devrekani in the north. Kastamonu Central District has an area of 1.847 $km^2$. There are 20 districts in the province, including the Central District, and the average altitude of the province is 799 metres above sea level, while the altitude of the Central District is 780 metres above sea level. Within the scope of the subproject, drinking water network and sewerage network will be constructed in Kırıkçeşme, Mehmet Akif Ersoy, İnönü, İsmailbey, Candaroğulları, Topçuoğlu, Aktekke, Honsalar, Yavuz Selim, Hepkebirler, Atabeygazi, İsfendiyar, Akmescit, Saraçlar, Budamış, Hisarardı, Beyçelebi, Cebrail and Kuzeykent neighborhoods in the central district of Kastamonu.

While determining the impact area of the subproject, it was determined that the access of commercial and businesses on the streets to be excavated may be blocked and local residents may encounter access and traffic problems. Since dust and noise impacts from excavation works will only affect residential areas in and around the construction area, it has been determined that the area of influence of the

subproject will cover the streets where the infrastructure network will be constructed and within 5-10 meters around the excavation area.

A summary of geographic data is given in the Table 1 below.

***Table 1. Geographical Data***

| Parameter | Value |
|---|---|
| Altitude | 780 m. (Central District) |
| Longitude | 32° 43' and 34º 37’ East |
| Latitude | 40° 48' and 42º 02’ North |
| Neighboring Districts | East: Taşköprü<br>West: Daday and Araç<br>Southern: Tosya and İhsangazi<br>North: Seydiler and Devrekani |
| Geographic Region | West Black Sea |
| Area of the Subproject | 1,847 km² (*Source: General Directorate of Mapping)* |

The location of Kastamonu province and the central district in Turkiye is shown on the map. Figure 1 is below.


*Figure 1. Map of Kastamonu Province and Central District*

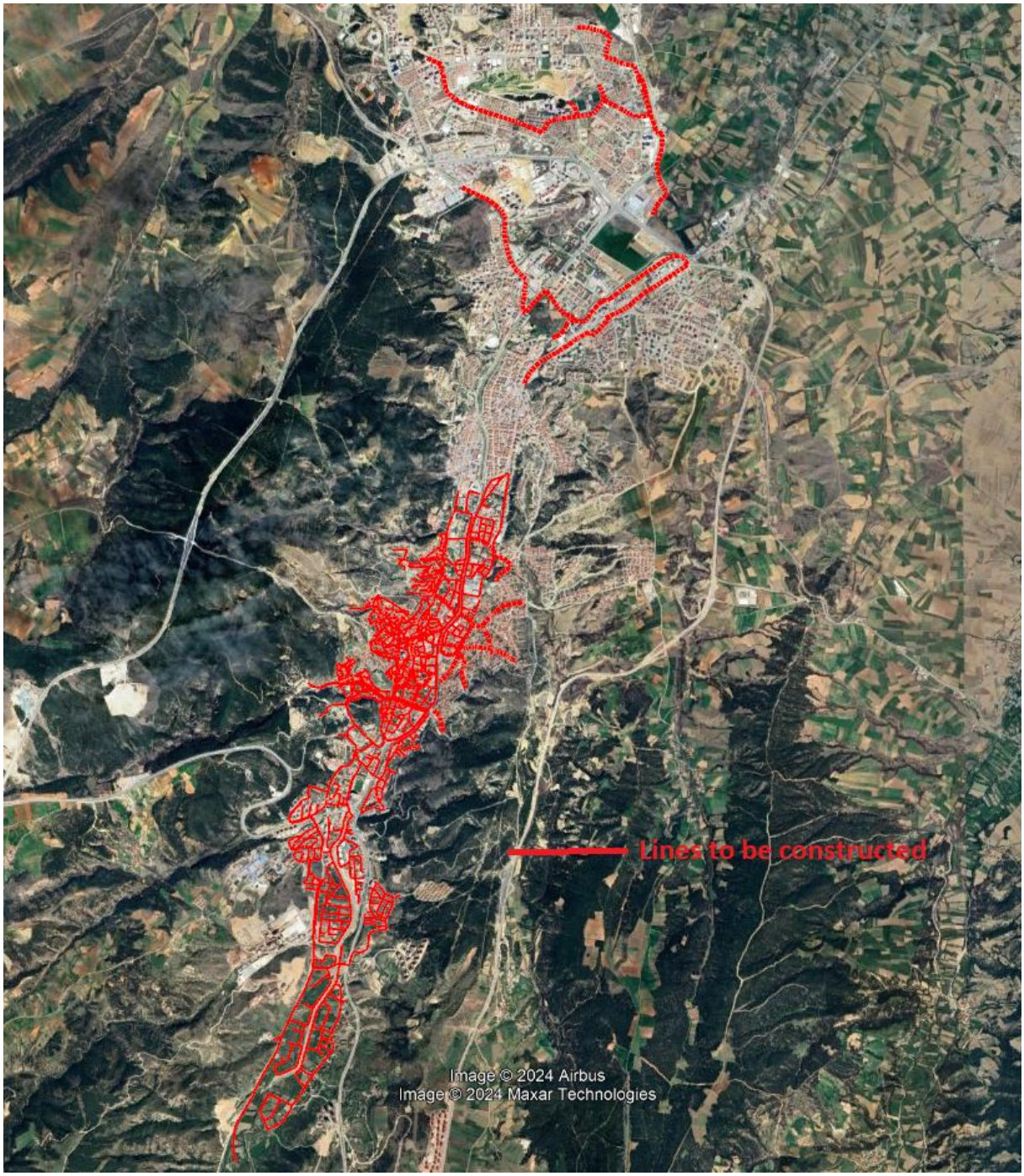



*Figure 2. Map of Subproject Impact Area*

### 3.1.1.1 Topography

The central district of Kastamonu was established in the inner part of the province, in the Karaçomak Stream valley descending from Ilgaz Mountain. The flat areas near the bottom of the valley are suitable for settlement. As you move away from the valley, the topography deteriorates and hardens. This has been a factor in the development of the city (see Figure 3).

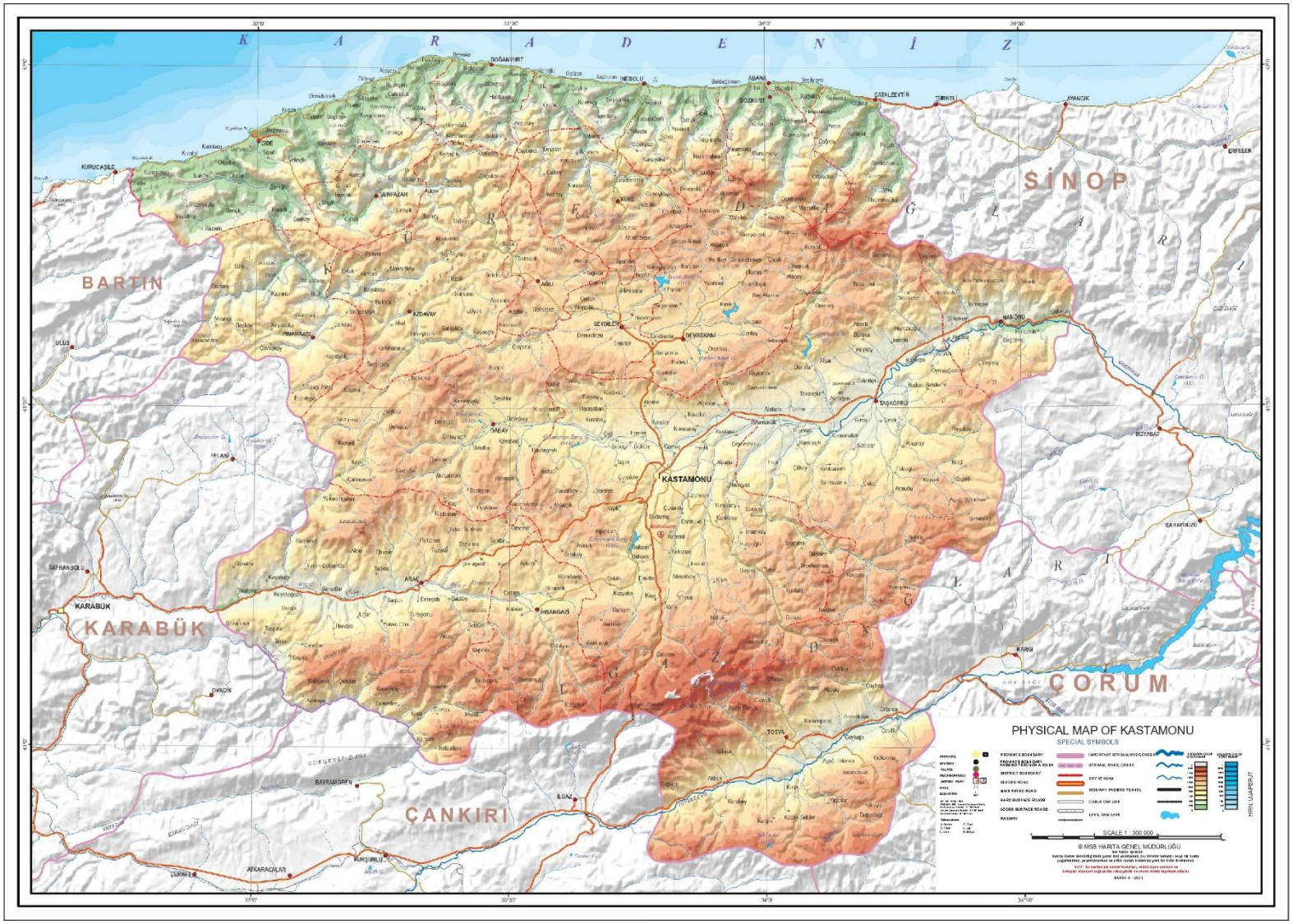



*Figure 3. Kastamonu Province Topographic Map*

### 3.1.1.2 Geology

The north of the Kastamonu basin consists of a Malm-Eocene sedimentary sequence developed on an old foundation formed by the combination of continental and oceanic assemblages that completed their evolution before Malm. Kastamonu basin is an arcuate basin in terms of rock type features, consisting of Late Cretaceous-Eocene volcanic, volcanogenic units and Eocene-Oligocene-Miocene aged shallow marine-terrestrial sediments. The region gained this tectonic structure as a result of the closure of the ocean, located between the Pontide and Sakarya continents, in the Middle-Late Eocene. Deformations belonging to Paleotectonic and Neotectonic periods have developed in the region, which has undergone an evolution process with intense tectonic activity.

The geology of the city is represented by two lithological units, Neogene and Mesozoic, and the Neogene formation is dominant in the geological alternation. The Neogene formation includes sedimentary layers, which are frequently encountered during excavations in the northern, southern, and western parts of the city, and generally consists of calcareous sandstone with thin clay and marl layers. Sandstones are characteristic with their yellowish beige colored, fine grained and dense textured structures and Numlite fossils in the castle area and on the hills where it is located.

The flat parts of the city are filled with alluvial sediments formed by the Karaçomak stream and the deposits coming from the slopes. There are slope debris of different thicknesses on both sides of the Karaçomak valley. The slope debris is formed from the weathering products of the sandstone formation. Groundwater is at a depth of 1.5-2.0 meters in the alluvial field.

### 3.1.1.3 Tectonic and Seismicity

Kastamonu is located on a total of 6 fault lines, the most important of which is the North Anatolian Fault Line. North Anatolian Fault: It is one of the most important active faults in the country, extending east-west just south of Ilgaz Mountains. Orhen Fault: It starts from the east of Devrekani road and extends towards Caykoy. Dikmen Fault: It starts from Yurekveren Village and extends to Sapacı Neighborhood. Gulef Fault: It starts from Sada Village and extends from the north of Gulef Village to the west. Ihsangazi Fault: It starts from İhsangazi and extends to Asagı karakuz Village. Kayı Fault: It starts from Yukarıtepe neighborhood and extends towards Karadere.

The central district of Kastamonu where the Projects will be executed is on the 1$^{st}$ degree earthquake zone. The earthquake map of Kastamonu Province is shown in the figure below (see Figure 4).

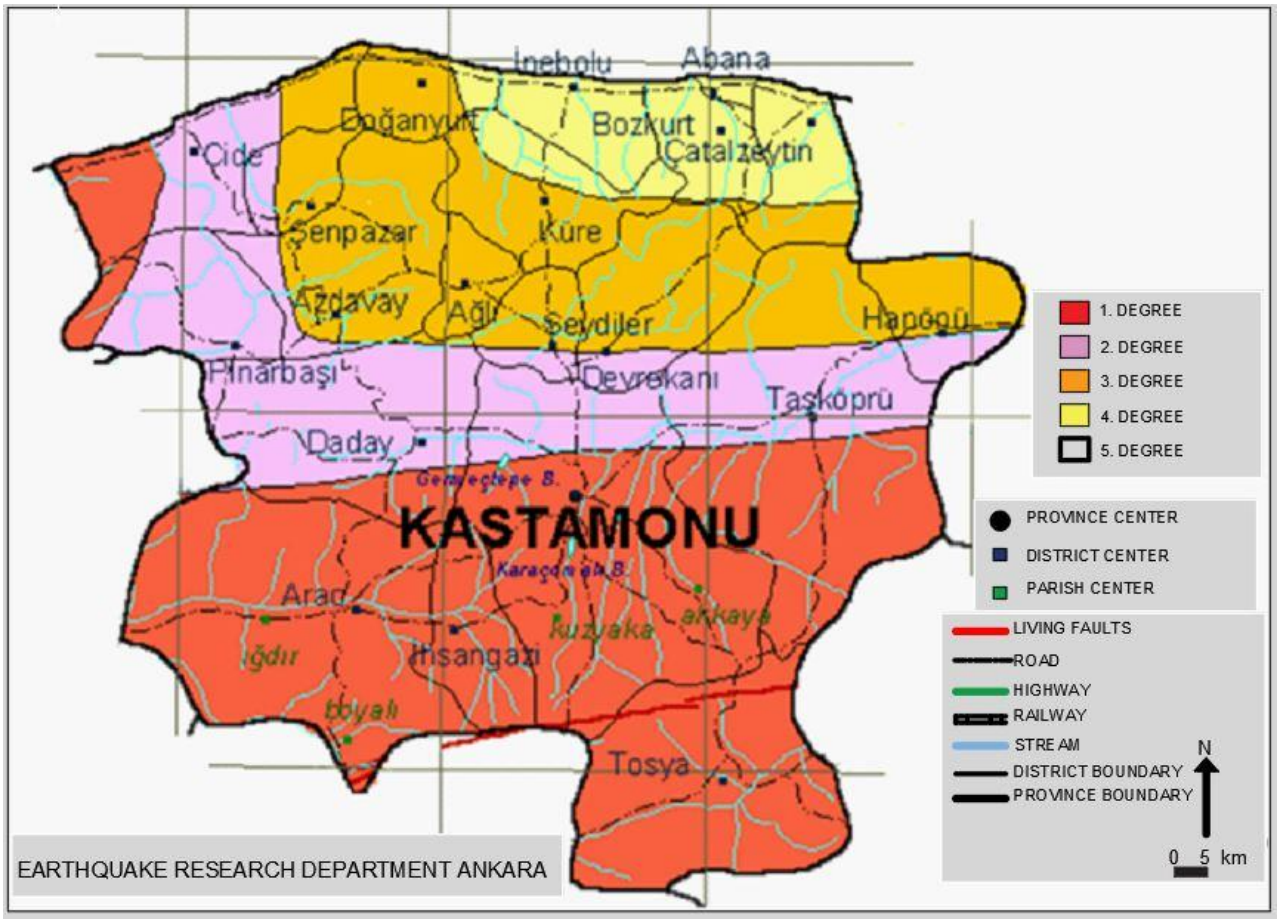



*Figure 4. Kastamonu Earthquake Map*

### 3.1.1.4 Soil and Land Composition

The largest soil group in the central district is brown forest soils. These soils, which developed under forest cover on the edges of the region showing a mountainous relief characterised by undulating hills and high slopes, were formed on calcareous schists, gneiss, clay, marl and various limestones. In the central district where the subproject will be implemented, the land structure is generally flat and slightly sloping with urbanisation and construction. Since the subproject implementation area is a region with dense urbanisation and construction, agriculture and animal husbandry have remained at a lower rate compared to rural areas.

There is no agricultural area in the central district, which is the implementation area of the subproject. Since the subproject passes through the roads within the zoning area, no damage will be caused to the soil structure.

### 3.1.1.5 Meteorology and Climatic Characteristics

Two types of climates prevail in Kastamonu. Black Sea climate is seen in the north and continental climate of Central Anatolia in the south. The İsfendiyar Mountains extending parallel to the coast prevent the Black Sea climate from entering the interior. Rainfall is more on the coasts.

The climate data for Kastamonu province, covering the years between 1930 and 2020, shows that the average maximum temperature in Kastamonu is August, with 28.1 °C. At the same time, the month with

the highest temperature during the year is July. The average temperature during the year is 9.8 ℃. The lowest temperature measured during the year was recorded in January with -26.9℃. Again, the average lowest temperature throughout the year is in January. Kastamonu province, which receives an average of 482.3 mm of precipitation in a year, receives the most precipitation in May and June.

#### 3.1.1.6 Air Quality

Within the scope of the national air quality monitoring network project, air quality monitoring is carried out in Kastamonu center. $PM_{2.5}$, $PM_{10}$, $O_3$, $NO_2$, $SO_2$, $SO_2$, CO parameters are monitored instantaneously at the air quality measurement station in the province. Air quality in the center is at good and moderate levels for 2022.

#### 3.1.1.7 Noise

The main environmental noise sources in Kastamonu central district are industrial facilities, construction sites and workplaces.

There are industrial facilities such as wood industry and small industrial facilities that can be defined as noise sources in Kastamonu central district where the project will be implemented. Since these small facilities are outside the subproject area (see Figure 5), they will not cause noise pollution during field works.

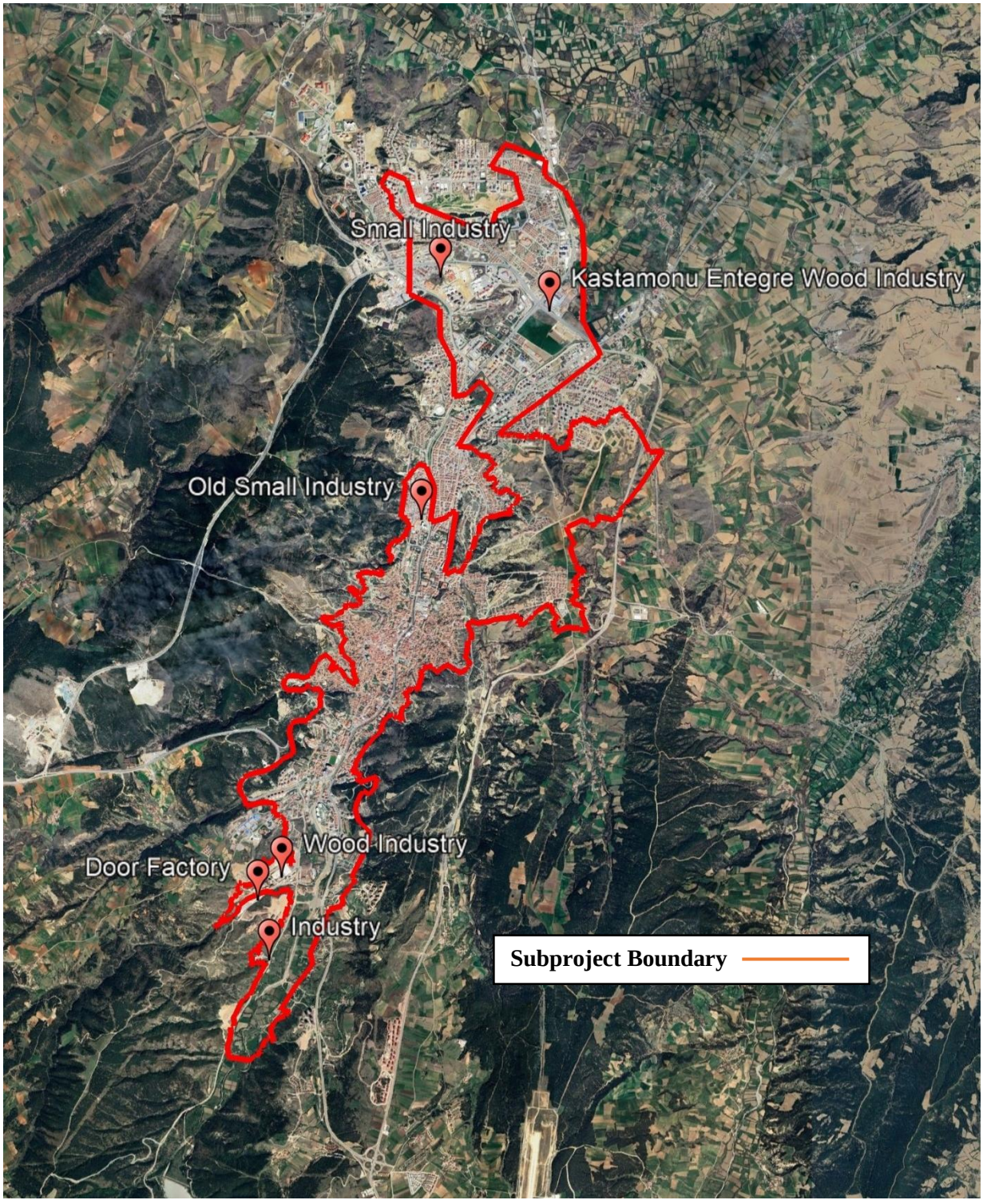



*Figure 5. Industrial Areas Near the Subproject Area*

### 3.1.1.8 Water Resources

The most important surface water resources in Kastamonu are Gokirmak and Devrakani Streams and their tributaries. The annual average flow of these rivers is 3,284.02 hm³/year. The water potential of Gokirmak Stream, which is the most important water resources of the province, is 521 million cubic meters and the water potential of Devrekani Stream is 821 million cubic meters. The drainage of the waters in Kastamonu Province is provided by Gokirmak, Devrez Stream, Valay Stream, Arac Stream

and their branches. Karaçomak stream, one of the important tributaries of Gökırmak stream, is located within the subproject area. Mitigation measures defined in this ESMP will be implemented throughout the subproject in order to minimise the impacts of the subproject works and the Karaçomak stream within the impact area (see Figure 6).

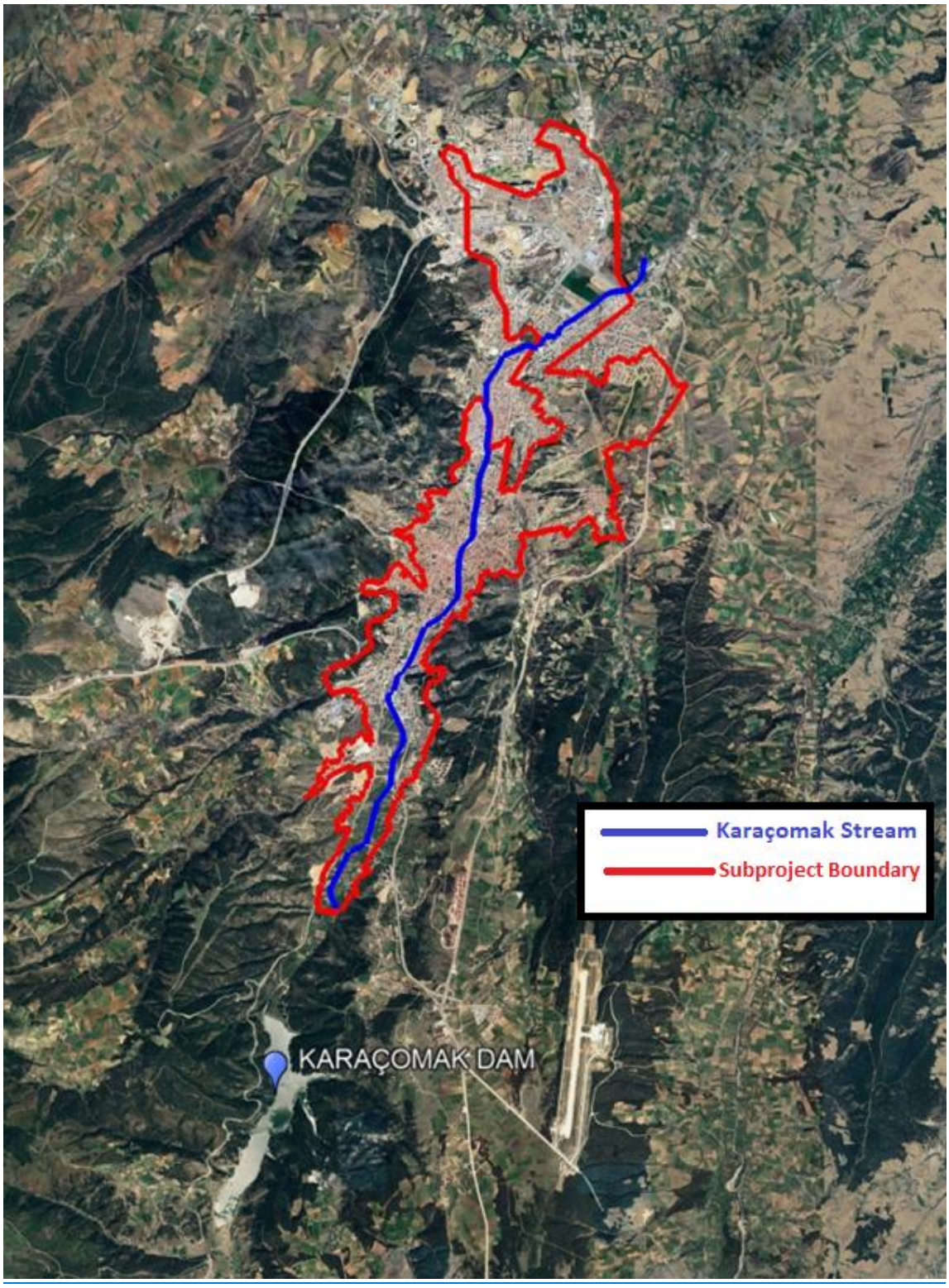



***Figure 6. Location of the Subproject Area and Karaçomak Stream***
(*Source:Türkiye Water Resources Map*)

### 3.1.1.9 Biodiversity

Kastamonu Province is located in a very rich region in terms of vegetation cover. There are 3 registered nature parks in the Kastamonu Province. The nearest nature park (Serifebacı nature park) is 12 km away from the city center, i.e., the subproject area (see Figure 23. Serifebacı Nature Park). There is not any natural monument in the subproject area. There is not any Specially protected environmental area in the subproject area. Although vegetation cover is low in the subproject area due to urbanisation and construction, there are wooded areas within the borders of the central district. Subproject area is in the city center so there is no wooded areas in the subproject area. Therefore, no trees will be cut during the subproject construction works.

The Karaçomak Stream in the subproject area was rehabilitated by DSİ starting in 2015. Karaçomak Creek has been rehabilitated with stone walls to prevent overflowing. Currently, there are no flora/fauna species around Karaçomak Stream.

There are no endangered species within the borders of the central district where the subproject will be intensively implemented, including endangered and vulnerable migratory species specified in the Bern Convention and its annexes. In addition, the works to be implemented in the city centre will not have any impact on the forest ecosystem and water ecosystems.

### 3.1.1.10 Other Natural Hazards

Due to its geological and meteorological characteristics, the subproject area is among the regions with high disaster risk in terms of earthquake, flood, meteorological and climatic disasters. In order to eliminate flood risk, DSİ has rehabilitated the Karaçomak stream passing through the subproject site. Currently, there is only earthquake risk in the subproject area.

### *Avalanches*

Kastamonu province is located in a region that is suitable for avalanche in terms of its meteorological condition and topographic elevations. Unfortunately, there are only 8 avalanches recorded by the General Directorate of Disaster Affairs since 1959 in Kastamonu and resulted in the death of 11 people. The subproject site is not under avalanche risk (see Figure 7).

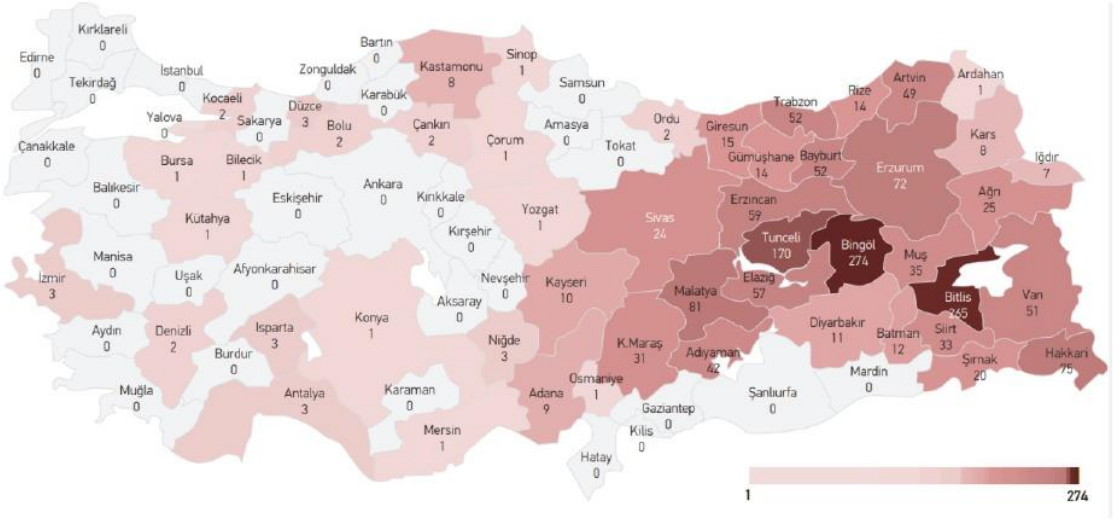



*Figure 7. Map of Avalanche Events Occurred in Türkiye*

### *Landslide*

Kastamonu province is one of the regions where the landslide potential is very high. Especially in 1985 and 1998, regional landslide events occurred very often. These landslides are still active today. There was significant damage to both buildings, houses, and infrastructure. In addition, many roads, agricultural and forest areas have become unusable due to landslides. The reason for the fact that there are many landslides throughout the province can be attributed to the incorrect use of land, especially in places with landslide risk in terms of slope and elevation, the establishment of settlements in risky places, agricultural activities, and road works without taking necessary precautions.

According to the data of the 70-year period between 1950 and 2019 in the Overview to the year 2019 and nature-related event statistics report within the scope of disaster management, Kastamonu is ranked 6$^{th}$ with 768 landslides/rock falls (see Figure 8).

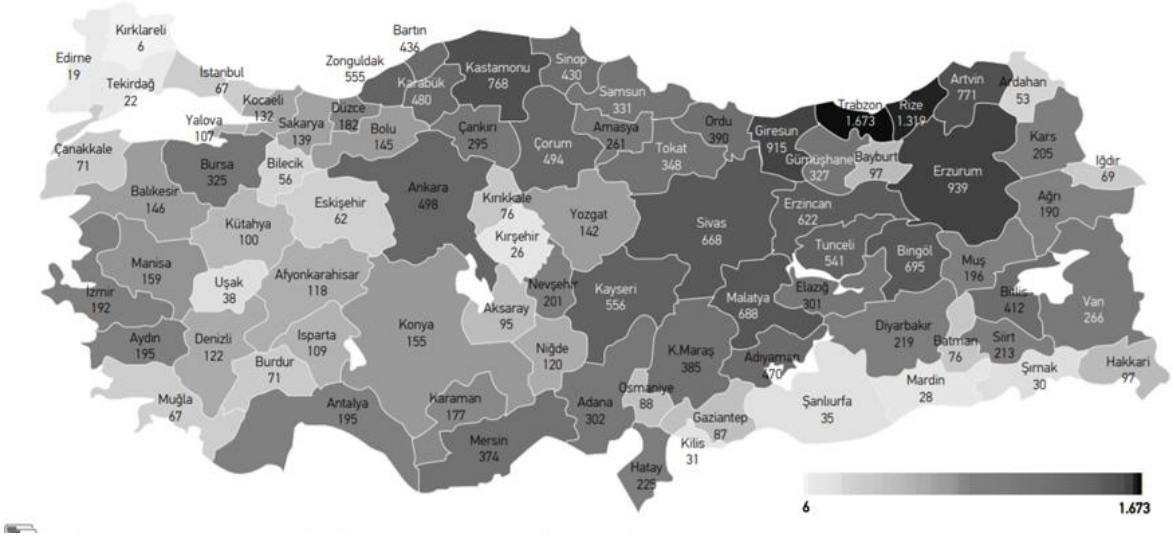



*Figure 8. Map of Landslide Events Occurred in Türkiye*

Landslide disasters occur frequently in Kastamonu. The two main factors why landslides occur frequently in this province are the geological structure and slope. In the table below, information about some landslide disasters that have occurred in Kastamonu in recent years is given (see Table 2 and Figure 9).

*Table 2. Landslides in Kastamonu in Recent Years*

| Date | Detail |
|---|---|
| 24/12/2021-31/12/2021 | In the Cide district of Kastamonu, the Cide-Doganyurt road was closed to transportation due to the landslide that occurred in a week. |
| 11/2/2022 | A 4-storey apartment building in Kastamonu's İnebolu district, which was in danger of collapsing due to the landslide caused by melting snow, was evacuated. |
| 12/2/2022 | As the snow in the region began to melt, landslides occurred in places on the slopes of the İnebolu-Abana highway. |
| 14/02/2022 | Due to the landslide that occurred in Çatalzeytin district of Kastamonu, a 30-meter collapse occurred on the village road. |
| 2/4/2022 | The landslide occurred at noon in the Didi District of Çatalzeytin district. Çatalzeytin-Kastamonu road was closed to transportation due to the rapid slide of the soil, which softened after the snow melted. |
| 7/4/2022 | A landslide occurred in a village in Bozkurt district of Kastamonu. The village road was closed to transportation due to the landslide that also dragged trees. |
| 24/02/2023 | In the Şenpazar district of Kastamonu, the neighborhood's road was closed to transportation due to the landslide that occurred as a result of melting snow water. |
| 21/5/2023 | A landslide occurred on the Kastamonu-Tosya highway. A car and a pickup truck were stuck in the ground. |
| 6/6/2023 | In the landslide caused by heavy rains in Kastamonu Bozkurt district, the road connecting 11 villages collapsed. |

*Figure 9. Image from the Landslide Disaster in Kastamonu (06/06/2023)*

***Floods***

Most of the districts in Kastamonu Province, including Central district, have developed along natural waterways, and are located in flood areas. Most of these areas, which are located in a narrow valley, are frequently exposed to flood and overflow risks. When flood events in Türkiye are examined, Kastamonu province ranks first in the Western Black Sea region with 79 cases.

A flood disaster occurred in the Western Black Sea region, Bozkurt district of Kastamonu was heavily affected by the flood occurred on 11.08.2021. A total of 71 people lost their lives in this flood disaster in Kastamonu. There is a stream bed in the subproject area that has been reclaimed by DSİ, there is no flood risk in the subproject area since the reclamation works have been completed (see Figure 10).

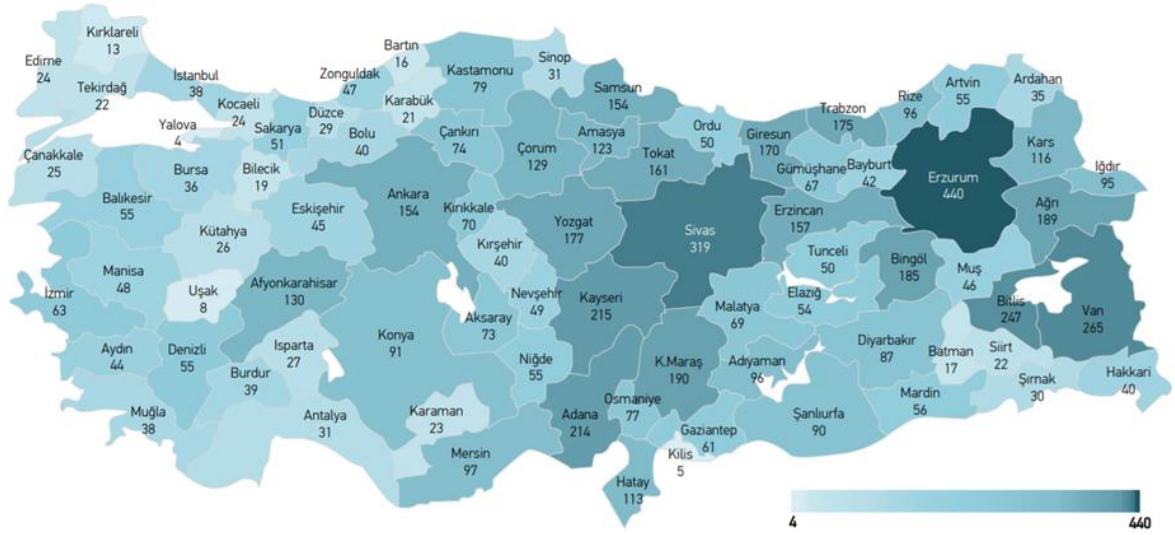



***Figure 10. Map of flood events occurred in Türkiye***

*(Source - AFAD-Kastamonu Provincial Disaster Risk Mitigation Plan)*

According to the Türkiye Map of Disaster-Strucken Settlements (1950- 2008), most of the natural disasters that have occurred in the past in the Kastamonu Central district, where the subproject activities will be carried out, are landslides and other disasters (fire, heavy rain, etc.).

Natural disasters experienced in Kastamonu after 2020 are explained in detail below.

On August 11, 2021, floods and landslides occurred as a result of excessive rainfall, which mostly affected Kastamonu, Sinop and Bartın provinces. A total of 97 people lost their lives and 228 people were injured in the floods that affected Kastamonu, Sinop and Bartın provinces.

The most affected by the flood disaster in the Western Black Sea region was the Bozkurt district of Kastamonu, with a population of 5,400. Rainwater flowing through the valleys of the Küre Mountains, where Bozkurt is located, where the most casualties and missing applications were made, reached the Ezine Stream, which passes through the middle of the district center, and increased its flow rate. As a result of the floods and floods that occurred with the overflow of the stream, the water level rose up to 4 meters in some places (see Table 3 and Figure 11).

***Table 3. Floods in Kastamonu in Recent Years***

| Date | Lost | Location |
|---|---|---|

| | | |
|---|---|---|
| 11/08/2021 | 72 people lost their lives. | Bozkurt District |
| 07/05/2022 | 9 bridges were destroyed, transportation to 26 villages was cut off and roads collapsed. | Çatalzeytin District |
| 24/06/2022 | Homes and workplaces were flooded. | Azdavay District |
| 27/06/2022 | The highway between Kastamonu and Şenpazar is closed to transportation due to damage to the bridge. In Kastamonu's Bozkurt district, Ezine Stream overflowed due to heavy rain and people were stranded. | Bozkurt-İnebolu Districts |
| 04/09/2022 | Homes and workplaces were submerged under water. | Central |
| 04/06/2023 | Houses were submerged under water. | Azdavay District |
| 10/07/2023 | Cide-Bartın road is closed. | Saz, Memiş ve Kumluca Neighbourhood |

*Figure 11. Image of Kastamonu Flood Disaster (11/08/2021)*

### 3.1.2 Socio-Economic Environment

### 3.1.2.1 Demography and Population

The population of Kastamonu province, Central district in previous years is presented in Table 4 below.

***Table 4. The Population of Kastamonu Centre district in previous years***

| According to TurkStat | | | |
|---|---|---|---|
| Years | Population | Years | Population |
| 2007 | 80.582 | 2016 | 114.131 |
| 2008 | 80.946 | 2017 | 116.737 |
| 2009 | 86.085 | 2018 | 118.282 |
| 2010 | 91.012 | 2019 | 124.454 |
| 2011 | 93.347 | 2020 | 124.018 |
| 2012 | 96.217 | 2021 | 125.622 |
| 2013 | 98.456 | 2022 | 128.707 |
| 2014 | 103.724 | 2023 | 155.011 |
| 2015 | 110.908 | | |

A labor camp will be established to accommodate workers during the construction phase of the subproject. The location of the camp will be determined during the construction phase and its impacts will be addressed in the Camp Management Plan to be prepared during the construction phase. It is estimated that a total of 120 people will work during the construction phase.

### 3.1.2.2 Land Acquisition

The area where the subproject will be constructed will be in the central district and within the zoning plan where urbanisation is dense. New network lines will be installed in already disturbed areas where the existing networks are already located in the public lands such as paved roads and streets. Therefore, there will be no additional land acquisition or expropriation required.

### 3.1.2.3 Vulnerable and Disadvantaged Groups/Individuals

Individuals and groups that will be differentially or disproportionately affected by the subproject, such as households with physically and/or mentally disabled family members, elderly people over the age of 70 living alone and in need of care, female-headed households, households with low or no income, and refugee households due to their disadvantaged or vulnerable status. As identified in the Stakeholder Engagement Plan (SEP), vulnerable and disadvantaged groups/individuals have been identified considering issues such as being more/disproportionately affected by accidents that may occur during construction compared to other stakeholders, having difficulty in participating in consultation activities, not being informed about the subproject due to speaking differeng language. Detailed table is presented in Table 5 below.

*Table 5. Vulnerable/Disadvantaged Groups/Individuals in Neighbourhoods*

| Neighborhoods | Households with physically and / or mentally disabled family members | Households with low or no income | Female-headed households | Refugee households (Syrian) | Elderly people over 70 years of age who live alone and in need of care |
|---|---|---|---|---|---|
| Akmescit | | | | | |
| Aktekke | - | - | - | - | - |
| Atabeygazi | 3 | 91 | 40 | 3 | 41 |
| Beyçelebi | 20 | - | 80 | 5 | 476 |
| Budamış | 5 | 150 | 50 | 4 | 250 |
| Candaroğlu | - | - | - | - | - |
| Cebrail | - | - | - | - | 250 |
| Esentepe | 25 | 300 | 50 | - | 160 |
| Hepkebirler | 10 | 200 | 12 | 15 | 93 |
| Hisarardı | 5 | 110 | 10 | 6 | 30 |
| Honsalar | | | | | |
| İnönü | 50 | 150 | 100 | 125 | 450 |
| İsfendiyer | - | - | - | - | 138 |
| İsmailbey | - | 300 | - | 50 | 500 |
| Mehmet Akif | 75 | 400 | 306 | 150 | 600 |
| Kırçeşme | 5 | 30 | 60 | 2 | 120 |
| Saraçlar | - | - | - | - | - |
| YavuzSelim | 9 | 89 | 28 | 2 | 154 |
| Topçular | 5 | 150 | 10 | 30 | 100 |

According to the information received from mukhtars during the informative interviews, vulnerable, disadvantaged groups/individuals are presented in Table 5 above.

The disadvantaged groups were selected because disabled family members and their families are affected by the construction phase and cannot attend the subproject information/consultation meetings, individuals living alone and in need of care cannot access regular donations, they have transportation difficulties due to excavation works, and the refugee population has communication barriers and cannot receive information about the subproject.

### 3.1.2.4 Education and Health Services

There are 93 primary, secondary and high school education institutions within the 19 neighborhoods in the area of influence (AoI) of the subproject. There are 31 family health centers and 1 public health laboratory, 3 public hospitals and 2 private hospitals within the AoI.

### 3.1.2.5 Means of Livelihood and Employment

According to Turkstat data for Kastamonu province in 2023, the labor force participation rate in the region is 53.9%, the employment rate is 51.2% and the unemployment rate is 4.9%.

When the economic income sources of the citizens living in the center of Kastamonu are listed, it is seen that the service sector is listed as primary, the industrial sector as secondary, and public services as tertiary. At the same time, agriculture and tourism sectors are among the other sectors where employees are employed. In the interviews with the mukhtars, the sectors in which the residents of the neighborhoods in the subproject impact area work were determined approximately. The sectors in which the residents of the 19 neighborhoods in the subproject impact area work are as follows; industry sector 22%, agriculture sector 12%, service sector 38%, public sector 17% and tourism sector 11%. In addition, it has been recorded by the municipality that there are a total of 1200 businesses/ tradesmen within the subproject impact area.

***Agriculture***

The fact that 66% of Kastamonu's territory is forested and heathland, winters are long and harsh, the land structure is hilly, the scarcity of first-class agricultural lands and the lack of irrigation facilities reduce the diversity in plant production. The scarcity of agricultural lands in the subproject area has caused agricultural activities to be carried out in more rural areas. For these reasons, agricultural areas will not be entered during the subproject implementation phase and the topsoil, which is important for agricultural activities, will not be damaged. The construction works of the subproject will be implemented on routes with asphalt and concrete roads where there is urbanisation.

***Industry***

The Kastamonu industry has been developing recently and offers important opportunities to investors with this development. Within the industrial structure, sectors related to agriculture and forestry products come to the forefront. There are three organised industrial zones in the province in order to enable small and medium-sized companies to produce with each other and complement each other. One of them is located in the city centre and the other two are located in Tosya and Seydiler districts. The districts where the commercial life of the province is the most intense are the centre, Tosya, Taşköprü and

İnebolu districts. The materials and equipment needed during the subproject will be supplied from the industrial facilities located in the province and in the central district as much as possible. Thus, the subproject will contribute to employment and commercial activities in the province and district. In addition, subproject employees will be selected primarily among the people living in the subproject implementation area and employment will be provided.

### 3.1.2.6 Transportation and Traffic

According to Kastamonu Municipality 2023 data; 337 km of the province's road network is divided road. Kastamonu's road network, 256 km is Bituminous Hot Mix Asphalt, 1,022 km is Asphalt with Surface Coating and 14 km is Concrete Paving. Transportation in the subproject impact area is limited to public transport and road transportation by private vehicles.

According to Turkstat data for 2023 the number of automobiles per thousand people in Kastamonu is 179.

### 3.1.2.7 Cultural Heritage

Kastamonu has many architectural, artistic, and historical cultural values. These cultural values within the scope of cultural tourism are listed as, Martyr Şerife Bacı Monument, Atabey Gazi Mosque (Kırk direkli), Yılanlı Complex (Darü'ş-Şifa, Mosque, Abdülfettah Veli Tomb and Fountains), Kastamonu Castle, Kastamonu Government House, Clock Tower, Şeyh Şaban-ı Veli Complex, Yakup Ağa Complex, İsmail Bey Complex, Şehinşah Rock Tomb, Nasrullah Mosque and Fountain, Münire Madrasa Handicrafts Bazaar, Liva Paşa Mansion Kastamonu Ethnography Museum, Archeology Museum, Kastamonu Governorship City History Museum.

Although some of these historical and cultural places are located in the central district (e.g. Martyr Şerife Bacı Monument, Atabey Gazi Mosque (with forty poles), Kastamonu Castle, Kastamonu Government House, Clock Tower, Münire Madrasah Handicraft Bazaar, etc.), they are structures that may be affected by construction works. Vibration and noise will occur especially during the works to be carried out near the historical mansions of Kastamonu (e.g. Ballık Mansion, İsmail Bey Mansion, Sirkeli Mansion, 75th Year Republic House, Sepetçioğlu Mansion, Tahirefendi (Ottoman) Mansion, Livapaşa Mansion, Eflanili Mansion, Kırkodalı Mansion, Yücebıyıkların Mansion, Hafızbey Mansion, Kastamonu Handicrafts Center, Mazlumcuoğlu Mansion).

***Naturally Protected Areas***

*Table 6. Registered Conservation Areas within the AoI of the Subproject*

| Naturally Protected Areas in Kastamonu | Neighborhood | Conservation Level | Decision Date | Decision No |
|---|---|---|---|---|
| Kastamonu Clock Tower | Cebrail | 1. | 09.11.1979 | 1985 |
| Kastamonu Castle | Atabeygazi | 1. | 03.05.1985 | 989 |
| Nasrullah Bridge | Hepkebirler | 1. | 14.03.1980 | 11789 |
| Nasrullah Mosque | Hepkebirler | 1. | 08.12.1989 | 975 |
| Hepkebirler Mosque and Fountain | Yavuz Selim | 1. | 09.11.1979 | 1985 |
| Manbologlu Mosque | Beyçelebi | 1. | 08.01.1991 | 2010 |
| Yılanlı Mosque Darülşifa | Hepkebirler | 1. | 14.05.1990 | 1223 |
| Yakup Aga Complex | Hepkebirler | 1. | 14.05.1990 | 1223 |
| Liva Paşa Mansion Ethnography Museum | Hepkebirler | 1. | 28.08.1986 | 2603 |

There is no natural protection area in the Area of Influence (AoI) of the project. Natural protection areas in the province are given in Table 6.

There is a cultural heritage protection area in the Area of Influence (AoI) of the project. The Figure 12 showing the boundary and the lines to be constructed is presented below.

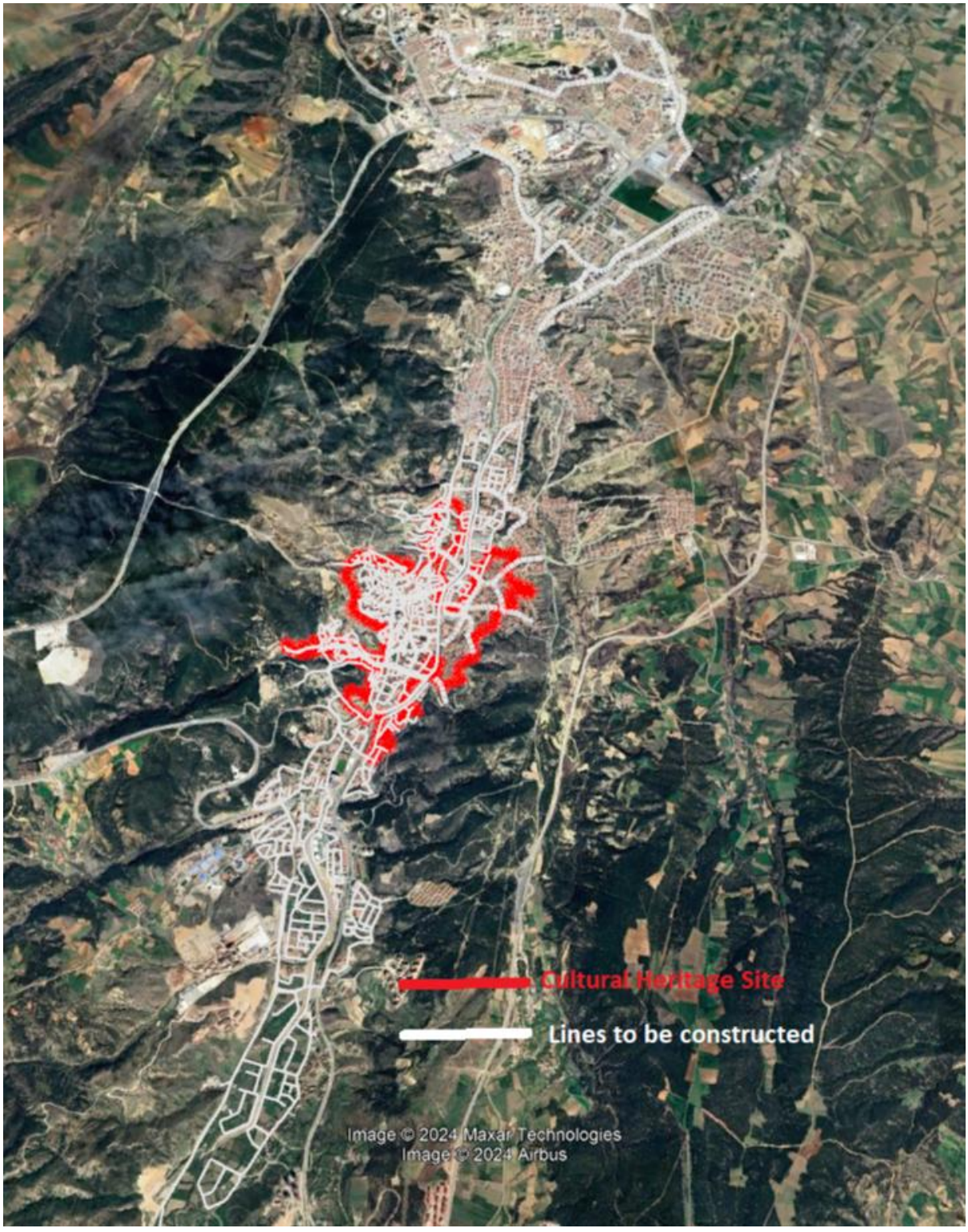



*Figure 12. Map of cultural heritage site and lines to be constructed*

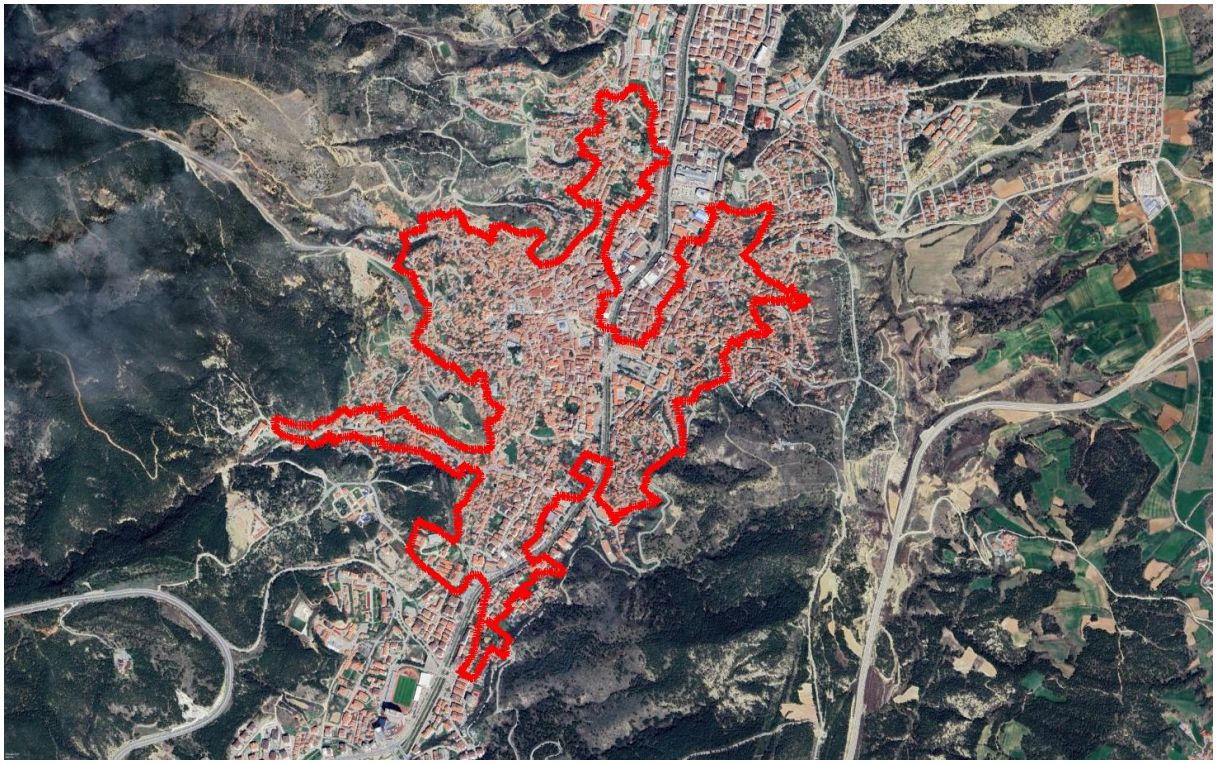


*Figure 13. Map of cultural Heritage Site*

### 3.1.2.8 Existing Infrastructure

**Water and Wastewater/Storm Water Infrastructure**

**Water Supply Infrastructure**

The water need of Kastamonu city has been supplied from Karaçomak dam, Gurleyik spring, Depelce and Izbeli springs and deep springs until recently. However, due to the insufficient amount of water supplied and the lack of other sources in the vicinity, the water deficit was met from the Karaçomak dam by enlarging the capacity of the transmission line. After the commissioning of the new transmission system, the K3 water well was canceled. 4 water springs and Depelce and Izbeli springs are kept as reserve resources.

Kastamonu Municipality started the construction of the first components of the system in 1949. The Table 7 below shows the most important construction periods for the water supply system.

*Table 7. Historical Development of Kastamonu Drinking Water System*

| Year | Tank | Pump Station | Water Supply |
|---|---|---|---|
| **1949** | DM2 | Stadium Water Pumping Center (SWPC) | K3 water well and 2 springs (3 springs in total) |
| **1973** | DM3, DM4 | | İzbeli and Depelce Springs, Well K1+K2 |
| **1980** | DM1, DM5, DM6, DM7, DM9 | TM1, TM2, TM3 and TM4 | Karaçomak Dam, Raw Water Transmission Line, Drinking Water Treatment Plant |
| **1987** | DY2, DY3, DY4, DM0, DM8 | TM0 | |

| Year | Tank | Pump Station | Water Supply |
|---|---|---|---|
| **1990** | DY02, M10, DY5, | TM5 | Gürleyik Springs and 42 km Transmission Line, K4 and K5 Springs |
| **1996** | | | Karaçomak Dam Raw Water Transmission Line, |
| **2007** | | | Karaçomak Dam, Raw Water Intake Structure with Floating Pontoons |
| **2008** | | | Drinking Water Treatment Plant |
| **2014** | | Kuzeykent TM | |

Main water source of Kastamonu city is located at the Karaçomak Dam, which is approximately 6 km south of the city, and 40 km from the Ilgaz Mountains. The other main source Gürleyik Springs located in the south of the city.

***Karaçomak Dam:***

Karaçomak Dam is a dam built by DSI (General Directorate of State Hydraulic Works) for irrigation, flood control and drinking water supply on Karaçomak Stream in Kastamonu. Characteristics of the dam are shown in the Table 8 below.

*Table 8. Karaçomak Dam Characteristics*

| | |
|---|---|
| The location of Dam | Kastamonu-Center |
| Stream | Karacomak Stream |
| Purpose | Irrigation, drinking water and flood protection |
| Year of construction (start-end) | 1969-1976 |
| Body fill type | Earth fill |
| Body Volume | 1,10 $hm^3$ |
| Height (from thalweg) | 49 m. |
| Lake volume at normal water level | 23 $hm^3$ |
| Lake area at normal water level | 1,54 $km^2$ |
| Maximum water level | 893,93 m. |
| Normal water level | 889,50 m. |
| Minimum water level | 862,20 m. |
| Irrigation area | 6.250 ha(net) |

Karaçomak Dam meets 77% of the city's drinking water needs, and provides irrigation water to agricultural areas in the north. Before being supplied to the network, the drinking water is treated at the drinking water treatment plant built by the Kastamonu Municipality Water and Sewerage Affairs Directorate.

***Gürleyik Springs:***

Gurleyik Springs at 1990 and 1795 meters on the southern slopes of Kucukhace Mountain, 40 km south of the Ilgaz Mountains, provide 23% of the city's annual water need.

The other two springs, the Depelce and Izbeli Springs, supply very little water to the water supply system. The total flow rate of the two sources is an average of 2 l/s.

Springs K1 and K2 are located in the valley downstream of the dam, springs K3 and K4 are located in the Water and Wastewater Administration of Kastamonu Municipality area, and well K5 is located in the valley to the west of the old settlement of Kastamonu. The K1-K2-K3-K4 Springs transmit their water to the DM2 water tank, and the K5 well to the DY2 water tank via the Stadium Pump Station (SPS). K3 water well has been cancelled. Other springs are used as a backup source in cases where the water from the Gurleyik Spring decreases. Summary about the springs in the system is presented in the Table 9 below.

*Table 9. Summary of Water Supply Springs*

| Location | Name | Depth(m) | Yield (l/s) | Construction Date | Explanation |
|---|---|---|---|---|---|
| Budamış Village | K1 | 25 | 8 | 1973 | |
| Budamış Village | K2 | 25 | 8 | 1973 | |
| Municipality Area | K3 | 10 | _ | 1949 | Abandoned |
| Municipality Area | K4 | 40 | 10 | 1990 | |
| Gümüşlü Hoca | K5 | 60 | 5 | 1990 | |

The main framework of the existing drinking water system is shown in the Figure 14 below.

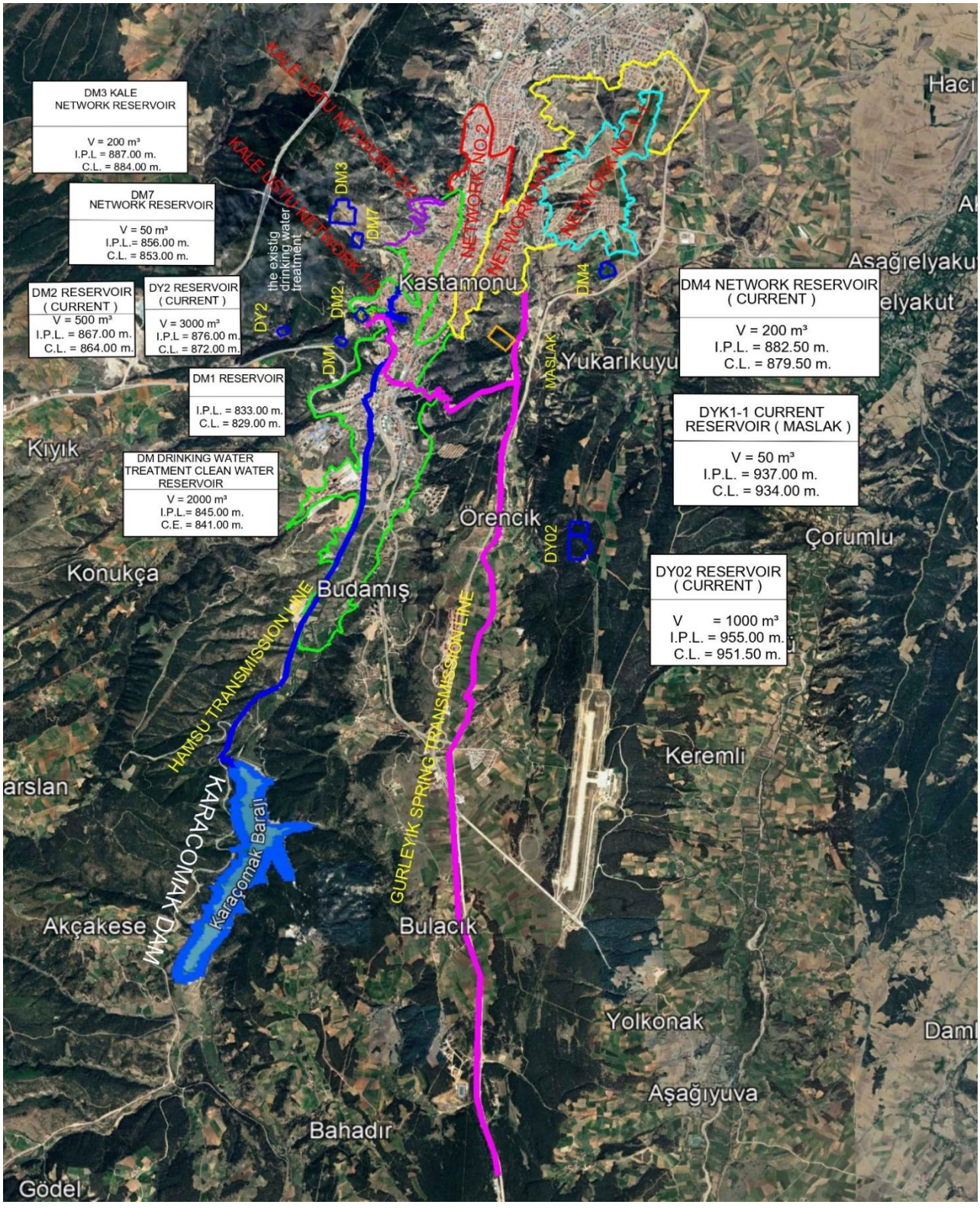



Figure 14. Existing Drinking Water Network-Main Structure of Kastamonu Province Central District

The summary of drinking water network is given in the Table 10 below.

*Table 10. Summary of Kastamonu Drinking Water Network*

| Diameter | Material | Length (m) | Construction Date |
|---|---|---|---|
| **80** | ACP | 8.145 | 1985 |
| **90** | PVC | 622 | 1973 |
| | PVC | 1.866 | 2006-2013 |
| **100** | ACP | 90.897 | 1985 |
| **110** | PVC | 16.460 | 1973 |
| | PVC | 23.558 | 2006-2013 |
| **125** | ACP | 23.578 | 1985 |
| | PVC | 283 | 2006-2013 |
| **150** | ACP | 7.483 | 1985 |
| | PVC | 41 | 2006-2013 |
| **175** | ACP | 2.713 | 1985 |
| **200** | ACP | 13.109 | 1985 |
| | PVC | 30 | 2006-2013 |
| **250** | ACP | 7.869 | 1985 |
| | PVC | 81 | 2006-2013 |
| **300** | ACP | 7.340 | 1985 |
| | PVC | 2.092 | 2006-2013 |
| **400** | ACP | 15.282 | 1985 |
| | PVC | 48 | 2006-2013 |
| **500** | ACP | 1.457 | 1985 |
| **800** | ACP | 147 | 1985 |
| **TOTAL** | | **223.101** | |

Some drinking water systems in the city center, whose construction years are very old, are not included in the quantities given above.

### *Existing Drinking Water Treatment Plant*

The final flow rate of the Drinking Water Treatment plant, which was put into service in 2008 and operated by the Kastamonu Municipality Water and Sewerage Affairs Directorate since 2009, is 27,648 m³/day (320 l/s), and the plant is designed to operate in case of 20% overload. The raw water comes to the facility from the Karaçomak dam by gravity. Daily and instantaneous flow adjustments are made in the inlet valve room, which is placed to adjust the flow of raw water entering the facility, with motor-controlled valves with a diameter of DN 700 mm. In order to determine the amount of raw water coming to the treatment plant, a flow meter was mounted on the DN700 mm inlet pipe in the flow meter chamber.

Drinking Water Treatment Plant;

- Inlet Valve and Flowmeter Chamber (1)
- Inlet Aeration Structure (1)
- Fast Mixing Structure (2)
- Slow Mixing Structure (2)
- Clarifier Tanks (3)

- Quick Sand Filters (4)
- Chlorine Contact Tank and Clean water tank (5-6)
- Backwash Water Retention Tank (8)
- Sludge Thickening (11)
- Sludge Dewatering System (12)
- Admin Building (13)
- Housing Building (14)
- Chemistry Building (10)
- Chlorine Building (9)
- Guard Building (15)
- Generator Building (16)

## Wastewater Network (Infrastructure Improvements)

The main component of the existing wastewater collection is shown in the Figure 15 below:

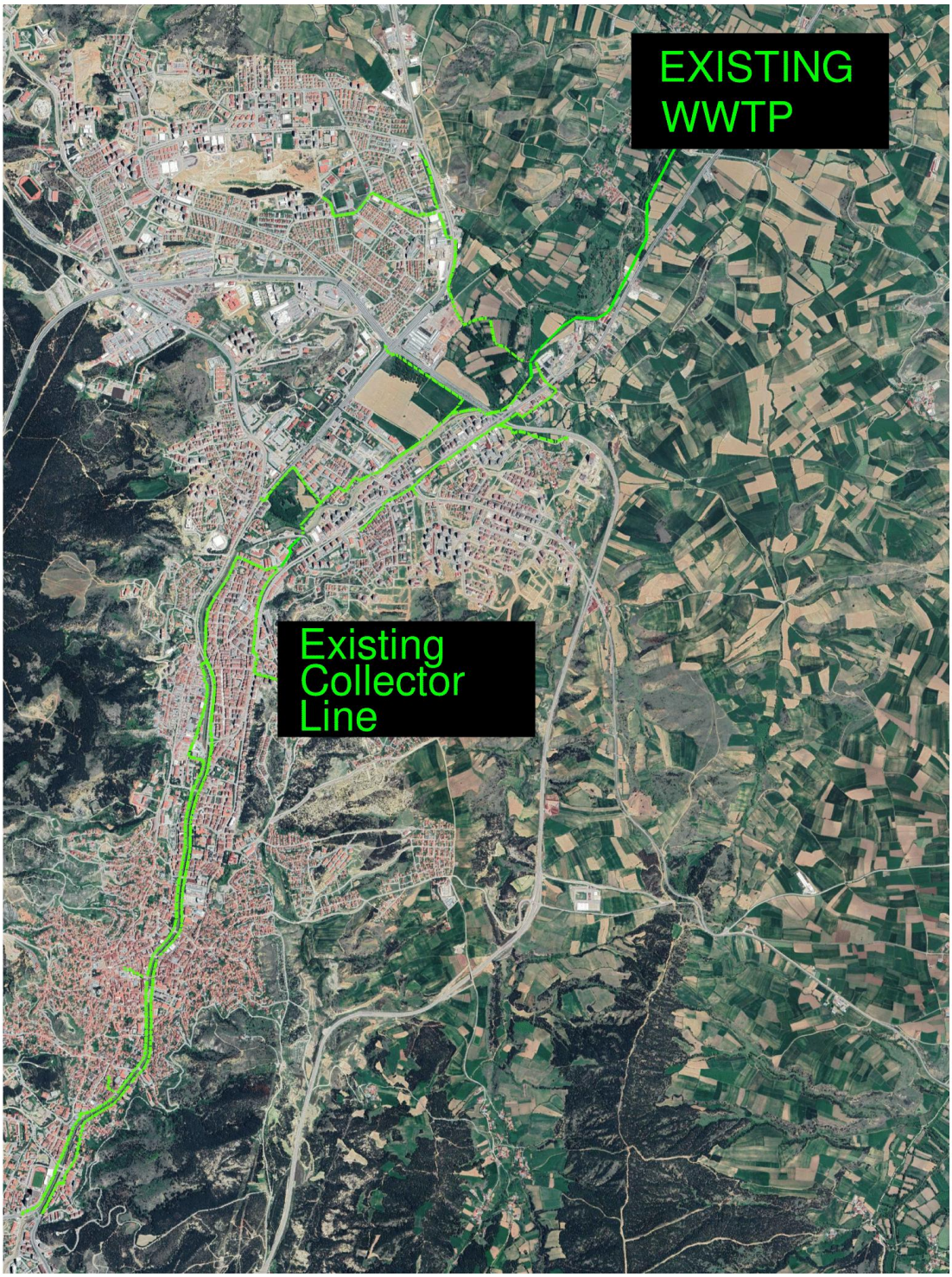



*Figure 15. Existing Wastewater Collection System Main Component*

## Existing Wastewater Collection Network

The existing sewerage system has developed over time in parallel with the development of the city. Two main collectors were built by DSI (State Hydraulic Works) in 1980 along both banks of the stream to transfer all wastewater flow to the north of the city. Collectors are Ø800 mm diameter and made of reinforced concrete pipes. The collectors converge at the junction of Taskopru and İnebolu roads in the northern part of the city, and reach the first discharge point just below the DSI (State Hydraulic Works) Regulator structure on the Karaçomak Stream.

In 1993, ILBANK had wastewater application projects prepared for all planned urban development areas, including the complete replacement of the stone channels in the old settlement. Wastewater application project, for the target year of 2027, designed by Üçer Consulting Engineering Inc. and approved in April 1993. The construction of 55 km of the lines planned according to this project, which is an urgent need, has been realized. In this context, the construction of wastewater collector lines has been completed from the current discharge point to the selected location for the WWTP site. Wastewaters are temporarily discharged into Kastamonu Karaçomak Stream.

Projects designed and approved in 1993 are gradually implemented in new development areas and are updated by Water and Wastewater Administration of Kastamonu Municipality if necessary. Although these are generally designed as separate systems, many unauthorized storms water connections are made to the wastewater pipes in practice. Therefore, the wastewater system partially serves as a combined system. The quantity of wastewater collection network is given in the Table 11 below.

*Table 11. Kastamonu Wastewater Collection Network Summary*

| Diameter (mm) | Material | Length (m) | Construction Date |
|---|---|---|---|
| **200** | Concrete | 2,878 | 1994-2003 |
| **300** | Concrete | 4,413 | 1994-2003 |
| **400** | Concrete | 2,907 | 1994-2003 |
| **600** | Concrete | 5,621 | 1994-2003 |
| **800** | Concrete | 22 | 1994-2003 |
| **1000** | Concrete | 470 | 1994-2003 |
| **200** | Concrete | 3,241 | 2003-2005 |
| **300** | Concrete | 4,970 | 2003-2005 |
| **600** | Concrete | 1,930 | 2006-2008 |
| **200** | Concrete | 130 | 2009 |
| **300** | Concrete | 486 | 2009 |
| **400** | Concrete | 985 | 2009 |
| **600** | Concrete | 809 | 2009 |
| **800** | Concrete | 826 | 2009 |
| **200** | Corrugated HDPE | 329 | 2010 |
| **300** | Corrugated HDPE | 1,229 | 2010 |
| **400** | Corrugated HDPE | 2,490 | 2010 |
| **600** | Concrete | 2,045 | 2010 |
| **800** | Concrete | 2,088 | 2010 |
| **200** | Concrete | 163 | 2011 |
| **300** | Concrete | 609 | 2011 |
| **400** | Concrete | 1,233 | 2011 |
| **600** | Concrete | 1,013 | 2011 |
| **800** | Reinforced Concrete | 1,034 | 2011 |
| **200** | Corrugated HDPE | 178 | 2012-2013 |
| **300** | Corrugated HDPE | 184 | 2012-2013 |
| **200** | Concrete | 346 | |
| **300** | Concrete | 667 | |
| **400** | Concrete | 1,104 | |
| **600** | Concrete | 123 | |
| **800** | Reinforced Concrete | 613 | |
| **1200** | Reinforced Concrete | 39 | |
| **Total** | | **45,175** | |

The sewerage system in the city center, which is very old, is not included in the quantities given above.

## Wastewater Treatment Plant

Wastewater collected from Kastamonu city center is treated at the Wastewater Treatment Plant financed by the European Union and the Republic of Türkiye and completed in March 2022 under the control of the Ministry of Environment, Urbanization and Climate Change and Kastamonu Municipality and Treated wastewater are discharged into the Karaçomak Stream.

The construction of the plant started in December 2019, completed and put into operation in March 2022. The wastewater treatment plant was designed in two stages. The first stage was completed within the scope of the project. The first stage is an advanced biological treatment plant with a capacity of 32,000 $m^3$/day and includes the following units:

- Physical, biological (nitrogen and phosphorus removal) and tertiary treatment units
- Ultraviolet disinfection system for the removal of microorganisms in the effluent
- Required units for sludge disposal
- Cogeneration system that will generate electricity from the gas generated in the facility.
- Solar sludge drying system to dry the treatment sludge by 90%

The Wastewater Treatment Plant is located at approximately 4 km to the north of the city center and the WWTP effluent is given to the Karaçomak Stream, which passes 50 m west of the plant. In this way, the public and environmental health effects caused by the discharge of wastewater into Karaçomak Stream have been eliminated, and a significant contribution has been made to the protection of aquatic ecosystems and the environment.

## Storm Water Network

The main drainage system of the city is the Karaçomak Stream and its branches, flowing in the north-south direction. Therefore, the most important problem is the drainage of the intermediate basins in the west and east of the stream. For the drainage of these areas, there are 12.7 km storm water culverts, the largest of which is 8.0 m x 1.4 m constructed by DSI and Municipality between 1978 and 2010 (see Table 12).

*Table 12. Kastamonu Storm Water Culverts Summary*

| Dimension (m) | Length (m) | Dimension (m) | Length (m) |
|---|---|---|---|
| 0.50 x 050 | 30 | 1.70 x 1.50 | 1,722 |
| 0.60 x 0.60 | 63 | 2.00 x 1.00 | 495 |
| 0.7 x 0.7 | 259 | 2.00 x 1.50 | 838 |
| 0.8 x 0.7 | 37 | 2.00 x 1.60 | 286 |
| 0.8 x 0.75 | 424 | 2.00 x 2.00 | 458 |
| 0.8 x 0.8 | 297 | 2.30 x 1.50 | 201 |
| 0.9 x 0.9 | 820 | 2.50 x 1.50 | 300 |
| 1.00 x 0.70 | 12 | 2.75 x 1.45 | 28 |
| 1.00 x 1.00 | 1,579 | 3.00 x 1.00 | 683 |
| 1.25 x 1.00 | 62 | 3.00 x 2.50 | 94 |
| 1.40 x 1.40 | 184 | 5.00 x 1.00 | 114 |
| 1.50 x 1.00 | 1,494 | 8.00 x 1.40 | 1,177 |
| 1.50 x 1.50 | 1,029 | **Total** | **12,686** |

The rehabilitation of the 3,484-meter section of the Karaçomak Stream, which divides Kastamonu Central District into two in a north-south direction, between the Ankara Bridge and the Taskopru junction was carried out in 2005 by utilizing the Small-Scale Infrastructure Grant Program financed by the European Union (see Figure 16).

*Figure 16. Karaçomak Stream Rehabilitation*

Karaçomak Stream; İnkaya, Çağlayık, Kütüklütarla, Honsalar, Miskinler, Circirin, Nuh Streams feed from the west, and Çillik and Kuru Streams from the east. The sediment brought by the side streams mixing with the Karaçomak Stream has been reduced by the reverse dams made in previous years, but it has not been completely cut off. In order to ensure the sustainability of the project, a reverse dam of 23.70 m x 7.50 m x 4.55 m was built on the İnkaya Stream, which is approximately 2.5 km from the project starting point. The operation of Karaçomak Stream and its tributaries is under the responsibility of DSI 23rd Regional Directorate.

Floods have occurred in the subproject area in various years. The earliest remembered flood was in 1898. After that, floods occurred in 1913, 1923, 1939, 1940, 1941, 1956, 1958 and 1964. However, there are no records showing the hydrological and damage information of these floods. In 1964, an area of 1094 hectares was affected by the flood. With the Karaçomak Dam, which was put into operation in 1976, floods became controllable.

## Waste Management

Kastamonu Union of Local Administrations (KASMİB) was established with the decision of the Council of Ministers dated 7.4.2006 and numbered 62202 in order to assist the to protect natural and cultural environment within the borders of Kastamonu province, to establish, and operate "Solid Waste and Waste Water" facilities, to contribute to sustainable development based on international environmental standards, to perform activities and other duties that local governments are obliged to fulfill by laws. Kastamonu Municipality, 19 district municipalities and Special Provincial Administration of Kastamonu are the members of the union.

Solid wastes collected from municipalities and villages affiliated to Special Provincial Administration are transferred to Solid Waste Landfill Facility operated by KASMİB in Sarıyonca Village of Devrekani District, and waste acceptance started in 2015. The Solid Wastes are directly transported to the Landfill facility from 6 districts close to the facility, the Kastamonu Center and the Central Provincial Special Administration with their own vehicles. The wastes collected from the other 14 district municipalities are transported to the Landfill Facility from the transfer stations. The Landfill facility has been designed and constructed as 3 lots on an area of 30.1 ha. The first lot is still used in the facility. In 2021, 84,007.12 tons of domestic waste was disposed of in the Solid Waste Landfill Facility.

There are leachate storage pond and treatment plant in the area to treat the leachate collected from the landfill. Collected leachate is treated with membrane bioreactor + nano filtration method.

Methane gas released from the landfill is collected and converted into electrical energy at the Landfill Gas Electricity Production (LFG) Facility located in the area.

There is Medical Waste Sterilization unit with a capacity of 300 kg/hour in the area where the Solid Waste Landfill Facility is located. In 2021, 494,462,000 kg of medical waste was sterilized in this unit (see Figure 17-Figure 18).

*Figure 17. Kastamonu Landfill Site (Source: KASMIB)*


*Figure 18. Kastamonu Landfill Location*

# 4 SUBPROJECT DESCRIPTION and ACTIVITIES

The scope of Kastamonu Drinking Water Distribution Network and Sewerage Network Subproject is divided into 2 separate sections. Component 1 consists entirely of the drinking water network. There will be no new reservoir construction within the scope of the subproject as the existing ones will be used. The quantities of the new drinking water network planned to be constructed within the scope of the subproject are given in Table 13 below.

*Table 13. The Quantities of New Drinking Water Networks Planned to be Constructed.*

| | DYK 2 | DYK 3 |
|---|---|---|
| Ø110/6,6 mm PE | | 10,985 |
| Ø140/8,3 mm PE | 17,228 | 35,027 |
| Ø160/9,5 mm PE | 3,170 | 5,694 |
| Ø180/10,7 mm PE | - | 4,524 |
| Ø200/11,9 mm PE | 2,119 | 4,490 |
| Ø225/13,4 mm PE | 743 | 1,481 |
| Ø250/14,8 mm PE | 1,129 | 2,078 |
| Ø315/18,7 mm PE | 1,199 | 484 |
| Ø355/21,1 mm PE | 471 | 3,915 |
| Ø500/29,6 mm PE | - | 353 |
| **Total** | **26,059** | **69.031** |

Component 2 consists entirely of the sewerage network. There are no structures such as pumping stations within the scope of the sewerage network. It consists only of network lines. Table 14 below shows the quantities of the new sewerage network planned to be constructed within the scope of the subproject.

| | Total (meter) |
|---|---|
| Ø 300 CP | 12,394 |
| Ø 400 CP | 4,506 |
| Ø 500 CP | 940 |
| Ø 600 RCP | 866 |
| Ø 800 RCP | 107 |
| Ø 1000 RCP | 1,585 |
| **Total** | **20,398** |

*Table 14. The Quantities of New Sewerage Networks Planned to be Constructed.*

## 4.1 Component-1 – Kastamonu (Central) Drinking Water Network

"Kastamonu Municipality (Central) Drinking Water Network Hydraulic Modelling and Application Project" report was prepared by Mestcon Consulting, Engineering and Trade Ltd. Co. after tendered by the Kastamonu Municipality in October 2021.

For construction purposes, there has been a need to revise some parts of the approved projects as a basis of implementation. In this context, the Revision of Drinking and Sewerage Project in Kastamonu (Central) Partial Neighborhoods was tendered by Kastamonu Municipality and carried out by the Özbek Engineering Ltd. Co.

The values given in The PID are taken from the project prepared by Özbek Engineering.

Population for year 2022 : 128,707 people

Population for target year (2058) : 275,000 people

Target year water demand : 2058– 765 l/s

The subproject does not envisage the renewal of the entire city network. Within the scope of finance, the parts that need to be renewed by the municipality have been determined by taking into account the needs of the city.

95.09 km (DN90 to DN500 HDPE PE100 pipe) drinking water network line will be constructed in the Kastamonu Central district within the scope of the subproject.

The drinking water network of the city to be built within the scope of finance is divided into 5 networks as DKY1-1 Network, DYK2 Network, DYK3 Network, Kale Üstü Network, DYK6 Network (see Figure 19and Table 13).

Component 1 consists entirely of drinking water networks. The networks are independent from each other and the existing networks are disconnected from each other. All reservoirs in the Figure 19 are existing.

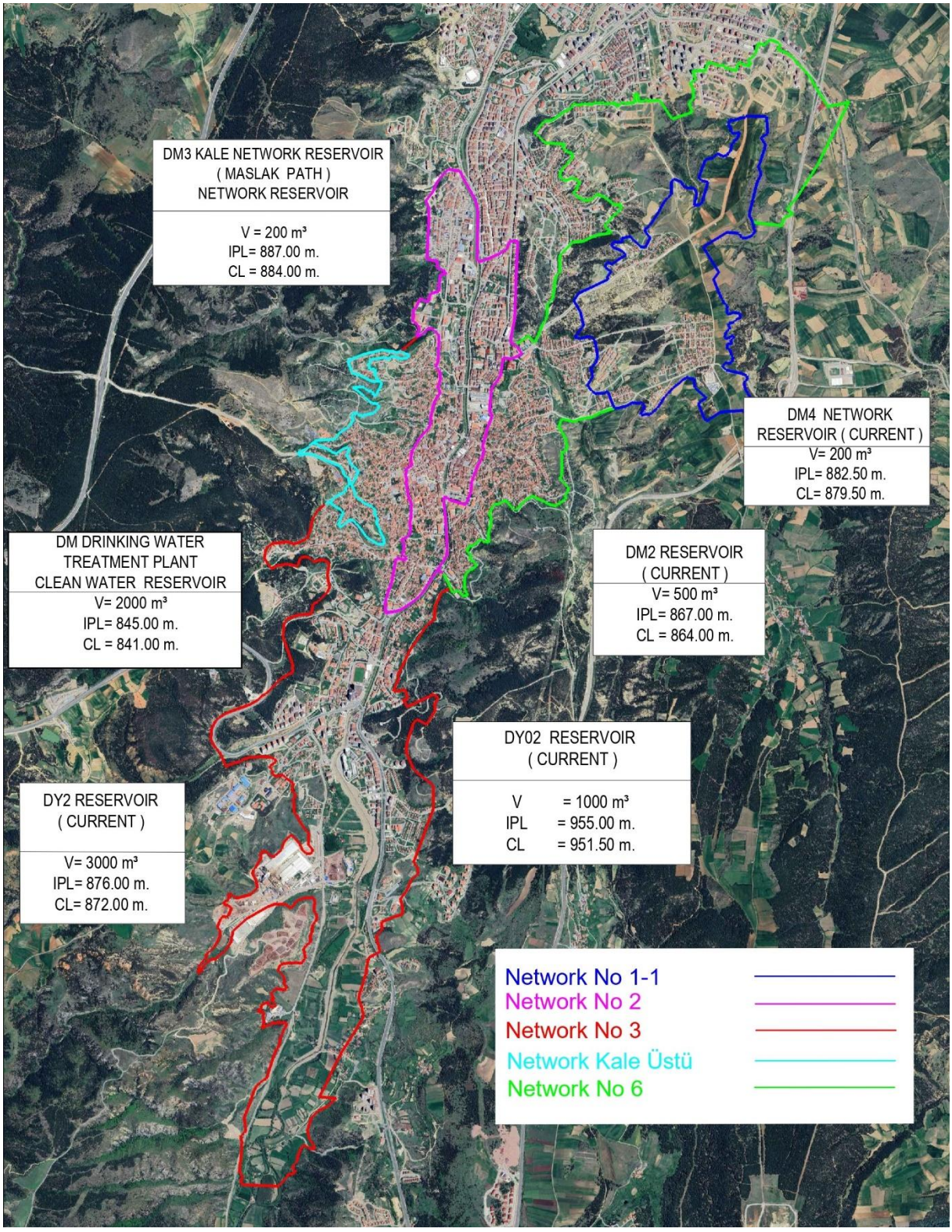



*Figure 19. Schematic Representation of Network Zones*

*Table 15. Drinking Water Network Bill of Quantities 1st Stage (To be constructed)*

| KASTAMONU WATER SUPPLY NETWORK PROJECT | | | |
|---|---|---|---|
| 1st STAGE Bill of Quantities | | | |
| **No** | **Description** | **Unit** | **Quantity** |
| **1** | Ø 110 mm PE Pipe | m | 10.985 |
| **2** | Ø 140 mm PE Pipe | m | 52.255 |
| **3** | Ø 160 mm PE Pipe | m | 8.864 |
| **4** | Ø 180 mm PE Pipe | m | 4.524 |
| **5** | Ø 200 mm PE Pipe | m | 6.609 |
| **6** | Ø 225 mm PE Pipe | m | 2.224 |
| **7** | Ø 250 mm PE Pipe | m | 3.207 |
| **8** | Ø 315 mm PE Pipe | m | 1.683 |
| **9** | Ø 355 mm PE Pipe | m | 4.386 |
| **10** | Ø 500 mm PE Pipe | m | 353 |
| **11** | Subscriber Connection | piece | 4755 |
| **12** | Air Release Structure | piece | 13 |
| **13** | Pressure Reducing Structure | piece | 3 |
| **14** | Flow meter Structure | piece | 13 |
| **15** | Residual Chlorine Measurement Structure | piece | 6 |
| **16** | Air Release Valves | piece | 13 |
| **17** | Drainage Valves | piece | 17 |
| **18** | Highway crossing with micro tunneling | m | 80 |
| **19** | Electrical Works | piece | 1 |
| **20** | Mechanical Works | piece | 1 |

Mestcon Consulting Engineering and Trade Limited Company was awarded by the Municipality to carry out the drinking water project for the entire city in 2021. Within the scope of this financing, before the Design Review studies began, the problematic areas of the city were identified by the municipal authorities and the renewal of the drinking water networks in these areas and the construction of additional lines were requested. All of the lines checked and re-projected within the scope of Design Review cover the quantities specified above. The entire drinking water project prepared by Özbek Engineering Ltd. Co will be constructed within the scope of this financing. No reservoir will be built within the scope of this finance, and existing drinking water reservoir will be preserved as they are. Total drinking water construction budget is 12.4 (including taxes and consultancy services) million euros.

The areas where the water and wastewater network planned to be built within the scope of the subproject are public land and owned by the Kastamonu Municipality. No additional land acquisition is required.

Kastamonu Municipality Water and Sewerage Directorate requested an evaluation of the ownership status of the subproject to the Real Estate and Expropriation Directorate. The relevant article is given in

Annex 1. The Real Estate and Expropriation Directorate responded to the letter saying that the subproject has been examined and there is no problem in terms of ownership in the existing zoning and cadastral roads. The relevant article is given in the Annex 2.

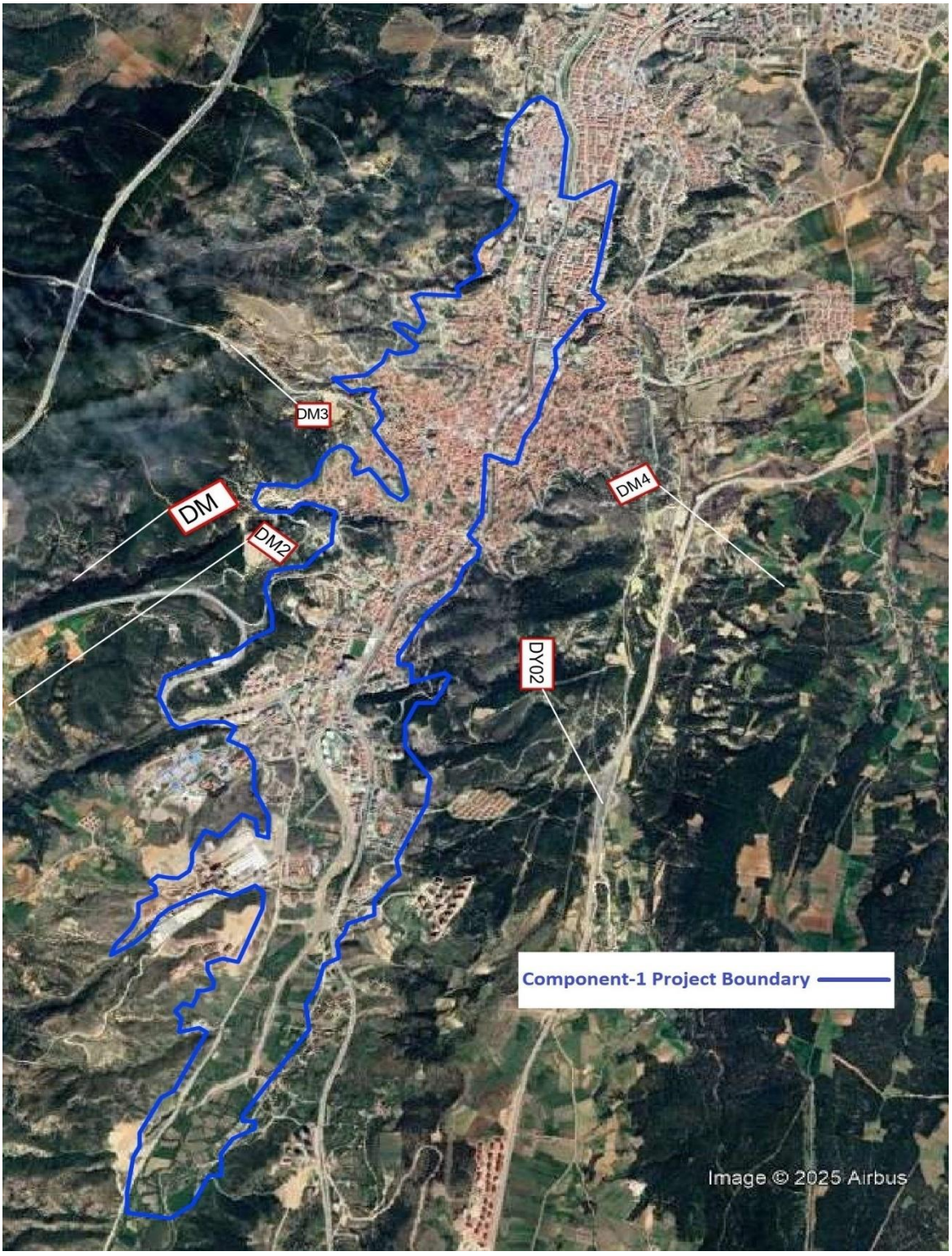



*Figure 20. Drinking Water Network General Layout*

Total Quantity= 95.090 m

Project Population(N2058) = 275.000 People

All drinking water tanks shown in Figure 20 is existing tanks. there will be no drinking water reservoir construction within the scope of the subproject.

## 4.2 Component 2 – Kastamonu (Central) Sewerage Network

Kastamonu (Central) Sewerage Network Project was prepared by Proeko Engineering Consultancy Construction Industry and Trade Limited Company after tendered by the Kastamonu Municipality in November 2021.

For construction purposes, there has been a need to revise some parts of the approved projects as a basis of implementation. In this context, the Revision of Drinking and Sewerage Project in Kastamonu (Central) Partial Neighborhoods was tendered by Kastamonu Municipality and carried out by the Özbek Engineering Ltd. Co. The values given in the feasibility report are taken from the project prepared by Özbek Engineering.

In the Kastamonu (Central) Partial Neighborhoods Sewerage Project, the population for the target year of 2058 was projected as N2058= 275,000 people. The subproject does not envisage the renewal of the entire city network. Within the scope of finance, the parts that need to be renewed by the municipality have been determined by considering the needs of the city where 20.4km (DN300- DN1000 Concrete pipe) sewerage line will be constructed in the Kastamonu Central district within the scope of the subproject (see Table 16).

Although a subproject is being made for partial neighbourhoods in the wastewater subproject, the selected flow rate must be spread throughout the city for the calculated flow rate to be collected on the collector line.

The future flows from the parts that are not projected are calculated and loaded as the additional flow rate in the subproject. Thus, it has been possible to collect the wastewater of the entire city on the projected collector line.

Pipe cover depth is expressed as the thickness of the soil fill between the ground and the pipe crown. The minimum allowable cover depth for the pipe will be 1.60 m at the beginning of the channels and 1.70 m at the rest of the channels. The depth of the underground sections of the PTT and Power lines in the subproject area is 0.70 m-0.80 m, and the depth of the drinking water lines is 1.00+Ø. So, there will be no overlap between the existing PTT, electricity and drinking water lines and the sewerage network. Minimum 0.30 m depth vertically, and 3.00 m distance horizontally between the existing drinking water line and wastewater line should be kept.

In the Kastamonu (Central) Sewerage Project, steam cured concrete and reinforced concrete pipes with integrated gaskets will be used, with a minimum pipe diameter of 200 mm and a maximum pipe diameter of 1200 mm. For house connections, a parcel manhole will be formed in front of each building, and they will be connected to the pipeline with Ø150 mm diameter concrete pipes with pipe socket and “C” piece.

Inspection manholes will be installed wherever the following conditions are met in terms of inspection, maintenance, and cleaning of the channels:

- At intersections (connections of street)

- Where direction changes
- In places where the diameters of the conduit change
- Inclination changes
- Inspection manholes will be placed on both sides of railway, highway, channel, and stream crossings.

The sewer system has been organized to collect all the waste water in the city. Pipes which are preserved as per the approved project, have been incorporated into the current project. Revise projects have been conducted as the basis for implementation in certain neighbourhoods regarding the construction of the approved project. In the project, all currently open roads are considered as first-stage, and mandatory first-stage lines have been designed to connect the flow of a specific area, which is at the first stage, from an area where the roads are not open to another first-stage lines. Additionally, second-stage lines have been designed for areas that are not open and have not been opened for settlement.

New sewerage network lines will be installed in public lands where the existing networks are already located such as paved roads and streets. No additional land acquisition is required.

Kastamonu Municipality Water and Sewerage Directorate requested an evaluation of the ownership status of the subproject to the Real Estate and Expropriation Directorate. The relevant article is given in Annex 1. The Real Estate and Expropriation Directorate responded to the letter saying that the subproject has been examined and there is no problem in terms of ownership in the existing zoning and cadastral roads. The relevant article is given in the Annex 2.

*Table 16. Sewerage Network Bill of Quantities 1st Stage*

| KASTAMONU SEWERAGE NETWORK PROJECT | | | |
|---|---|---|---|
| 1st STAGE Bill of Quantities | | | |
| No | Description | Unit | Quantity |
| 1 | Ø 300 mm Concrete Pipes | m | 12.394 |
| 2 | Ø 400 mm Concrete Pipes | m | 4.506 |
| 3 | Ø 500 mm Concrete Pipes | m | 940 |
| 4 | Ø 600 mm Reinforced Concrete Pipes | m | 866 |
| 5 | Ø 800 mm Reinforced Concrete Pipes | m | 107 |
| 6 | Ø 1000 mm Reinforced Concrete Pipes | m | 1585 |
| 7 | Manholes for Ø 300 mm Concrete Pipes | Nos | 357 |
| 8 | Manholes for Ø 400 mm Concrete Pipes | Nos | 108 |
| 9 | Manholes for Ø 500 mm Concrete Pipes | Nos | 21 |
| 10 | Manholes for Ø 600 mm Reinforced Concrete Pipes | Nos | 27 |
| 11 | Manholes for Ø 800 mm Reinforced Concrete Pipes | Nos | 8 |
| 12 | Manholes for Ø 1000 mm Reinforced Concrete Pipes | Nos | 32 |
| 13 | House Connections | m | 11.268 |
| 14 | House Connection Manholes (Type: KNL-TP-23/A) 80x60 | Nos | 208 |
| 15 | House Connection Manholes (Type: KNL-TP-23/B) 60x60 | Nos | 417 |
| 16 | House Connection Manholes (Type: KNL-TP-23/C) Ø 0,62 | Nos | 417 |
| 17 | Highway crossing with micro tunnelling | m | 249 |
| 18 | Stream crossing with micro tunnelling | m | 34 |

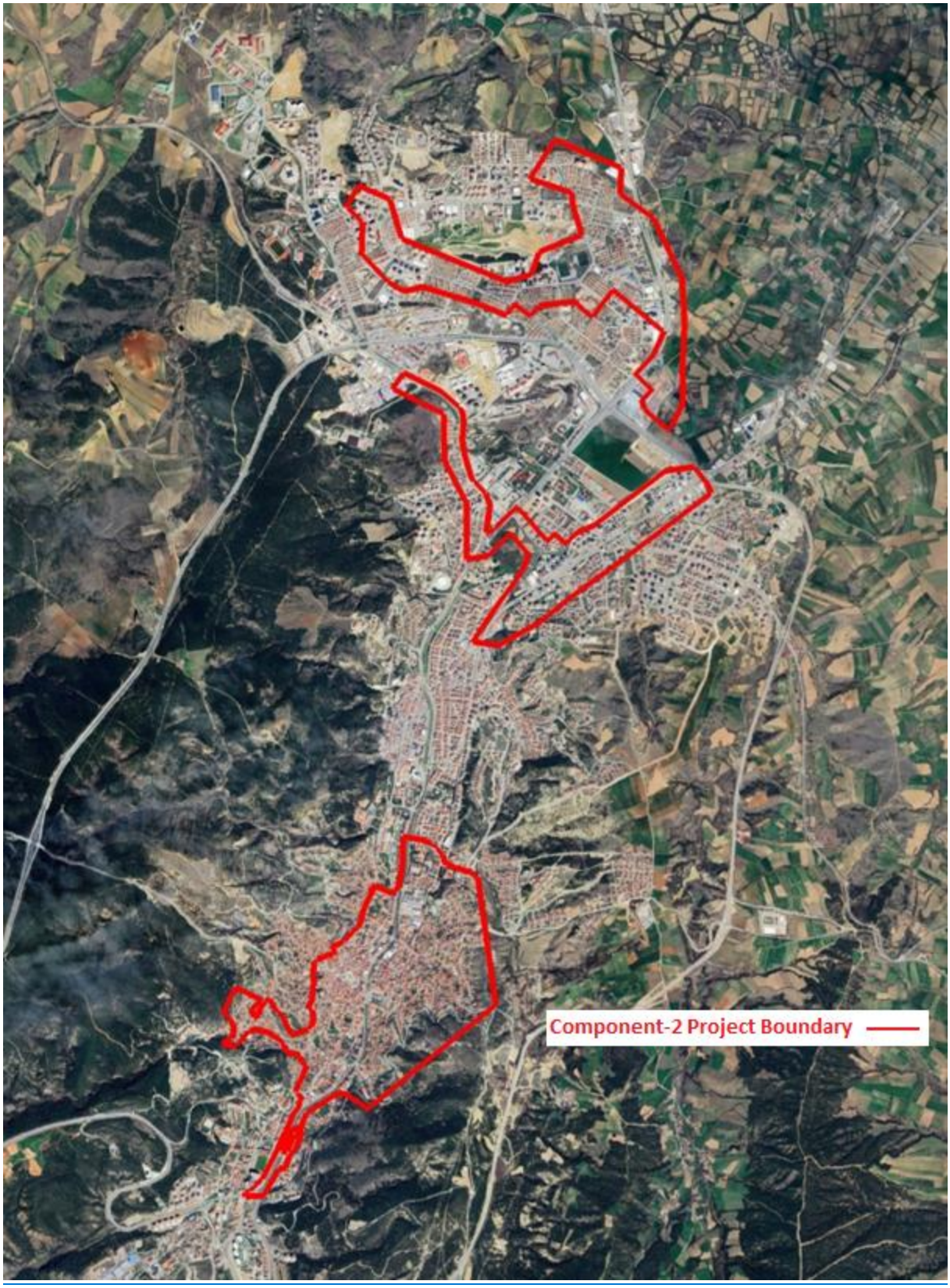



*Figure 21. Wastewater Network General Layout*

# 5 ESMP Matrix: Risk and Impacts, Mitigation, Monitoring

This section describes the reporting and Environmental and Social Management Plan Matrices during different stages of subproject. The Environmental and Social mitigation measures have been incorporated at all the stages of the subproject from Construction phase to Operational Phase.

## 5.1 Environmental and Social Assessment

### 5.1.1 Air Quality

Dust generation is expected due to excavation works within the scope of construction and site preparation works of the subproject. These impacts are expected to be temporary and reversible. Necessary measures will be taken to prevent dust formation during filling, unloading and transportation operations, and the trucks will be covered during transportation. Dust formation will be prevented by regular watering of the roads.

In addition, exhaust emissions generation from construction machinery and equipment are expected. Periodic inspection and maintenance of construction machinery, equipment, and vehicles to be used during the construction of the subproject will be carried out. In this context, impacts are expected to be low. However, if sensitive receptors and nearby communities are identified to be adversely affected by emission levels, additional measures will be taken.

During the preparation and construction phases of the subproject;

- Periodic maintenance of construction machinery will be ensured.
- Periodic water spraying during the transportation of excavation material and washing the wheels of the vehicles to prevent dust emissions will be ensured.
- Vehicles will be covered during the transportation of excavated soil.

During the operation phases of the subproject;

- During the spot repair and maintenance works to be carried out to solve the problems that may be encountered during the operation phase, the measures to be taken during the construction works described above will be taken.
- The collection system will be regularly inspected, and necessary unblocking works will be carried out to prevent hydrogen sulphide emissions.
- Sludge accumulation in pipelines will be prevented (e.g. flushing pipelines with clean water).
- Sewerage systems have been designed to ensure flow and air supply to critical points of sewerage systems has been considered.

The provisions of the "Regulation on the Control of Emissions Creating Odor", which entered into force after being published in the Official Gazette dated 19.07.2013 and numbered 28712, will be complied with.

### 5.1.2 Water Use

Kastamonu Municipality and its Consultant and Contractors are obliged to provide the water required for the subproject without creating a negative impact on groundwater and surface waters. The amount of water to be used during the construction phase will be limited and will be used for the testing and flushing the pipelines and spraying for the prevent dust emissions.

It is estimated that a total of 120 people will work during the construction phase. Assuming a water consumption of 200 l/day per person, total water consumption will be 24 tonnes/day. Potable water required by the employees during the construction phase will be supplied from Kastamonu Municipality city water network. Drinking water will be supplied from bottled water or municipal water in accordance with the Regulation on Water Intended for Human Consumption. Since Kastamonu Municipality personnel will work during the operation phase, the number of people will be limited and the consumption will be less since there will be no accommodation.

The source of the water to be used during the pipe testing process and to prevent dusting will be shown by Kastamonu Municipality and the water source will be used after all permits are obtained. treated municipal water will not be used for these works.

### 5.1.3 Wastewater

Within the scope of the subproject, it is anticipated that wastewater will be generated from two main sources: the wastewater produced by employees residing in the camp area and the wastewater generated during the pipe testing process. The amount of wastewater generated is estimated to be 18 $m^3$/day with the assumption of 150 l/capita/day. If the place where the camp accommodation area is established provides a connection to the municipality's wastewater network, a septic tank will not be installed and will be connected to the wastewater network. If the accommodation area cannot be connected to the municipality's wastewater network, the contractor will install a septic tank and transport the wastewater to the Kastamonu Municipality wastewater treatment plant with sewage trucks. After the analyses to determine the pollution load of the wastewater used in pipe testing processes are carried out, if necessary, it will be treated in accordance with the regulations and discharged to the receiving environment.

The water used for testing and flushing the pipelines will not be discharged directly to the receiving environment without any treatment. Necessary measures for the treatment will be taken before starting the testing and flushing works. No uncontrolled discharges will be made during subproject activities. Physical filtration methods such as straw bales that will not cause soil runoff will be used and discharge flow rate will be kept low. No uncontrolled discharge will be performed during the subproject activities.

If the open trenches excavated for the project activities are filled because of surface water, groundwater or precipitation, the water in the trench will not be discharged directly to the receiving stream. The accumulated water will be discharged to the nearest receiving stream as clear water after setting the sand, sludge and suspended matter so as not to cause soil runoff. If there is no receiving stream close to the excavation area, it will be transferred to the treatment plant of the municipality by water truck.

### 5.1.4 Waste Management

In addition to excavation wastes, hazardous and non-hazardous solid wastes are expected to be generated during the construction phase of the subproject. These wastes will be stored separately at the construction sites in accordance with local legislation (e.g. Waste Management Regulation, Packaging Waste Control Regulation, Waste Oil Management Regulation, Regulation on Control of Vegetable Waste Oils, Excavation Soil, Construction and Demolition Waste Control Regulation, Regulation on Control of End-of-Life Tires, Medical Waste Control Regulation) and will be transported to licensed facilities and disposed of. Kastamonu Municipality and its consultant and contractors are responsible for ensuring liaison with licensed facilities and recovery/disposal of all wastes within the framework of local legislation (Waste Management Regulation) and WB performance standard criteria.

Awareness raising training on waste minimization and waste management will be provided to all staff and contractor’s workers working on the subproject.

There are asbestos pipes in some of the existing drinking water lines. These ACM pipes will be left in place untouched, and if dismantling is required, dismantling, transport and disposal operations will be carried out in accordance with the Subproject Specific Asbestos Management Plan (Annex-3) and the Regulation on Health and Safety Precautions in Working with Asbestos. In case it is necessary to intervene ACP for any reason, necessary plans will be prepared and works will be carried out in accordance with the provisions of the "Regulation on Health and Safety Measures in Working with Asbestos" published in the Official Gazette dated 25.01.2013 and no. 28539 and Industrial Good Practices.

### 5.1.5 Noise

Noise from construction equipment and vehicles is expected to have a negative impact on sensitive receptors in the vicinity of the subproject. In order to minimize the impact, construction works will be carried out during daylight hours (07:00 - 19:00). In addition, noise levels will be regularly monitored at sensitive receptors every six months and additional measures will be taken if necessary.

In the planning of all activities of the subproject, the relevant provisions of the " Environmental Noise Control Regulation" published in the Official Gazette dated 30.11.2022 and numbered 32029 will be complied with.

Necessary measures will be taken to ensure that the limit values in the Regulation are met, and the sound level will be reduced by using the blocking methods between the nearby settlements and the construction site. The works to be carried out on the site will be carried out during the daytime and no work will be carried out at night.

It will be ensured that the maintenance of the construction machines and equipment that will work in the field will be carried out on time and regularly and the possible noise that may occur will be reduced to prevent the workers, local people, and animals around the working points from being affected. Care will be taken not to operate construction machines and equipment at the same time.

Ambient noise level measurements will be made prior to the start of construction works and the baseline noise level will be determined prior to the works on the locations given in Figure 22. Noise measurements will be made in settlements during the construction phase and if the limit values given in the Regulation and WBG General EHS Guidelines are exceeded within the scope of construction activities, noise barriers with high sound absorption will be placed between the construction areas and buildings.

During the operation phase of the Subproject, there will be no noise disturbing the external environment.

Necessary monitoring will be carried out regarding noise pollution and in case of any noise problem arising from the construction activities, additional measures (use of additional sound insulation materials, construction of sound barriers, etc.) will be taken to address the problem.

The provisions of the " Environmental Noise Control Regulation" published in the Official Gazette dated 30.11.2022 and numbered 32029 and the provisions of WBG General EHS Guidelines will be complied with.

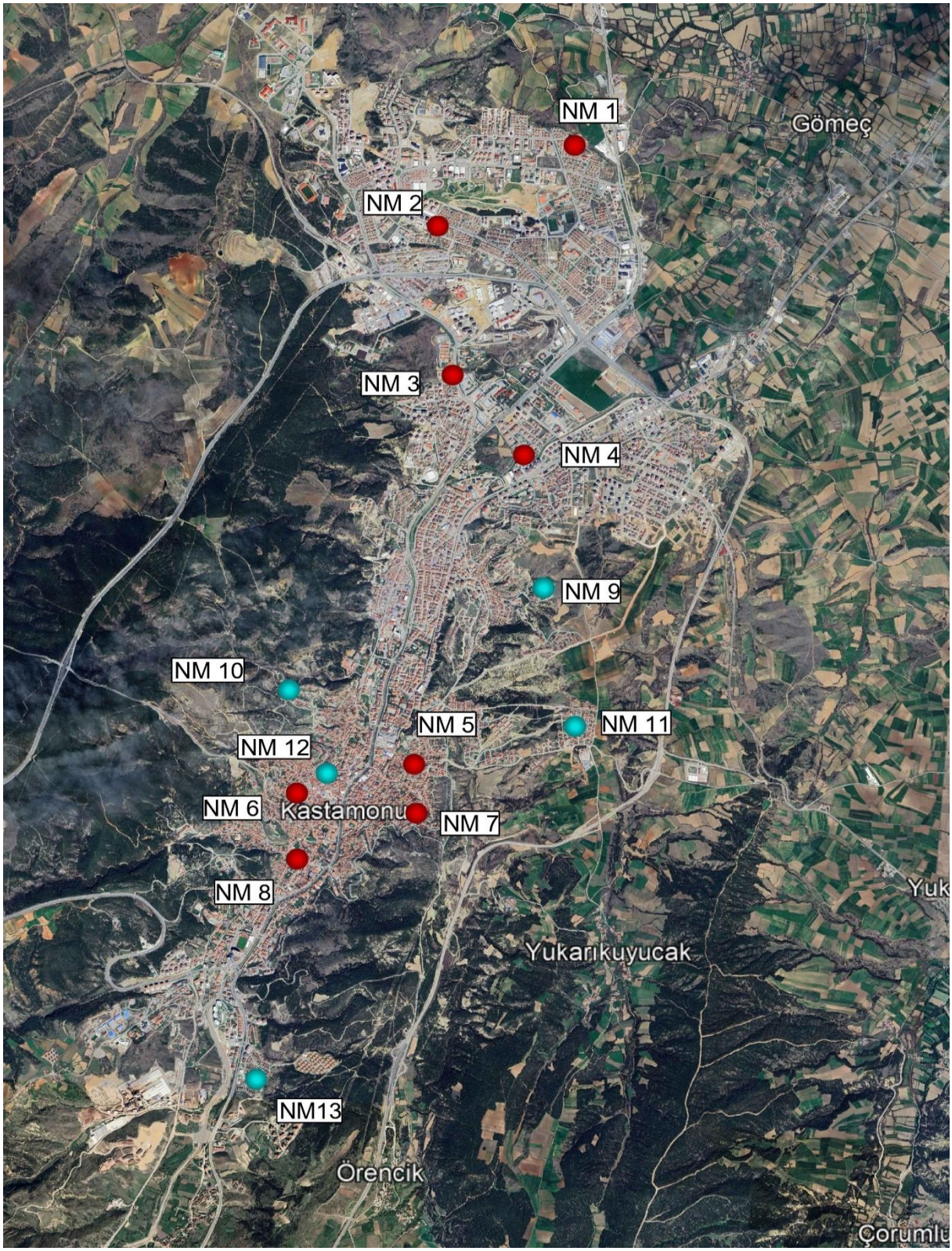



*Figure 22. Noise measurement points*

| RECOMMENDED POINTS | COORDINATE | |
|---|---|---|
| | X | Y |
| NM 1 | 566421,077 | 4588817,354 |
| NM 2 | 565311,954 | 4587996,831 |
| NM 3 | 565545,584 | 4586694,725 |
| NM 4 | 566230,111 | 4586021,643 |
| NM 5 | 565524,231 | 4583171,928 |
| NM 6 | 564541,977 | 4582825,983 |
| NM 7 | 565583,614 | 4582741,314 |
| NM 8 | 564598,983 | 4582234,608 |
| NM 9 | 566500,419 | 4584846,221 |
| NM 10 | 564407,039 | 4583733,648 |
| NM 11 | 566870,810 | 4583635,642 |
| NM 12 | 564786,722 | 4583026,672 |
| NM 13 | 564422,576 | 4580248,685 |

*Table 17. Coordinates of Noise Measurement Points*

### 5.1.6 Land Use and Soil Quality

The drinking water network and sewerage network planned to be built within the scope of the subproject are located in the central district of Kastamonu. All of the works planned to be carried out within the scope of the subproject will be carried out on public lands in accordance with the zoning plans. The subproject will be performed in the disturbed areas where as the paved roads and streets in the city center. Therefore, soil is already disturbed and there is no significant vegetation on the subproject site. There will be no additional land acquisition or expropriation required.

### 5.1.7 Landscape/Visual

In the works to be carried out in the places where the land use purpose is determined as parks, care will be taken not to disrupt the quality and appearance of the existing parks, and after the necessary conditions are met, afforestation and landscaping will be carried out in a way that will not disrupt the existing land use. Care will be taken not to disrupt the daily use opportunities of the public such as walking paths and sports equipment.

Open excavation areas, pipe laying and construction machinery can be a visual nuisance in the surrounding area. Enclosing excavation and construction areas with appropriate barriers or screens will ensure safety and reduce visual impact. Excavation and material accumulations can lead to untidy images on construction sites. Planned stockpile management should be in place to ensure that materials and equipment are stored on site in an orderly manner and to prevent unnecessary piles from accumulating. The deterioration of roads and pavements during excavation works can have a negative environmental and aesthetic impact. Immediate repair works should be carried out to restore roads and pavements after excavation is completed. Temporary paving or pavement repair works will reduce visual disturbance. During excavation and backfilling works, dust generation can increase, which can cause both visual pollution and reduced air quality. Water spraying can be used during excavation and backfilling to reduce dust generation. Dust control reduces both visual and health impacts by protecting the surrounding air quality.

### 5.1.8 Biodiversity and Protected Areas

Subproject area is in the city center so there is no wooded are in the subproject area. Therefore, no trees will be cut during the subproject construction works. There is not any Specially protected environmental

area in the subproject area. The subproject will be performed in the already disturbed areas where as the paved roads and streets in the city center. Therefore, there will be no significant clearing of vegetation or cutting of trees on the subproject site.

The Karaçomak Stream in the subproject area was started to be rehabilitated by DSI in 2015. Karaçomak Stream was rehabilitated with stone walls to prevent overflow. Currently, there are no flora/fauna species around Karaçomak Stream.

Workers will be trained, and the importance of the stream will be explained before construction works near Karaçomak Stream. During construction works, the stream will not be interfered with, and construction waste and other wastes will not be disposed into it. During all works, barriers will be placed between the work area and the stream and workers will be prohibited from entering the water or discharging into the stream. In addition to all these measures, all workers will be trained by the environmental specialist responsible for the sub-project on the Karaçomak Stream as a sensitive area and the mitigation measures to be taken during the subproject.

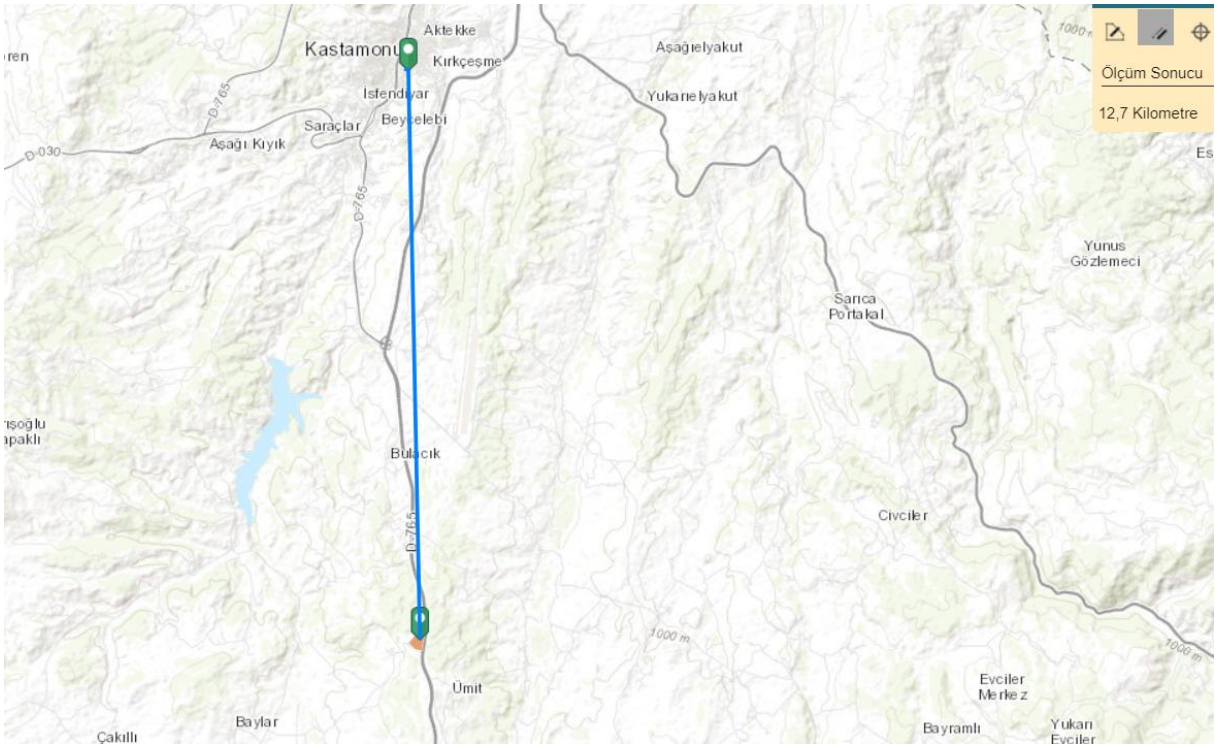



*Figure 23. Serifebacı Nature Park*

### 5.1.9 Population /Demography

Due to the nature of the subproject, the required workforce will be limited. It is foreseen that a total of 120 people will work within the scope of the subproject. Therefore, there will be no excessive labour influx as a result of the subproject. Sub-Project's affects on population will be low. A labor camp will be established to accommodate workers during the construction phase of the subproject. Labor Management Plan and Camp Management Plan will be prepared in line with the Labor Management Procedure prepared for TEFWER. The location of the camp will be determined during the construction phase and its impacts will be addressed in the Camp Management Plan to be prepared during the construction phase.

### 5.1.10 Land Acquisition

In the determination of the line routes in the site within the scope of the subproject, especially the areas that are not private properties, which are required to be subject to expropriation procedures, have been eliminated as much as possible, and it is aimed to pass the line route through cadastral roads and zoning roads.

Pipes to be laid during subproject construction works will be buried underground. Therefore, impacts will be temporary and specific to the subproject area. "Kastamonu Central District Drinking Water and Sewerage Network Line Project" is not expected to cause physical displacement. Within the scope of the subproject, temporary/permanent physical displacement will not be realized as work will be carried out on existing streets and roads in the central district of Kastamonu. In addition, tradesmen and businesses may be affected by the excavation works and road closures to be carried out on these streets and roads and may experience loss of income. There may be access disruptions due to road closures for construction works, as well as impacts such as dust and noise that may discourage people from visiting local businesses.

The old route will be used as much as possible for the new network line route. For this reason, no impact on structures or physical relocation is expected in the subproject areas.

If it is necessary to stockpile pipes and construction materials, the areas belonging to the Kastamonu Municipality will be used as warehouses.

The areas where the Component-1 and Component-2 Water, and Wastewater Networks are planned to be constructed within the scope of the subproject are public land (as indicated in Annex 1 and Annex 2) and belong to Kastamonu Municipality. No additional land acquisition is required.

### 5.1.11 Vulnerable/Disadvantaged Groups/Individuals

Individuals and groups that will be differentially or disproportionately affected by the subproject, such as households with physically and/or mentally disabled family members, children, elderly people over the age of 70 living alone and in need of care, female-headed households, households with low or no income, and refugee households due to their disadvantaged or vulnerable status. As identified in the Stakeholder Engagement Plan (SEP), vulnerable and disadvantaged groups/individuals have been identified and mitigation measures will be taken for the negative impacts of the subproject.

Vulnerable and disadvantaged groups or individuals may experience some negative impacts during the construction phase. These impacts are expected to be temporary and short-term. People with physical disabilities may experience transportation problems, access to infrastructure services and accident risk problems in areas blocked by barriers due to construction works. However, the quality of access to infrastructure services after the construction works will have a permanent positive impact.

During the construction phase of the subproject, consultation and information meetings will identify measures to be taken (such as reducing the risk of accidents with barriers and using wheelchair access platforms) and mitigate the transportation and accident risk impacts of vulnerable and vulnerable groups.

Studies will be carried out by social experts to ensure that disabled and dependent individuals are not adversely affected by excavation works and do not experience assistance and transportation problems. With these studies consultation meetings will be held with individuals in need of care and living alone and their requests will be received and relevant institutions will be contacted. The residence addresses of these individuals will be determined and the transition platforms to be used by disabled individuals during excavations in these areas will be provided by the contractor.

The social expert will meet with refugee families with language barriers through an interpreter and inform them about the subproject and record their complaints or requests.

Temporary adverse impacts that vulnerable/disadvantaged groups/individuals may be temporarily exposed to during the construction period of the subproject and measures to mitigate these impacts are given below.

- Households with physically and / or mentally disabled family members,
- Elderly people over 70 years of age who live alone and in need of care,
- Female-headed households,
- Households with low or no income, and
- Refugee households

### 5.1.12 Economy /Employment

Personnel will be needed during the construction of the subproject. Labor and employment will be provided from local people to the extent possible. In addition, there may be a need for accommodation for employees who are experts in their field and who come from outside the city. The location of the campsite will be determined by the contractor during the construction phase. The camp site will be described in detail in the relevant documents, Labor Management Plan (LMP) and Camp Management Plan (CMP) to be prepared during the construction phase. It is foreseen that a total of 120 people will work within the scope of the subproject. Sub-Project's affects on population will be low. Labor influx will be limited by prioritizing local employment.

During the construction phase of the subproject, it is foreseen that tradesmen and businesses will be affected in the areas where excavation works will be carried out and they will experience temporary loss of economic income. To mitigate the impact of temporary loss of income, a work plan will be prepared by the contractor to ensure that access to tradesmen and businesses will not be impeded. Excavation works in these areas will be planned in such a way that access will not be obstructed by short-distance excavations. In addition, the excavation works in these areas will be implemented with the aim of completing the construction works on the same day with short distance excavations.

### 5.1.13 Occupational Health and Safety

Construction works may cause accidents and occupational disease that threaten the health and safety of employees if necessary, precautions are not taken. In this context, Kastamonu Municipality and its consultant and contractors are obliged to provide a safe and healthy working environment for employees. Employees will be informed about their job descriptions, responsibilities, relations with the local community and the risks and their countermeasures, instructions for the work to be done that may threaten health and safety related to the work before starting work. An Occupational Health and Safety Management Plan will be prepared for the Project and employees will be informed about their duties and responsibilities as specified in this management plan. Employees will be provided with the necessary personal protective equipment and will be informed about work and occupational safety through regular trainings. A Risk Assessment Report will be prepared in accordance with the Occupational Health and Safety Risk Assessment Regulation for all works to be carried out before the start of construction works, risks will be shared with employees and necessary measures will be taken to eliminate the risks. OHS Management Plan, Risk Assessment Report and Emergency Management Plan will also be prepared for the subproject camp site. "Emergency Plans" will be prepared in accordance with the Regulation on Emergency Situations in Workplaces. "Emergency Plans" will be prepared for a possible accident and emergency and emergency teams will be established and drills and trainings will be carried out in accordance with emergency scenarios. Subproject sites will be inspected daily by OHS specialists and unsafe conditions and behaviours, including updated daily work permits, toolbox talks and near misses/incidents will be corrected and reported daily.

A work permit system will be established for very dangerous jobs such as excavation, working at height, confined space entry hot works (Welding, Cutting, Grinding).

### 5.1.14 Community Health and Safety

The subproject construction phase may have some impacts on community health and safety. These impacts may primarily include a labor influx of workers and associated cultural conflicts and negative impacts such as sexual exploitation and abuse/sexual harassment. In addition to these impacts, local citizens may be exposed to accidents in excavated areas and areas where materials are stored; falls into the trenches, electric shocks and disturbbances impacts from noise and dust generation. In order to prevent such situation, OHS management plan and OHS measures, warning signs and illuminated warning sign will be kept in the work area.

### 5.1.15 Traffic and Transportation

Within the scope of the works to be carried out, local traffic is expected to be congested due to the entry and exit of construction vehicles to and from the work sites. Failure to fully enclose the work areas, the absence of a flagman and install the necessary warning signs may result in accidents that threaten public health and safety. In order to prevent such situations, the construction schedule and traffic restrictions will be announced to the public in a timely manner. Prior to the construction works, a traffic management plan will be prepared by the contractor for the construction site.

### 5.1.16 Cultural Heritage

There are many historical and registered buildings within the AoI of the subproject. Although some of these historical and cultural places are located in the central district (e.g. Martyr Şerife Bacı Monument, Atabey Gazi Mosque (with forty poles), Kastamonu Castle, Kastamonu Government House, Clock Tower, Münire Madrasah Handicraft Bazaar etc.), they are likely to be affected by construction works. Although the impact area of the construction works is determined to be between 5-10 meters, vibrations caused by excavation works near registered buildings pose a risk.

A Chance Find Procedure has been prepared in order to manage activities in terms of cultural heritage (see Annex-4). This procedure has been prepared for the construction site. The old city in the central district of Kastamonu is under protection as an archaeological site. An application was made to Kastamonu Provincial Directorate of Culture and Tourism for their opinion on the works within the scope of the project. The official opinion letter will be submitted to ILBANK. There are several registered traditional Ottoman Houses in the city center. Although the excavation works are not expected to directly affect the traditional registered Ottoman Houses, vibration or vehicle maneuvers may damage these registered houses.

Employees will be trained on cultural heritage and archaeological remains before the construction works start in this area and Kastamonu Provincial Museum Directorate will be contacted and an official permisson letter will be obtained for the construction phase before the construction works start. The official permission letter will be submitted to ILBANK. In case of accidental findings, the works will be stopped, and the area will be protected with barriers and bands so that the authorised public institutions can carry out inspections.

## 5.2 Construction Phase Environmental and Social Management Plan (ESMP) Matrix

| Ref. | Potential Impacts/Risks | Subproject Phase | Sensitive Receptor(s) | Management/ Mitigation Measure | Responsibility for Implementation of Mitigation Measure | Relevant Management Plan or Procedure |
|---|---|---|---|---|---|---|
| **ESS 1** | **Assessment and Management of Environmental and Social Risks and Impacts** | | | | | |
| **1.1** | Non-compliance with ILBANK's ESMS, national legislation and World Bank policies | Construction | Local community Labours | To ensure compliance with ILBANK's ESMS, World Bank and national environmental and OHS requirements during the construction phase of the subproject through inspections | Municipality, Contractor, Supervision consultant | Subproject ESMP, Sub-management Plans and audit. |
| | | | | Prepare a checklist of permits that are required for the subproject during construction. | | |
| | | | | Employ Environmental Specialist, OHS specialist and Social Specialist staff with experience and similar work experience qualifications to oversee the implementation of legal and World Bank E&S requirements and the implementation of this ESMP during the planning, procurement, construction phases. | | |
| | | | | Develop specific procedures / plans outlining correct practice and management for significant environmental / OHS / labour aspects/risks should include, but not be limited to: | | |

| Ref. | Potential Impacts/Risks | Subproject Phase | Sensitive Receptor(s) | Management/ Mitigation Measure | Responsibility for Implementation of Mitigation Measure | Relevant Management Plan or Procedure |
|---|---|---|---|---|---|---|
| | | | | • Pollution prevention plan<br>• Traffic management plan<br>• OHS Management Plan<br>• Waste management plan,<br>• Emergency preparedness and response plan<br>• Reinstatement plan<br>• Chance Find Procedure<br>• Excavation plan<br>• Labour Management Plan<br>• Contractor Management Plan<br>• Camp Management Plan<br>• Community Health and Safety Plan<br>• Health and Safety Precautions Management Plan for Working with Asbestos | | |
| **ESS 2** | **Labor and Working Conditions** | | | | | |
| **2.1** | Improper working condition | Construction | Labours | Contractor management plan will be prepared by the Kastamonu Municipality to manage the contractor's work process. Subproject-level Labour Management Plan (LMP) and Occupational Health and Safety (OHS) Plan will be developed by | Municipality, Contractor, Supervision consultant | OHS Plan<br>LMP<br>Workers' Grievance Mechanism |

| Ref. | Potential Impacts/Risks | Subproject Phase | Sensitive Receptor(s) | Management/ Mitigation Measure | Responsibility for Implementation of Mitigation Measure | Relevant Management Plan or Procedure |
|---|---|---|---|---|---|---|
| | | | | the contractor prior to the construction works. | | |
| **2.2** | Unauthorized entrance, trespassing | Construction | Labours | Ensure site premises are provided with appropriate fencing (where applicable) and lighting. Use hazard notices/signs/barriers to prevent access to dangerous areas. | Municipality, Contractor, Supervision consultant | OHS Plan<br>Workers' Grievance Mechanism<br>LMP |
| **2.3** | Road incidents/ accidents, traffic safety | Construction | Labours | Ensure speed limits on site and on transporting routes. | Municipality, Contractor, Supervision consultant | OHS Plan<br>Workers' Grievance Mechanism<br>LMP |
| **2.4** | Incident, accident risk at worksite | Construction | Labours | Ensure the use of suitable Personal Protective Equipment (PPE) for workers. | Municipality, Contractor, Supervision consultant | OHS Plan<br>Workers' Grievance Mechanism<br>LMP |
| **2.5** | Trip hazards and safety risks at worksite, Environmental Pollution | Construction | Labours | Maintain high standard in housekeeping on site. | Municipality, Contractor, Supervision consultant | OHS Plan<br>Emergency Response and Action Plan<br>Workers' Grievance Mechanism<br>LMP |
| **2.6** | Workplace safety | Construction | Labours | Ensure provision of Health and Safety (OHS) facilities at the Subproject site, including shaded welfare areas, bathrooms, and potable water. | Municipality, Contractor, Supervision consultant | OHS Plan<br>Workers' Grievance Mechanism<br>LMP |
| **2.7** | Unauthorized access to workplace | Construction | Labours | Ensure that the workers camp and construction areas are open only to authorized people. | Municipality, Contractor, | OHS Plan<br>Workers' Grievance Mechanism |

| Ref. | Potential Impacts/Risks | Subproject Phase | Sensitive Receptor(s) | Management/ Mitigation Measure | Responsibility for Implementation of Mitigation Measure | Relevant Management Plan or Procedure |
|---|---|---|---|---|---|---|
| | | | | | Supervision consultant | LMP |
| **2.8** | Fire Risk | Construction | Labours | Provide necessary fire prevention equipment on site in line with applicable regulations and carry out regular inspections | Contractor | OHS Plan<br>Workers' Grievance Mechanism<br>LMP |
| **2.9** | Unregistered employment, child labor, forced labor | Construction | Labours | Ensure that workers have access to and are aware about the Grievance Mechanism. | Municipality, Contractor, Supervision consultant | OHS Plan<br>SEP<br>LMP<br>Workers' Grievance Mechanism |
| | | | | Ensure minimum legal labour standards as per Labour Law and regulations (child/forced labour, no discrimination, working hours, minimum wages) are met. | Municipality, Contractor, Supervision consultant | |
| | | | | Provide hygienic, adequate facilities for workers, ensuring toilets and changing rooms are separated to male and female employees. | Contractor | |
| | | | | Ensure the workforce has access to primary healthcare on site, providing prescriptions. Ensure that workplace physician and other healthcare personnel are available according to relevant regulation | Municipality, Contractor, Supervision consultant | |
| | | | | Provide housing conditions in accordance with all applicable health and safety regulations and norms by ensuring the provision of | Contractor | |

| Ref. | Potential Impacts/Risks | Subproject Phase | Sensitive Receptor(s) | Management/ Mitigation Measure | Responsibility for Implementation of Mitigation Measure | Relevant Management Plan or Procedure |
|---|---|---|---|---|---|---|
| | | | | adequate space, supply of water, adequate sewage and garbage disposal system, appropriate protection against heat, cold, damp, noise, fire and disease-carrying animals, adequate sanitary and washing facilities, ventilation, cooking and storage facilities and natural and artificial lighting, and basic medical services. | | |
| **2.10** | Local Employment & Procurement | Construction | Local community | Ensure local communities are preferred for the supply of goods and services to the Subproject and Subproject personnel, where appropriate. | Municipality, Contractor, Supervision consultant | Stakeholder Engagement Plan<br>Workers' Grievance Mechanism<br>LMP |
| **2.11** | Working with/Exposure to Asbestos Containing Materials (ACM) | Construction | Labours | Assess existing parts of line whether they contain asbestos or not and inform contractor regarding risks.<br>Follow instructions to prevent airborne asbestos in the workplace within the national legislation and requirements and follow requirements of international best practice.<br>Engage contractors that have employees suitably qualified, experienced and licensed by Ministry of Labour and Social Security and can supply required | Municipality, Supervision consultant | Asbestos Management Plan<br>Health and Safety Precautions<br>Management Plan for Working with Asbestos<br>Workers' Grievance Mechanism<br>LMP |

| Ref. | Potential Impacts/Risks | Subproject Phase | Sensitive Receptor(s) | Management/ Mitigation Measure | Responsibility for Implementation of Mitigation Measure | Relevant Management Plan or Procedure |
|---|---|---|---|---|---|---|
| | | | | equipment for asbestos-related work.<br>Ensure the asbestos removal work does not result in unacceptable risk to other workers.<br>Ensure all personnel wear appropriate PPE provided and take other asbestos control measures as instructed by Asbestos Management Plan and Asbestos Removal Specialist for asbestos-related work. | | |
| | | | | Ensure having experts specified in the Regulation on Health and Safety Precautions in Working with Asbestos for the asbestos related work.<br>Ensure all workers are appropriately trained/licensed to conduct the work – training records/licence provided.<br>Ensure asbestos related works does not result in unacceptable risk to other workers.<br>Ensure supplying appropriate PPE and all personnel wear and use PPE provided and take other asbestos control measures as instructed by Asbestos Management Plan, Asbestos Removal Specialist and employers/project managers. | Contractor | Asbestos Management Plan<br>Health and Safety Precautions Management Plan for Working with Asbestos<br>Workers' Grievance Mechanism<br>LMP |

| Ref. | Potential Impacts/Risks | Subproject Phase | Sensitive Receptor(s) | Management/ Mitigation Measure | Responsibility for Implementation of Mitigation Measure | Relevant Management Plan or Procedure |
|---|---|---|---|---|---|---|
| **ESS 3** | **Resource Efficiency and Pollution Prevention and Management** | | | | | |
| **3.1** | Dust emissions | Construction | Local community and environment | Ensure watering of construction sites and transportation roads during dry and windy conditions. Generally, keep roads in appropriate conditions. | Municipality, Contractor, Supervision consultant | Pollution Prevention Plan<br><br>Traffic Management Plan |
| | | | | Cover truck loads with canvas to avoid dust blow. | Municipality, Contractor | |
| | | | | Ensure optimal traffic routes. Enforce vehicle speed limits on unpaved roads. | Municipality, Contractor, Supervision consultant | |
| | | | | Ensure appropriate stockpile management (for friable materials) to minimise dust blow. Minimise drop heights for material transfer activities such as unloading of friable materials. | Contractor | |
| **3.2** | Mismanagement of domestic waste | Construction | Local community and environment | Obtain permission and/or sign protocols to utilize local municipal services. Areas where domestic waste is collected, and containers should be regularly sanitized to prevent diseases. | Municipality, Contractor | Pollution Prevention Plan |
| **3.3** | Mismanagement of hazardous waste and waste ACM | Construction | Local community and environment | Ensure that hazardous waste generated during the subproject construction phase is collected in accordance with procedures and regulations and stored in secondary | Contractor | Waste Management Plan<br>Pollution Prevention Plan<br>Emergency Response and Action Plan |

| Ref. | Potential Impacts/Risks | Subproject Phase | Sensitive Receptor(s) | Management/ Mitigation Measure | Responsibility for Implementation of Mitigation Measure | Relevant Management Plan or Procedure |
|---|---|---|---|---|---|---|
| | | | | containment in the temporary waste storage area.<br>Send hazardous waste to licensed disposal companies | | |
| | | | Local community and environment | Engage recruited Asbestos Removal Specialist for asbestos-related work.<br>Ensure all workers are appropriately trained/licensed to conduct the work – training records/licence provided.<br>Within the limits of their responsibilities, prevent, to the extent practicable, the release of airborne asbestos fibers in the working environment by ensuring safe asbestos work practices defined in Asbestos Management Plan are followed and ensuring<br>that any damaged asbestos or unexpected asbestos found in the workplace is managed in accordance with regulation and international best practice.<br>Ensure supplying appropriate PPE and all personnel wear and use PPE provided and take other asbestos control measures as instructed by Asbestos Management Plan and Asbestos Removal Specialist for asbestos-related work. | Contractor | Waste Management Plan<br>Pollution Prevention Plan<br>Asbestos Management Plan Annex 3)<br>Emergency Response and Action Plan |

| Ref. | Potential Impacts/Risks | Subproject Phase | Sensitive Receptor(s) | Management/ Mitigation Measure | Responsibility for Implementation of Mitigation Measure | Relevant Management Plan or Procedure |
|---|---|---|---|---|---|---|
| **3.4** | Soil contamination | Construction | Local community and environment | Ensure that the maintenance of construction machinery is carried out on time.<br>Do not store chemicals that may cause soil pollution in the construction work area.<br>Use secondary containment in areas where chemicals are stored.<br>Intervene in chemical spills without wasting time and transport the contaminated soil to the hazardous waste storage area for disposal. | Contractor | Pollution Prevention Plan<br>Emergency Response and Action Plan |
| **3.5** | Emissions from equipment and vehicles | Construction | Local community and environment | Use equipment and vehicles in appropriate technical conditions. Provide emissions control equipment where applicable (e.g. filters). | Municipality, Contractor | Pollution Prevention Plan<br>Traffic Management Plan |
| | | | | Ensure optimal traffic routes to minimise lengths of travel while avoiding settlements if possible. | Municipality, Contractor | |
| | | | | Ensure vehicles and equipment are switched off when not in use.<br>In addition, all vehicles and equipment will be regularly maintained during the subproject. | Municipality, Contractor | |
| **3.6** | Noise and vibration impacts at the construction sites and from construction traffic | Construction | Local community and environment | Limit the hours of operation for specific equipment or operations, especially mobile sources operating through community areas or close | Municipality, Contractor, Supervision consultant | Pollution Prevention Plan |

| Ref. | Potential Impacts/Risks | Subproject Phase | Sensitive Receptor(s) | Management/ Mitigation Measure | Responsibility for Implementation of Mitigation Measure | Relevant Management Plan or Procedure |
|---|---|---|---|---|---|---|
| | | | | to residential houses (typically between 07:00 and 19:00). Avoid vehicle movements at night. | | |
| **3.7** | Noise and vibration impact at the construction sites | Construction | Local community and environment | Use of state-of-the-art technology and limit the number of machines operated simultaneously. | Municipality, Contractor | Pollution Prevention Plan<br>Traffic Management Plan |
| | | | | Ensure the use of modern and well-maintained equipment (e.g. use of silencers). | Municipality, Contractor | |
| | | | | Set traffic speed limits. Verify driver's behaviour with respect to driving speed and safety. | Municipality, Contractor | |
| | | | | Plan vehicle routes to avoid settlements where possible. | Municipality, Contractor | |
| | | | | Use protective hearing equipment for workers conducting noisy activities. | Municipality, Contractor | |
| | | | | Organise carpools/buses for worker transportation where possible to avoid additional traffic pressure. | Municipality, Contractor | |
| | | | | Prevent storage of construction materials, equipment, and machineries on traffic lanes. | Municipality, Contractor | |
| **3.8** | Impact on surface water quality | Construction | Local community and environment | Restrict excavation activities during periods of intense rainfall. Use temporary bunding to reduce the risk of sediment, oil or chemical spills to the receiving waters. | Municipality, Contractor | Excavation Plan<br>Camp Management Plan<br>Waste Management Plan<br>Grievance Mechanism |

| Ref. | Potential Impacts/Risks | Subproject Phase | Sensitive Receptor(s) | Management/ Mitigation Measure | Responsibility for Implementation of Mitigation Measure | Relevant Management Plan or Procedure |
|---|---|---|---|---|---|---|
| | | | | Use an impermeable septic tank for wastewater collection and/or obtain permission from the municipality to connect to the wastewater network. set up a temporary waste storage area in the campsite for the waste that will be generated | | |
| | | | | Carry out excavation works in cut off ditches to prevent water from entering excavations. | | |
| **3.9** | Construction waste, environmental contamination / spills | Construction | Local community and environment | Collect and segregate wastes and ensure safe storage in line with legal requirements. | Municipality, Contractor, Supervision consultant | Waste Management Plan<br>Pollution Prevention Plan<br>Emergency Response and Action Plan |
| | | | | Ensure disposal through licensed waste contractors for treatment/removal/recycling of each of the waste types and asbestos containing pipes. | | |
| | | | | Where possible, connect construction wastewater to the sewerage system or ensure that it is contained and disposed of in septic tanks. | | |
| | | | | Ensure appropriate and safe storage of contaminants such as fuels, construction materials and wastes. Provide absorbent and intervention materials in sufficient quantities and | | |

| Ref. | Potential Impacts/Risks | Subproject Phase | Sensitive Receptor(s) | Management/ Mitigation Measure | Responsibility for Implementation of Mitigation Measure | Relevant Management Plan or Procedure |
|---|---|---|---|---|---|---|
| | | | | at relevant locations for intervention in case of leakages/spills. | | |
| | | | | Implement appropriate secondary containment and spill controls for maintenance or refuelling works. | | |
| | | | | Ensure immediate cleaning of any spills and remediation of contaminated areas after construction or maintenance. | | |
| **3.10** | Soil handling | Construction | Local community and environment | Ensure appropriate storing of excavated soil removed. After construction excavated soil will be used as backfill for restoration of the area. | Municipality, Contractor, Supervision consultant | Reinstatement Plan |
| | | | | Limit stockpile height to 2 m maximum to avoid soil loss. | | |
| | | | | Reinstatement of construction working area to the best possible after construction activities are completed. | | |
| **ESS 4** | **Community Health and Safety** | | | | | |
| **4.1** | Impact on Community Health and Safety | Construction | Local community and workers | Ensure all contractors implement codes of conduct concerning employment and workforce behavior (including but not limited to safety rules, zero tolerance for | Municipality, Contractor, Supervision consultant | Community Health and Safety PlanTraffic Management Plan Grievance Mechanism |

| Ref. | Potential Impacts/Risks | Subproject Phase | Sensitive Receptor(s) | Management/ Mitigation Measure | Responsibility for Implementation of Mitigation Measure | Relevant Management Plan or Procedure |
|---|---|---|---|---|---|---|
| | | | | substance abuse, environmental sensitivity of the area, dangers of sexually transmissible diseases and HIV/AIDS, gender equality and sexual harassment, respect for the beliefs and customs of the populations and community relations in general). | | |
| | | | | Target signage and outreach activities to improve public awareness of traffic changes and potential hazards for high-risk sections of public roads, including near the site and laydown areas. | | |
| | | | | In case of security personnel at the site, ensure proper training and in the use of force and appropriate conduct toward workers and affected communities | | |
| **4.2** | Communicable Diseases | Construction | Local community and workers | Report any occurrence of any communicable diseases amongst the workforce (STD, HIV/AIDS, TB, malaria and Hepatitis B and C) and set up disease prevention programme if needed. | Contractor | Community Health and Safety Plan<br><br>Grievance Mechanism |

| Ref. | Potential Impacts/Risks | Subproject Phase | Sensitive Receptor(s) | Management/ Mitigation Measure | Responsibility for Implementation of Mitigation Measure | Relevant Management Plan or Procedure |
|---|---|---|---|---|---|---|
| **4.3** | Handling of asbestos containing materials – if any | Construction | Local community | Prevent, to the extent practicable, the release and exposure of airborne asbestos fibers in the working environment and surrounding communities by ensuring safe asbestos work/control practices are followed and ensuring that any damaged asbestos or unexpected asbestos found in the workplace is managed in accordance with national legislations, international best practice and Asbestos Management and Pollution Prevention Plan. | Contractor | Asbestos Management Plan<br>Pollution Prevention Plan |
| **ESS 5** | **Land Acquisition, Restrictions on Land Use and Involuntary Resettlement** | | | | | |
| **5.1** | Impacts on livelihoods /Economic Displacement | Construction | Local community | Engage with the local community and potential affected households to understand their needs and identify the risk of damage to their livelihood basis through the Subproject (e.g. lack of access to premises, lack of access to services).<br>Businesses that may face temporary loss of income along the line will be introduced to GM and grievances will be handled.<br>Excavation works in these areas will be planned in such a way that access | Municipality, Contractor, Supervision consultant | Stakeholder Engagement Plan<br>Grievance Mechanism/ |

| Ref. | Potential Impacts/Risks | Subproject Phase | Sensitive Receptor(s) | Management/ Mitigation Measure | Responsibility for Implementation of Mitigation Measure | Relevant Management Plan or Procedure |
|---|---|---|---|---|---|---|
| | | | | will not be obstructed by short-distance excavations.<br>Aim to finish construction work on the same day with short-distance excavations. | | |
| **ESS 6** | **Biodiversity Conservation and Sustainable Management of Living Natural Resources** | | | | | |
| **6.1** | Site clearance, vegetation removal and habitat disturbance | Construction | Flora and Fauna | Prior to construction works, identify the presence of critically important species in and around the work area by applying to the relevant public authorities (Universities, experts/companies working in the specified area). Avoid damaging natural vegetation during traffic management and site set-up and work only within the designated construction work area. | Municipality, Contractor, Supervision consultant | Reinstatement Plan |
| | | | | Limit vegetation clearing to areas within the site boundary where it is necessary. | Municipality, Contractor, Supervision consultant | |
| | | | | Ensure revegetation of cleared areas where possible after construction using native species. | Municipality, Contractor, Supervision consultant | |
| **ESS 8** | **Cultural Heritage** | | | | | |

| Ref. | Potential Impacts/Risks | Subproject Phase | Sensitive Receptor(s) | Management/ Mitigation Measure | Responsibility for Implementation of Mitigation Measure | Relevant Management Plan or Procedure |
|---|---|---|---|---|---|---|
| **8.1** | Damage of Cultural Heritage | Construction | Cultural resources | Ensure all chance finds of cultural heritage (e.g. graves, old ceramic, old building fragments) are reported immediately to the relevant authority and ILBANK. If possible, avoid excavation in the ultimate neighbourhood of a chance find, fence the chance find and await instructions from the competent authority.<br>Ensure that permits are obtained from the relevant institutions before starting construction work near registered buildings and structure.<br>Request site observation and monitoring of construction works by experts from relevant institutions when necessary. | Municipality, Contractor, Supervision consultant | Chance Find Procedure<br>Grievance Mechanism |
| **ESS 10** | **Stakeholder Engagement and Information Disclosure** | | | | | |
| **10.1** | Insufficient Information Sharing | Construction | Local community | Engage/ communicate with communities and plan sufficient time for participation. Ensure regular consultations with the local authorities and communities regarding the management of construction. | Municipality, Contractor, Supervision consultant | Stakeholder Engagement Plan<br>Grievance Mechanism |
| **10.2** | Weak management of grievance mechanism | Construction | Local community | A full-time social expert will be employed for the duration of the | Municipality, Contractor, | Stakeholder Engagement Plan |

| Ref. | Potential Impacts/Risks | Subproject Phase | Sensitive Receptor(s) | Management/ Mitigation Measure | Responsibility for Implementation of Mitigation Measure | Relevant Management Plan or Procedure |
|---|---|---|---|---|---|---|
| | | | | subproject. The social expert will take an active role in the operation of the grievance mechanism and will report to the supervisor when the mechanism fails and/or is weakly managed. | Supervision consultant | Grievance Mechanism |
| **10.3** | Adverse impacts to vulnerable/disadvantaged groups/individuals<br>• Households with physically and / or mentally disabled family members,<br>• Elderly people over 70 years of age who live alone and in need of care,<br>• Female-headed households,<br>• Households with low or no income,<br>• Refugee households | Construction | Vulnerable/disadvantaged groups/individuals | Participation of vulnerable groups in consultation activities will be ensured as specified in the SEP. | Municipality, Contractor, Supervision consultant | Stakeholder Engagement Plan<br>Grievance Mechanism |

## 5.3 Operation Phase Environmental and Social Management Plan (ESMP) Matrix

| Ref. | Potential Impacts/Risks | Subproject Phase | Sensitive Receptor(s) | Management/ Mitigation Measure | Responsibility for Implementation of Mitigation Measure | Relevant Management Plan or Procedure |
|---|---|---|---|---|---|---|
| **ESS 1** | **Assessment and Management of Environmental and Social Risks and Impacts** | | | | | |
| **1.1** | Non-compliance with ILBANK's ESMS, national legislation and World Bank policies | Operation | Local community | Prepare the sub-management plans required for the sub-project during operation. | Municipality | Subproject ESMP, Sub-management Plans. |
| **ESS 2** | **Labor and Working Conditions** | | | | | |
| **2.1** | Improper working condition | Operation | Labour | An Occupational Health and Safety (OHS) Plan specifying the working conditions of the personnel to be employed during the operation period will be prepared by Kastamonu Municipality. | Municipality | OHS Plan<br>Grievance Mechanism |
| **ESS 3** | **Resource Efficiency and Pollution Prevention and Management** | | | | | |
| **3.1** | Dust emissions and noise | Operation | Local community and environment | Management/Mitigation Measures in the Table 5.2 will be implemented.during maintenance and repair work. | Municipality | Pollution Prevention Plan<br>Traffic Management Plan<br>Grievance Mechanism |
| **ESS 4** | **Community Health and Safety** | | | | | |

| Ref. | Potential Impacts/Risks | Subproject Phase | Sensitive Receptor(s) | Management/ Mitigation Measure | Responsibility for Implementation of Mitigation Measure | Relevant Management Plan or Procedure |
|---|---|---|---|---|---|---|
| **4.1** | Impact on Community Health and Safety | Operation | Local community and workers | Sharing necessary information with local communities during maintenance and repair excavations, informing the public | Municipality | Stakeholder Engagement Plan Grievance Mechanism |
| **ESS 10** | **Stakeholder Engagement and Information Disclosure** | | | | | |
| **10.1** | Weak management of grievance mechanism | Operation | Local community | The grievance mechanism will allow all stakeholders to raise concerns about the Project in accordance with the World Bank ESS10. | Municipality | Stakeholder Engagement Plan Grievance Mechanism |

## 5.4 KEY PERFORMANCE INDICATORS

Key performance indicators and related targets need to be identified in order to control the efficiency and implementation of mitigation measures and commitments. So, key performance indicators according to this plan in general and targets are given in below table.

| ID | KPI | Target |
|---|---|---|
| **KPI-1** | Number of reported non-compliances with the requirements of this Plan | Zero per three months |
| **KPI-2** | Number of non-compliances closed due to corrective actions being taken within the defined timeframe (set on a case by case basis). | 100% of all non-conformities remedied within the defined timeframe |
| **KPI-3** | Number of grievances received from the community related to water pollution, soil pollution, noise, vibration or dust that were closed due to corrective actions taken within the specified timeframe. | 100% of all grievances resolved within the defined timeframe |
| **KPI-4** | Number of complaints received from the workers related to work conditions that were closed due to corrective actions taken within the specified timeframe. | 100% of all grievances resolved within the defined timeframe |
| **KPI-5** | % of all staff who have received relevant and adequate training | 100% compliance with training requirements |
| **KPI-6** | Success of training test results | Expected average 85% |
| **KPI-7** | Number of occupational health and safety accident and occupational disease | Zero per three months |
| **KPI-8** | Number of air emission measurement results that indicate limits have been exceeded in accordance with relevant legislation and standards | Zero per three months |
| **KPI-9** | Number of noise measurement results that indicate limits have been exceeded in accordance with relevant legislation and standards | Zero per three months |
| **KPI-10** | Volume of waste generated by waste stream | Maintain or reduce waste volumes by waste stream on a 3 monthly basis |
| **KPI-11** | % of waste re-used or recycled | Maintain or increase the volume of waste re-used or recycled on a 3 monthly basis. |
| **KPI-12** | % of wastes generated that are being correctly managed by licensed waste contractors | 100% of all waste streams correctly transported and disposed of |
| **KPI-13** | Volume of water consumed except for drinking purposes | Recording the amount of water and keeping water use under control |
| **KPI-14** | KW of electricity used | Maintain or reduce electricity usage on a 3 monthly basis |
| **KPI-15** | Volume of diesel fuel used | Maintain or reduce diesel fuel Usage on a 3 monthly basis |
| **KPI-16** | Volume of industrial oil used | Maintain or reduce industrial oil usage on a 3 monthly basis |
| **KPI-17** | Volume of natural gas used for heating purposes | Maintain or reduce natural gas usage on a 3 monthly basis |

| | | |
|---|---|---|
| **KPI-18** | Volume of soil reused / disposed | Maintain or increase the amount of reused soil on a 3 monthly basis |
| **KPI-19** | Biodiversity, site clearance, vegetation removal and habitat disturbance | Zero site clearance<br>Zero vegetation removal<br>Zero biodiversity damage<br>Zero tree cutting |
| **KPI-20** | Damage of Cultural Heritage sites | Zero per three months |
| **KPI-21** | Traffic | Zero traffic accident<br>Zero traffic related grievance |

It is not always possible to achieve relevant targets, but continuous improvement will be the major principle in accordance with KPIs.

## 5.5 Construction Phase Environmental and Social Monitoring Table

| Ref. | Subject | Parameter to be Monitored | Monitoring Location | Monitoring Method | Monitoring Frequency | Reference / Threshold Level (if applicable) | Responsibility for Monitoring | Cost (If not included in the Subproject Budget) |
|---|---|---|---|---|---|---|---|---|
| **1** | Flora | The number of incidents and/or number of affected species<br>Corrective actions | Subproject area | Site observation and reviewing of records | - Daily monitoring<br>- Monthly evaluation<br>- Annual inspection | ESS6 | Contractor | Included in Subproject Budget |
| **2** | Fauna | The number of incidents and/or affected species<br>Corrective actions | Subproject area | Site observation and reviewing of records | - Daily monitoring<br>- Monthly evaluation<br>- Annual inspection | ESS6 | Contractor | Included in Subproject Budget |

| Ref. | Subject | Parameter to be Monitored | Monitoring Location | Monitoring Method | Monitoring Frequency | Reference / Threshold Level (if applicable) | Responsibility for Monitoring | Cost (If not included in the Subproject Budget) |
|---|---|---|---|---|---|---|---|---|
| **3** | Ambient air quality; | Dust, CO, SO2, NOx, TOC, Suspended particulate matter (SPM) (PM10), Asbestos (if there is any risk) | Construction site The nearest receiving environment<br><br>Excavations areas | Site observation or portable air quality measurement equipment and "Controlling Exhaust Measurement Licenses"<br><br>Site observation and encountering ACP | Daily visual observation<br>Monthly and at the nearest residential area boundary during activities where the air quality will decrease (It may be done more frequently with respect to the resident's complaints)<br>In the event of a change in activities causing increase in dust level<br>When construction vehicles started operation<br>In case of any grievance<br>Daily visual observation<br>In case of encountering old pipes<br>In case of any complaint | Air Quality Assessment and Management Regulation/ Table B<br>Health And Safety Precautions When Working with Asbestos Regulation | Contractor Kastamonu Municipality | Included in Subproject Budget |

| Ref. | Subject | Parameter to be Monitored | Monitoring Location | Monitoring Method | Monitoring Frequency | Reference / Threshold Level (if applicable) | Responsibility for Monitoring | Cost (If not included in the Subproject Budget) |
|---|---|---|---|---|---|---|---|---|
| **4** | Environmental noise and vibration level | Noise level<br>Vibration level | The nearest receiving environment | Measurement of noise by accrediated laboratories | - Monthly and at the nearest residential area boundary during activities where the noise level will increase (It may be done more frequently with respect to the resident's complaints)<br>- In the event of a change in activities causing increase in noise level<br>- In the event of doing night works with permission<br>- In case of any complaint | Environmental Noise Control Regulation<br>ESS3<br>IFC General EHS Guideline | Contractor<br>Kastamonu Municipality | Included in Subproject Budget |
| **5** | Soil quality | Number of leakage incidents/ Amount of contaminated soil disposed of | Construction site | Site observation and reviewing of records | - Daily monitoring<br>- Monthly evaluation<br>- Annual inspection<br>- Soil analysis in case of any soil contamination | Regulation On Control of Soil Pollution and Point Source Contaminated Areas | Contractor<br>Kastamonu Municipality | Included in Subproject Budget |

| Ref. | Subject | Parameter to be Monitored | Monitoring Location | Monitoring Method | Monitoring Frequency | Reference / Threshold Level (if applicable) | Responsibility for Monitoring | Cost (If not included in the Subproject Budget) |
|---|---|---|---|---|---|---|---|---|
| **6** | Surface water quality | Water quality (Flow, pH, BOD, COD, Oil and Grease, TSS and DO, Conductivity, Temperature) | From upstream and downstream | Laboratory analysis of taken water sample according to Standard Methods, | - Monthly monitoring<br>- Annual inspection | Regulation on Surface Water Quality/ According to Annex 5 Table 2 | Contractor Kastamonu Municipality | Included in Subproject Budget |
| **7** | Waste (solid and liquid; hazardous, non-hazardous and inert) | Type and amount of waste produced | Construction site | Site observation and keeping records | - Daily monitoring<br>- Monthly evaluation<br>- Annual inspection | Waste Management Regulation and Water Pollution Control Regulation | Contractor Kastamonu Municipality | Included in Subproject Budget |
| **8** | Odour | $H_2S$ level | The nearest receiving environment | Measurement of $H_2S$ level with calibrated gas measuring equipment | - Semi annually<br>- On complaint | Regulation on the Control of Odour-Forming Emissions | Contractor Kastamonu Municipality | Included in Subproject Budget |
| **9** | Traffic | Number of complaints<br>Number of subproject traffic rules not followed | Construction site | Reviewing of grievance records, | - Daily monitoring<br>- Monthly evaluation<br>- Annual inspection | Road Traffic Regulation<br>ESS4 | Contractor Kastamonu Municipality | Included in Subproject Budget |
| **10** | Grievance | Number of grievances<br>Corrective actions | Complaint Center | Grievance Records | - Daily monitoring<br>- Monthly evaluation<br>- Annual inspection | Grievance Mechanism<br>ESS10 | Contractor Kastamonu Municipality | Included in Subproject Budget |
| **11** | Occupational health and safety & Community health and safety | Number of incidents,accidents and grievances, near misses, number of toolbox talks<br>Corrective actions | Construction sites | Document review (e.g., grievance records, incident statistics, incident reports) | - Daily monitoring, OHS reports and work permits.<br>- Monthly evaluation<br>- Annual inspection | Occupational Health and Safety Law and it's related regulations and GIIP, ESS2 and ESS4 | Contractor Kastamonu Municipality | Included in Subproject Budget |

| Ref. | Subject | Parameter to be Monitored | Monitoring Location | Monitoring Method | Monitoring Frequency | Reference / Threshold Level (if applicable) | Responsibility for Monitoring | Cost (If not included in the Subproject Budget) |
|---|---|---|---|---|---|---|---|---|
| **12** | Occupational health and safety Noise exposure of employees | Number of incidents, accidents, and grievances, near misses, number of toolbox talks Corrective actions | Construction sites | Document review (e.g., grievance records, incident statistics, incident reports) | - Daily monitoring, OHS reports and work permits.<br>- Monthly evaluation | Regulation on the Protection of Employees from Noise-Related Risks and GIIP ESS4 | Contractor Kastamonu Municipality | Included in Subproject Budget |
| **13** | Historical, Cultural and Archaeological assets | Site survey reports, Chance finds notification reports, Museum Directorate Decisions | Construction sites | Site observation and reviewing of records | - Continuous monitoring | Regulation on the Identification and Registration of Immovable Cultural Assets and Sites in Need of Protection and GIIP, ESS8 | Contractor Kastamonu Municipality | Included in Subproject Budget |

## 5.6 Operation Phase Environmental and Social Monitoring Table

| Ref. | Subject | Parameter to be Monitored | Monitoring Location | Monitoring Method | Monitoring Frequency | Reference / Threshold Level (if applicable) | Responsibility for Monitoring | Cost (If not included in the Subproject Budget) |
|---|---|---|---|---|---|---|---|---|
| **1** | Ambient air quality | Dust | Operation phase repair/maintenance location | Site observation | - When repair/maintenance is carried out | Air Quality Assessment and Management Regulation/ Table B | Kastamonu Municipality | To be funded by Kastamonu Municipality |
| **2** | Waste (solid and liquid; hazardous, non-hazardous and inert) | Type and amount of waste produced | Operation phase repair/maintenance location | Site observation and keeping records | - Daily monitoring<br>- Monthly evaluation<br>- Annual inspection<br>- In case of complaint | Waste Management Regulation Waste Management Plan and Water Pollution Control Regulation | Kastamonu Municipality | To be funded by Kastamonu Municipality |
| **3** | Grievance | Number of complaints Corrective actions | Operation phase repair/maintenance location | Grievance Records | - Daily monitoring<br>- Monthly evaluation<br>- Annual inspection | ESS10 | Kastamonu Municipality | To be funded by Kastamonu Municipality |
| **4** | Occupational health and safety & Community health and safety | Number of incidents,accidents and grievances, near misses | Operation phase repair/maintenance location | Document review (e.g., grievance records, incident statistics, incident reports) | - Daily monitoring, OHS reports and work permits.<br>- Monthly evaluation<br>- Annual inspection | Occupational Health and Safety Law and it's related regulations,ESS2 and ESS4, World Bank Standards | Kastamonu Municipality | To be funded by Kastamonu Municipality |

## 5.7 Monitoring and Reporting

| Reporting Party | Reporting Requirements | Reporting Frequency | The Party to which Reports will be Submitted |
|---|---|---|---|
| Contractor / Contractor's ESHS Specialist | • The summary of the progress of construction activities schedule<br>• The up-to-date list of all accidents incidents and near misses that occur during the subproject.<br>• The records of E&S trainings provided to personnel.<br>• The tracking information of all past issues still being resolved.<br>• The photographs of the subproject activities related to the implementation of the ESMP Checklist mitigation measures.<br>• The daily compliance checklist of the works that are performed every day on the site.<br>• The outputs of the performed activities in line with the Environmental and Social Monitoring Plan<br>• The construction contractor must prepare monthly and quarterly ESMRs and submit them to the Municipality through the Supervision Consultant. | Once a month | Supervision Consultant |
| Contractor/ Contractor's ESHS Specialist/ Preparing Submanagement Plan | • Pollution prevention plan<br>• Traffic management plan<br>• OHS Management Plan<br>• Waste management plan,<br>• Emergency preparedness and response plan<br>• Reinstatement plan<br>• Chance Find Procedure<br>• Excavation plan<br>• Labour Management Plan<br>• Contractor Management Plan<br>• Camp Management Plan<br>• Community Health and Safety Plan<br>• Health and Safety Precautions Management Plan for Working with Asbestos<br>• Asbestos Management Plan | Before the Subproject starts and annual revisions | Municipality<br>ILBANK |
| Supervision Consultant | • Follow-up of non-conformities in the contractor's monthly reports<br>• The outputs of the supervision, monitoring, and auditing activities<br>• The progress of E&S Audits<br>• Preparation of Environmental and Social non-conformity forms<br>• The supervision consultant will review the contractor's monthly and quarterly ESMR and prepare and submit to PIU quarterly ESMR, including its own assessments and | Once a month | Project Implementation Unit, Municipality |

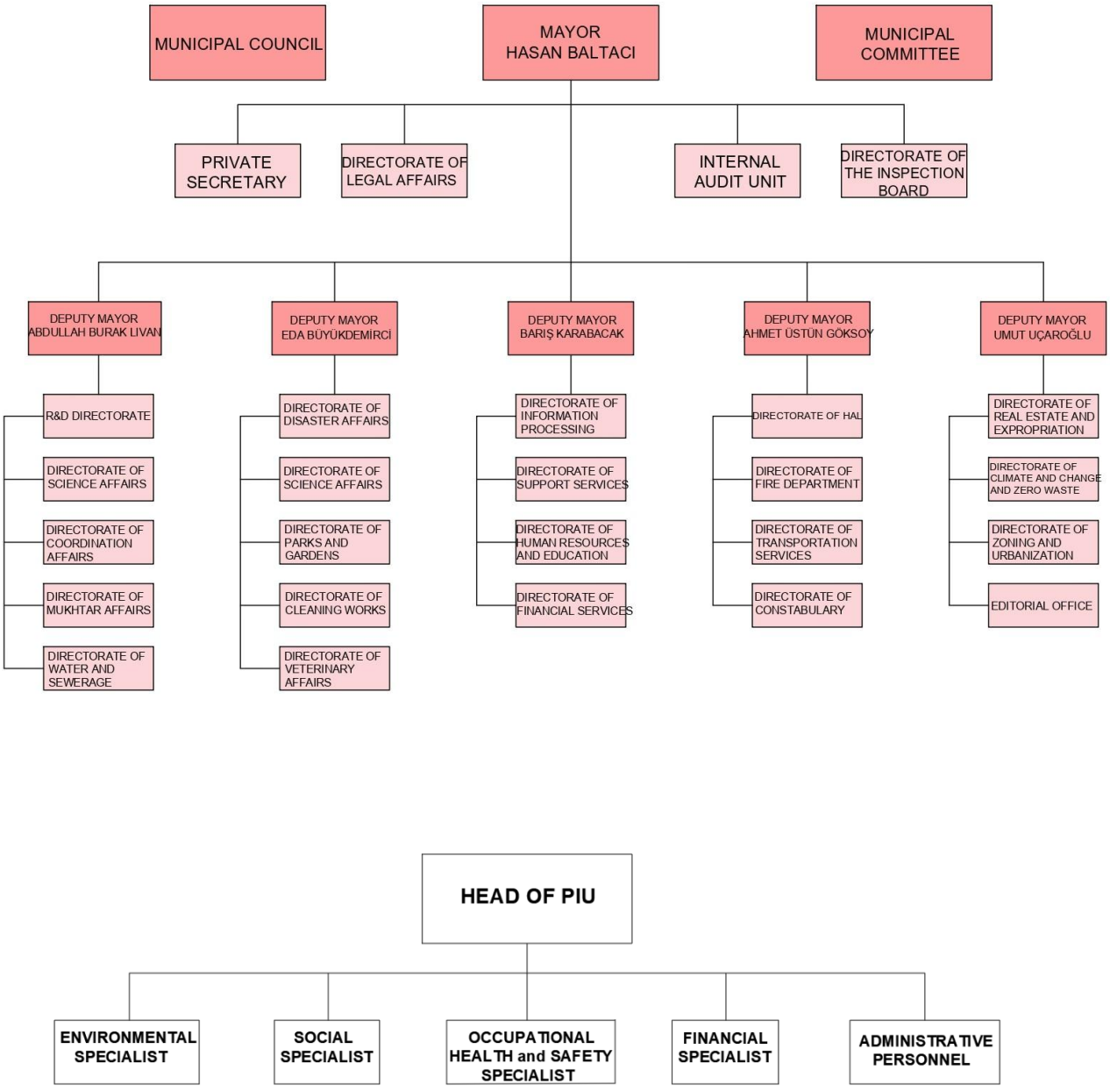
| | | | |
|---|---|---|---|
| | observations on EHS issues. It is the responsibility of the supervision consultant to prepare non-conformity forms in case of any non-conformities observed during the field inspections and in the reports. | | |
| Project Implementation Unit,<br>Municipality | • The PIU will review the monthly and quarterly ESMRs of the contractor and the supervision consultant and will be responsible for the timely submission of monthly (if requested by ILBANK) and quarterly ESMRs to ILBANK<br>• The summary of the completed construction activities<br>• The estimated remaining construction works and their schedule<br>• The summary of the compliance activities<br>• The outputs of the activities in line with the subproject based Environmental and Social Monitoring Plan<br>• The Environmental Social, Health and Safety Key Performance Indicators (K PI s)), such as;<br>o Statuses of grievances resolved per province,<br>o Properly prepared and approved ESMP Checklist per subproject,<br>o Occupational accidents / incidents<br>• The up to date list of Environmental, Social and Safety events<br>• The up to date list of Environment, OHS and Social Specialists including their commencement dates<br>• The tracking information of all past issues still being resolved.<br>• The photos of subproject activities | Quarterly | ILBANK |
| ILBANK<br>PMU | • The PMU will review monthly/quarterly reports submitted by the PIU and the consultant during the construction phase. ILBANK will inform the WB by submitting regular semi-annual monitoring reports on the EHS performance of the subproject. | | |
| World Bank | • The World Bank will review the regular semi-annual monitoring reports on the EHS performance of the subproject and will instruct ILBANK if any non-conformity or non-compliance is detected. | | |

# 6 CAPACITY DEVELOPMENT and TRAINING

## 6.1 Organizational Capacity

The organization structure of the PIU to be established by the Sub-borrower is presented in Figure 24 PIU will have qualified staff and resources to the satisfaction of ILBANK.

***Figure 24*. Organization Structure – Project Implementation Unit (PIU)**



The Sub-borrower will maintain the PIU by ensuring that there is qualified staff assigned and serving on the duty throughout the sub-financing agreement life cycle.

At minimum, the E&S team at the Sub-borrower PIU will include the following personnel who shall support management and monitoring of subproject E&S risks and impacts and ensure full compliance with the ESMP and other relevant E&S instruments:

- **Environmental Specialist(s):** to address environmental risks and impacts identified under the Environmental and Social Assessment (ESA) reports, such as Environmental and Social Impact Assessment (ESIA), Environmental and Social Management Plan (ESMP), etc.
- **Social Expert/ Grievance Mechanism (GM) Focal Point:** to address social risks and impacts under the ESA reports, land acquisition, and labor issues, including stakeholder engagement and grievance redress; and
- **Occupational Health and Safety (OHS) Specialist(s)** to address OHS risks and impacts under the ESA reports.

If the necessary staff is not available within its own organizational structure, the Sub-borrower shall receive support/ consultancy services from outside.

***Contractors***

The Sub-borrower will require awarded contractors to establish and maintain throughout the contract duration an organizational structure with qualified staff and resources.

This will be achieved through assigning the following personnel under the contractor's organization:

- Environmental Specialist(s)
- Social Specialist(s) who will also act as the GM Focal Point
- A Class Occupational Health and Safety (OHS) Specialist(s)

If the necessary staff is not available within its own organizational structure, contractors shall receive third-party support/ consultancy services.

## 6.2 Roles and Responsibilities

**Table 18. Roles and E&S related Responsibilities of Key Parties associated with ESMP Implementation**

| Party | Role | Key Responsibilities |
|---|---|---|
| **Sub-borrower** | | |
| Kastamonu Municipality | Sub-borrower Management | • Hold ultimate responsibility for the E&S performance of the subproject to the satisfaction of the ILBANK, including the performance of subproject contractors throughout the sub-financing agreement life cycle.<br>• Establish Project Implementation Unit (PIU) following the execution of sub-financing agreements to carry out operational and administrative tasks to oversee the implementation of the E&S instruments and monitoring progress; allocate resources for the recruitment of in-house environmental, social and OHS staff under the PIU<br>• Ensure that ESMP, SEP and other E&S management plans and procedures required by ILBANK is prepared within the timeframes agreed with ILBANK and allocate adequate financial and human resources – either from the Sub-borrower's own resources or from the Subproject loan and implement.<br>• Cooperate with the ILBANK representatives to discuss and agree on the ESAP and other E&S covenants for incorporation into sub-financing agreements to be executed between the ILBANK and the sub-borrower (with support from RD E&S team as necessary) |

| Party | Role | Key Responsibilities |
|---|---|---|
| | | • Ensure that EHSS requirements of ILBANK are incorporated into relevant contractor tender and agreement documents to be prepared in collaboration with the construction supervision consultant<br>• Hold and use the authority and responsibility to stop any subproject related work activity if it poses an imminent danger to health, safety, or the environment.<br>• Allocate resource to ensure monitoring of subproject E&S performance and reporting to ILBANK at IFI standards in line with the sub-financing agreement conditions<br>• Facilitate monitoring visits and audits by ILBANK and their consultants<br>• Notify the ILBANK RD – E&S Teams of any significant E&S incident or accident within maximum 24 hours of the accident/incident; contractually require the supervision consultants and/or contractors to promptly report such incident and accidents (timeframe to be defined by ILBANK).<br>• Prepare and submit a detailed E&S Incident Investigation Form, supplemented by an RCA to be conducted pursuant to GIIPs, to ILBANK within **30 days** of the accident/incident date for significant accidents or incidents (in line with the template presented in the E&S Supervision, Monitoring and Reporting Procedure). The investigation will be supplemented by a Root Cause Analysis (RCA). |
| | E&S Team<br>- Environmental staff<br>- Social staff<br>- OHS staff | • Participate in the training to be organized by ILBANK as part of ILBANK ESMS Training Procedure implementation<br>• Ensure that satisfactory ESMP, SEP and as required other E&S assessment documentation required by ILBANK is prepared by qualified independent specialists and submitted to ILBANK for appraisal and credit decision-making for High and Substantial risk subprojects, as well as for Moderate risk subprojects where the sub-borrower has limited E&S capabilities, coordinate commissioning independent third-party specialists (such as external E&S consultancy companies, individual consultants) to carry out the E&S assessment and prepare the E&S documentation required for ILBANK's appraisal and credit decision-making processes<br>• Provide ILBANK with relevant adequate information to undertake the E&S due diligence in accordance with the ESMS (e.g. duly completed sub-borrower questionnaire and supporting documentation to be requested by ILBANK in accordance with the E&S Screening and Risk Classification and ESDD procedures)<br>• Support the sub-borrower management as required in the review and evaluation of ESAP and other E&S covenants for incorporation into sub-financing agreements to be executed between the ILBANK and the sub-borrower<br>• Ensure compliance of subprojects operations (including contractor activities on site) with national legislation and E&S requirements of the lending IFIs as included in the sub-financing agreements, ESAP and subproject-specific E&S documentation (such as ESMP, SEP and other E&S management plans and procedures required by ILBANK)<br>• Undertake monitoring of subproject E&S performance and reporting to ILBANK at IFI standards in line with the sub-financing agreement conditions<br>• Ensure implementation of corrective actions in case of E&S non-compliances in coordination and agreement with ILBANK DG and RD E&S teams over reasonable timeframes<br>• Coordinate the construction supervision consultants, contractors and/or external E&S consultants for collection of the monitoring data and compilation of or providing input to periodic monitoring reports as necessary and appropriate<br>• Allow ILBANK representatives (including individual consultants) to access subproject facilities and records. |

| Party | Role | Key Responsibilities |
|---|---|---|
| Construction Supervision Consultants | Management and E&S staff | Carry out the following tasks on behalf of the sub-borrowers:<br>• Participate in the training sessions to be organized by sub-borrowers in line with the requirements of ILBANK ESMS Training Procedure<br>• Supervise the construction works of contractors on-site, including implementation of subproject-specific E&S requirements (requirements stemming from ESMP, SEP and other E&S management plans and procedures required by ILBANK as applicable) by contractors on a daily basis<br>• Ensure sufficient E&S capacity for implementation of E&S requirements as set out in the sub-financing agreements between the sub-borrower and ILBANK<br>• Support the sub-borrowers for the supervision and review of E&S management documentation prepared by construction contractors and submit them to sub-borrowers upon finalization<br>• Review monthly self-monitoring reports prepared by the construction contractors for early identification of E&S issues and/or non-compliances and submit them to municipalities/municipal utilities upon finalization<br>• Identify E&S non-compliances on site and enforce construction contractors to undertake corrective actions within defined and agreed timeframes<br>• Support the sub-borrowers (as requested) in the preparation of periodic E&S monitoring reports to be submitted to ILBANK in line with the ILBANK E&S Supervision, Monitoring and Reporting Procedure<br>• Notify the sub-borrower of any significant E&S incident or accident that have taken place in subproject related operations within 24 hours |
| Construction Contractor | Management and E&S staff | • Ensure sufficient E&S capacity for implementation of E&S requirements as set out in the construction contracts<br>• Participate in the training sessions to be organized by sub-borrowers in line with the requirements of ILBANK ESMS Training Procedure<br>• Prepare subproject-specific E&S management plans and procedures prior to start of construction works as required by the construction contracts<br>• Comply with the requirements of national legislation and implement the E&S requirements as set out in the sub-financing agreements (executed between ILBANK and the sub-borrowers) and construction contracts<br>• Submit periodic (in frequencies to be set by ESAP) E&S self-monitoring reports to the municipalities/municipal utilities through construction supervision consultants ("*müşavir*") – in line with the format provided by ILBANK.<br>• Fill in monthly occupational health and safety (OHS) forms – reviewed by construction supervision consultants.<br>• Implement corrective actions in case of E&S non-compliances under the supervision of sub-borrower's construction supervision consultant<br>• Promptly notify the sub-borrower of any significant E&S incident or accident that have taken place in subproject related operations (timeframe to be defined by ILBANK no later than 24 hours) |

## 6.3 Capacity Building and Training

The Consultant will assist the Kastamonu Water Utility Department of the municipality and the PIU to implement measures required under the Environmental and Social Management Plan (ESMP).

One of the main necessities of the ESMP is trainings for the Kastamonu Municipality's, Water Utility Department's and Contractor's top-level management and employees. Training of staff will be done at several levels. Some short-term training is required for the Environment Specialist other staff members of the PIU and the Contractor staff to raise their levels of environmental awareness. The training can be conducted by either some external experts or through the help of in-house expertise of the PIU and the Consultants and help of ILBANK and the World Bank. In the long-term training, special environmental and social issues will be examined, and likely solutions provided to the PIU by Supervision Consultant. The PIU is also responsible for the monitoring of the Contractor's actions on training. These trainings will be provided by supervision consultant experts. Other trainings requiring special expertise will be provided by external experts provided by the PIU **Hata! Başvuru kaynağı bulunamadı.** and **Hata! Başvuru kaynağı bulunamadı.** provide examples of the basic trainings for the ESMP implementation. The training programs will be developed and delivered by the PIU.

*Table 19. Proposed Training Program- Module 1*

| **Module 1** | | |
|---|---|---|
| Training course | : | Environmental and social supervision, monitoring, and reporting |
| Participants | : | Environmental and social staff, technical staff, and administrative staff of the PIU |
| Time | : | Soon after the subproject effectiveness but at least 1 month before the construction. The follow-up training will be scheduled as needed. |
| Duration | : | Two days of training twice a year to be repeated on a yearly basis until the end of the DLP. |
| Content of the Training | : | General environmental and social management relating to the Subproject.<br>Requirements on environmental monitoring<br>Monitoring and implementation of mitigation measures<br>Guide and supervise contractor in implementation of the ESMP.<br>Documentation and reporting<br>Emergency response and control<br>Other areas to be determined |
| Trainer | : | Supervision Consultant |

*Table 20. Proposed Training Program- Module 2*

| Module 2 | | |
|---|---|---|
| Training course | : | Implementation of mitigation measures |
| Participants | : | Contractor, on-site construction management staffs, environmental and social staffs of contractor |
| Time | : | After signing the works contract |
| Duration | : | Two days of training twice a year to be repeated on a yearly basis depending on needs. |
| Content of the Training | : | Overview of potential impacts and mitigation measures<br>Requirements of environmental and social monitoring<br>Occupational Health and Safety Training<br>Risk assessment training<br>Job Instructions training<br>OHS Toolbox training.<br>Role and responsibilities of the contractor<br>Content and methods of implementation of environmental and social mitigation measures<br>Preparation and submission of report<br>Emergency response and with the exercises according to relevant regulation with the exercises according to relevant regulation<br>Other areas to be determined |
| Trainer | : | PIU with support of the Technical Assistance team |

Kastamonu Municipality will conduct a training and awareness raising program covering ESMP expectations and commitments. All construction site personnel will be given detailed training on the minimum precautions to be taken in case of encountering asbestos-containing pipes, the safe work to be done and the Personal Protective Equipment (PPE) to be used. The Supervision Consultant will organize a workshop for this training together with the Municipality. Training on working with asbestos; It is given to asbestos removal workers by "Asbestos Removal Specialist" who has a Ministry course certificate, and their certificates are issued. The contractor is responsible for the complete and correct implementation of the training received in the field.

The required training will be provided to the personal prior to the recruitment process. Compliance with the code of conduct (CoC) on gender-based violence, sexual harassment, sexual exploitation and abuse included in the training will be included in the staff contract. The contract will clearly state sanctions for non-compliance with the code of conduct.

At the end of the training given to the staff and workers, a measurement and evaluation exam should be conducted. This aims to improve the competence of staff. Based on the results of the review, the training program may be modified or, if necessary, the trainers may be changed, or the training may be repeated to determine whether the training was effective.

The training program/modules will address a range of topics including but not limited to

- The purpose of the ESMP in relation to Subproject activities,
- Requirements in the management plans and monitoring activities to be carried out under this plan,
- Grievance redress mechanism developed under the Subproject, grievance redress mechanism officer and worker rights,
- Community health and safety risks and precautions,
- OHS, first aid, emergency preparedness,
- Code of conduct,
- Communication with the local community,
- Code of conduct training including gender-based violence, sexual harassment, sexual exploitation and abuse,
- Traffic and road safety principles, and
- Training on waste segregation, storage, and environmental planning.
- ACM Awareness training for all employees

# 7 IMPLEMENTATION SCHEDULE and COST ESTIMATES

With the subproject, environmental and social awareness will be created with the drinking water and sewerage project to be implemented in Kastamonu Central district. Stakeholders will be involved in the subproject and all subproject employees will be provided with environmental and social awareness trainings. In addition, regular trainings will be provided to subproject employees on codes of conduct, sexual harassment and exploitation, biodiversity and cultural heritage.

The costs required for these training plans and the establishment of a grievance mechanism contact centre are detailed in the table below (see Table 21).

*Table 21. ESMP Cost Estimates*

| Item | Responsibility | Estimated Cost (EURO) | Implementation Stage |
|---|---|---|---|
| Grievance Mechanism | PIU<br>Contractor | 24.000 €/year | Construction Stage |
| ESMP Team<br>Environmental Expert<br>Social Expert<br>OHS Expert | Contractor | 158.000 €/year | Construction Stage |
| Occupational Health and Safety | PIU<br>Contractor | 36.000 €/year | Construction Stage |
| Information meetings, brochures and all kinds of awareness raising activities | PIU<br>Contractor | 4.000 €/year | Construction Stage |
| Training and Capacity Development | Contractor | 5.000 €/year | Construction Stage |

# 8 APPENDICES

Annex 1. Letter from the Water and Sewerage Directorate to the Real Estate and Expropriation Directorate

Annex 2. Response Letter from the Real Estate and Expropriation Directorate to the Water and Sewerage Directorate

Annex 3. Asbestos Management Plan

Annex 4. Chance Finds Procedure

Annex 5. Environmental and Social Screening Form

*Annex 1. Letter from the Water and Sewerage Directorate to the Real Estate and Expropriation Directorate*

T.C.
KASTAMONU BELEDİYE BAŞKANLIĞI
Su ve Kanalizasyon Müdürlüğü

Sayı : E-29683207-000-63796 12.09.2023
Konu : Mülkiyet Hk.

EMLAK VE İSTİMLAK MÜDÜRLÜĞÜNE

İlimiz Merkezinde TEFWER Projesine hazırlık olarak Fizibilite çalışmaları yapılmaktadır. Bu çalışmalar neticesinde altyapı projesi hazırlanmıştır. İlgili personelinize mail ortamında gönderilecek olan bu projenin Mülkiyet açısından incelenerek gerekli değerlendirmenin tarafımıza gönderilmesini,

Saygılarımla arz ederim.

İsmail Ümit GÜLER
Su ve Kanalizasyon Müdürü

Bu belge, güvenli elektronik imza ile imzalanmıştır.
Doğrulama Kodu: RdMRlf-lQApba-/g2/i/-pYO8Bf-OjnFlJtl Doğrulama Linki: *https://www.turkiye.gov.tr/icisleri-belediye-ebys*

Aktekke Mh. Barbaros Cd. No:5 Belediye Hizmet Binası
Telefon No: (366)214 10 48 Faks No: (366)214 99 83
e-Posta: kaski@kastamonu.bel.tr İnternet Adresi: http://kastamonu.bel.tr
Kep Adresi: kastamonubelediyesi@hs01.kep.tr

Bilgi için: Emrah ARABACI
Tekniker
Telefon No:

***Annex 2. Response Letter from the Real Estate and Expropriation Directorate to the Water and Sewerage Directorate***

T.C.
KASTAMONU BELEDİYE BAŞKANLIĞI
Emlak ve İstimlak Müdürlüğü

Sayı : E-87607384-804.01-74303
Konu : Mülkiyet Hk.

SU VE KANALİZASYON MÜDÜRLÜĞÜNE

İlgi : 12.09.2023 tarihli ve 63796 sayılı yazınız.

İlgi sayılı yazınızda bahse konu Proje incelenmiş olup mevcut imar ve kadastro yollarında mülkiyet açısından problem görülmemektedir.

Gereğini arz ederim.

Ufuk YÜCEBIYIK
Emlak ve İstimlak Müdür V.



Adres: Aktekke Mh. Barbaros Cd. No:5 Belediye Hizmet Binası
Telefon No: (366)214 10 48 Faks No: (366)214 99 83
e-Posta: emlakistimlak@kastamonu.bel.tr İnternet Adresi: http://kastamonu.bel.tr
Kep Adresi: kastamonubelediyesi@hs01.kep.tr

Bilgi için: Ali İhsan ATAŞ
Büro Personeli
Telefon No: -

*Annex 3. Asbestos Management Plan*

*Annex 4. Chance Finds Procedure*

*Annex 5. Environmental and Social Screening Form*