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Environmental and Social Management Plan

Çorum Kızılhamza Irrigation Project

TURKIYE RESILIENT LANDSCAPE INTEGRATION PROJECT (TULIP)

PROJETAS
Project Management and Technical Advisory Services

CONTENT

LIST OF TABLES

LIST OF FIGURES

ABBREVIATIONS

AoI	Area of Influence
CHS	Community Health and Safety
CIMER	Presidential Communication Centre
CITES	Convention on International Trade in Endangered Species of Wild Flora and Fauna
CLO	Community Liaison Officer
CLS	Community Level Survey
COD	Chemical Oxygen Demand
DSI	General Directorate of State Hydraulic Works
EHS	Environmental Health and Safety
EIA	Environmental Impact Assessment
E&S	Environmental and Social
EPSA	Ex Post Social Audit
ESF	Environmental and Social Framework
ESS	Environmental and Social Standard
ESIA	Environmental and Social Impact Assessment
ESMF	Environmental and Social Management Framework
ESMS	Environmental and Social Management System
ESMP	Environmental and Social Management Plan
EU	European Union
FGD	Focus Group Discussions
GBVH	Gender-Based Violence and Harassment
GHG	Greenhouse Gas
GLAC	Guide to Land Acquisition
GM	Grievance Mechanism
HLS	Household Level Survey
HSE	Health Safety and Environment
IFC	International Finance Corporation
IFI	International Financing Institutions
ILO	International Labour Organization
KGM	General Directorate of Highways
LMP	Labor Management Procedure
LRP	Livelihood Restoration Plan
MoAF	Ministry of Agriculture and Forestry

MoEUCC	Ministry of Environment, Urbanization and Climate Change
NA	Not Applicable
NGO	Non-governmental Organization
OGM	General Directorate of Forestry of the Ministry of Agriculture and Forestry
OHS	Occupational Health and Safety
PAS	Project Affected Settlement
PDO	Project Development Objective
PIU	Project Implementation Unit
PPE	Personal Protective Equipment
RCA	Root Cause Analysis
RP	Resettlement Plan
SEA/H	Sexual Abuse, and Sexual Harassment
SEP	Stakeholder Engagement Plan
SEGE	Socioeconomic Development Index
TULIP	Turkiye Resilient Landscape Integration Project
TURKSTAT	Turkish Statistical Institute
TRGM	General Directorate of Agricultural Reform
WB	World Bank
WSVA	Water Source Vulnerability Analysis
YEDAŞ	Yesilirmak Electricity Retail Sales Inc.

GLOSSARY

Associated facility: Facilities or activities that are not funded by as part of the project, and in the judgement of the WB, are (i) directly and significantly related to the project; and (ii) carried out, or planned to be carried out, contemporaneously with the project; and (iii) necessary for the project to be viable and would not have been constructed, expanded or conducted if the project did not exist. For facilities or activities to be Associated Facilities, they must meet all three criteria. If these conditions are fulfilled, the Associated Facilities will be subject to the same environmental and social policies applicable to the project in question.

Project-affected settlement (PAS): The villages or neighborhoods whoselands are subject to the project's land use

Physical displacement: Relocation, loss of shelter or residential land resulting from the acquisition of land by a project.

Resettlement Plan (RP): The document in which a project sponsor or other responsible entity specifies the plans, procedures and appropriate and feasible measures to address physical and/or economic displacement caused by the project.

Stakeholders: Any individual, groups, organizations, and institutions affected by or likely to be affected by a project, or may have an interest in a project.

Vulnerable groups: People who by virtue of gender, ethnicity, age, physical or mental disability, economically disadvantaged or social status may be more adversely affected by resettlement than others and who may be limited in their ability to claim or take advantage of resettlement assistance and related development benefits.

EXECUTIVE SUMMARY

Türkiye Resilient Landscape Integration Project (TULIP), which will be implemented by the General Directorate of Agricultural Reform (TRGM), the General Directorate of State Hydraulic Works (DSI), and the General Directorate of Highways (KGM) affiliated with the Ministry of Transport and Infrastructure, under the coordination of the General Directorate of Forestry of the Ministry of Agriculture and Forestry (OGM), with the financing of the World Bank loan will support the State of the Republic of Türkiye in addressing the environmental and socio-economic problems encountered in the Bolaman sub-basin in the Eastern Black Sea Basin and the Çekerek sub-basin in the Yeşilırmak Basin and will increase the livelihood security and resilience of local communities against the risks and effects of climate-related landslides, floods, and droughts. TULIP will adopt an integrated landscape management approach from the target basins to achieve these goals. The past experiences of the State of the Republic of Türkiye and the World Bank on watershed rehabilitation will be utilized. Within the project's scope, a participatory planning process is envisaged, considering the contributions of different stakeholder groups, which ensures the coordination and integration of solution proposals between various public institutions, state and local stakeholders.

According to the Environmental and Social Management Framework (ESMF) that was prepared for TULIP to cover environmental and social management approach, environmental and social assessment commences with the Environmental and Social (E&S) Screening of the proposed sub-project. The E&S Screening determines whether the sub-project will require an Environmental and Social Management Plan (ESMP) or a full scale Environmental and Social Impact Assessment (ESIA) and Ex-post Social Audit. Therefore, an E&S Screening Report was prepared by the project coordination unit through project implementation unit of DSIand approved by the World Bank prior to preparation of this ESMP for Çorum Kızılhamza Irrigation Project (i.e. the sub-project). Overall environmental and social risk categorization of the sub-project was rated as “Moderate” based on WB Environmental and Social Standards (ESSs). Furthermore, the sub-project is exempt from the national Environmental Impact Assessment (EIA) regulation. As a result of the E&S Screening Report, a site-specific ESMP, Stakeholder Engagement Plan (SEP) and Resettlement Plan (RP) are prepared.

The purpose of the Resettlement Plan (RP) is to manage the negative impacts arising from the land acquisition of the project in accordance with WB standards. Additional land is needed to develop the irrigation systems in Kızılhamza and Sarısüleyman village. Landowners, formal and informal land users, and those whose livelihoods dependent on land are adversely affected by the land acquisition of the project, hence, the acquisition of these areas necessitates the preparation of this RP.

This RP is prepared to address the adverse land based socio-economic risks and impacts of the project. The RP covers the following:

- Provide information on the national legislation and international standards governing land expropriation,
- Identify potential land-based impacts and their magnitude, affected parties including vulnerable groups,
- Set out the steps of land acquisition process and institutional arrangements,
- Provide Eligibility Criteria,
- Provide valuation and Compensation for losses,
- Implementation plan to provide compensation and delivery of other benefits to project affected persons (PAPs) and ensure timely acquisition of assets,
- Provide information on consultation, participation and grievance mechanisms in project planning and implementation,
- Provide budget for required resources for implementation of RP,
- Provide an accessible mechanism for lodging grievances and a system for managing the received grievances received,
- Provide a plan for supervision, monitoring and evaluation of resettlement implementation.

Accordingly, the number of parcels affected is 252 and 246 of which are private lands and 7 of which are public lands. The owners of 246 private lands are 427 PAPs. Irrigation pipes will be built on the side of the roads between existing lands. For this reason, lands are not divided in a way that will affect agricultural activities. Except for 1 parcel belonging to DSI and 1 road which is Public Common Property, 5 Treasury lands are affected by the project. 2 of the 5 treasury lands are in Kızılhamza and 3 in Sarısüleyman. 1 informal user was identified on 1 treasury land. This person is also the owner of one of the affected private lands in Kızılhamza village.

Çorum Kızılhamza Irrigation Project (the project) which aims to build Kızılhamza Irrigation System will irrigate 252 ha of land. Within the scope of the project, the existing Kızılhamza Pond will be used as a water source, and the lands located in Kızılhamza and Sarısüleyman villages will be irrigated. The project site is already utilized as cultivated land. In terms of technical specifications, it is planned to use 10,590.09 meters (Ø110–Ø630) polyethylene pipes for the irrigation line and construct 10,399.88 meters of operational and maintenance road. The irrigation area is 38 km away from the city center and 18 km from Ortaköy district center. Construction of a new access road is not required since the area is connected by an asphalt road. Irrigation pipes will be placed in the trench to be opened 1.5 m wide and 2.5 m deep on the irrigation line, then the line will be restored to its original condition by laying pipe protection material, subsoil and finally topsoil. The primary objective of this Environmental and Social Management Plan (ESMP) is to assess and address the potential social and environmental impacts and risks associated with the pre-construction, construction, and operation phases of the Kızılhamza Irrigation Project.

The environmental and social adverse impacts and risks of the project on both environmental quality and social structure are assessed in this report. Water resources, climate, land cover, soil types, vegetation, biodiversity, seismic properties, air quality, water quality, and noise levels are assessed to establish the environmental baseline while social infrastructure, land acquisition, livelihoods, cultural heritage, labor management and influx, vulnerability, social equity and equality were examined to establish the social baseline. In addition, national and international legislations, guidelines, standards, and requirements were evaluated for allocations of responsibilities for the implementation of mitigation measures.

The project impact area is defined as a polygon, 2 km away from the endpoints of the project area in terms of dust emissions within the framework of the provisions of the national Industrial Air Pollution Control Regulation. The Area of Influence (AoI) has been determined by considering the geographical, geological, and hydrogeological structure of the region and covers both the impacts on surface waters and groundwater and the impacts of the project on the local people who are likely to be affected in the first stage. The project area, AoI and the nearest sensitive receptors are represented in Figure 5-1. Sarısüleyman, Soğucak, and Kızılhamza villages are within the AoI of the project.

Approximately 15 personnel are expected to be employed at the construction site during the construction phase. A camp site will be designated to accommodate the personnel involved in the Project. This site will include at least dormitories, dining halls, shower/toilet facilities, and resting areas. Additionally, a maintenance-repair station and a fuel station will be established as needed during construction. The camp area will generally have a gravel ground, while the areas around the maintenance and repair station and fuel station will have sealed concrete floors. Furthermore, leak-proof secondary containment structures with a volume three times that of the hazardous chemicals they will contain will be installed for substances such as fuel oil tanks and motor oil.

Water requirements, wastewater generation, and solid waste generation are calculated for 15 personnel. Total Daily Water Demand will be 12.9 m^3/day. Water requirements will be supplied from groundwater resources similar to the current situation. There are no prohibited areas for water use in the project site, and a well certificate for use will be issued to the responsible company during the construction phase. For the operation phase, 5 personnel will be responsible for operating the irrigation system. Daily Water Demand (Personnel for Operation) will be 1.495 m^3/day. Additionally, water

requirement for maintenance works is also calculated for three different scenarios such as short duration (3 days), medium duration (10 days), and long duration (30 days).

Wastewater generated during the construction phase will primarily consist of domestic wastewater from the personnel involved. It is projected that 15 personnel will be employed during this phase, and it is expected that these individuals will not be residing at the villages adjacent to the project area. Wastewater generation is calculated as 2.99 m^3/day. In addition, washing water will be needed to wash the vehicles that will take part in the project. This washing station, where approximately 0.2 m^3 of water will be consumed for each vehicle, will be established on a leak-proof concrete floor in the camp area. However, at this stage, it can be determined exactly how often the vehicles (12 vehicles) that will take part in the project will be washed, and it can be predicted that each vehicle will need a maximum of 0.5 m^3 of water once a week.

Wastewater will be collected with a sealed septic tank and conveyed to the Çorum Municipality's Wastewater Treatment Plant (WWTP) by sewage truck (Please see Annex-9). In case Çorum Municipality's WWTP is not suitable for wastewater disposal, Sungurlu Municipality's WWTP and Yozgat Municipality's WWTP can be considered as alternatives. All three wastewater treatment plants are municipal wastewater treatment plants and have Environmental Permit Certificates for wastewater discharge [(1)]. A contract or protocol will be signed by the contractor before the starting of the construction works with the relevant municipalities regarding wastewater acceptance. Wastewater to be generated within the scope of the project will not be given to facilities without an environmental permit for wastewater discharge, and will not be discharged to the soil, surface water, lake, or any other receiving bodies in any way without obtaining an environmental permit for wastewater discharge.

The waste generated by the project will be minimal in quantity. A construction site will be established to accommodate the field personnel, and it is expected that domestic solid and liquid waste will be produced at the site. The solid waste will be handed over to the Çorum Special Provincial Administration and disposed to the 2nd Class Landfill Facility operated by Çorum Municipalities Environmental Union as part of an agreement to be signed by the contractor during the pre-construction period. The 2nd Class Landfill Facility has Environmental Permit and Licence Certificate on Municipal Wastes and Non-Hazardous Waste Landfill, Biodegradable Waste Processing valid until 02.01.2025 [(2)]. Total Amount of domestic waste will be 14.7 kg/day during construction phase. For the operation phase, 4.9 kg/day domestic solid waste is generated.

The highest expected noise levels in Kızılhamza and Soğucak villages, which are the closest settlements to the Project area, are expected to be less than 52.72 and 44.52 dBA, respectively. Therefore, these receptor points are below the limit values specified in both the national Environmental Noise Control Regulation and the EB EHS Guidelines. In the scenario where all vehicles and equipment operate at the same place at the same time, it is predicted that a noise level of 68.21 dBA will be reached in Sarısüleyman Village, which is 170 m from the project area. However, it is not possible for all vehicles to be active in the same area at the same time due to the agenda of the construction works and the geographical structure of the project area.

Dust emissions from vehicle movements are expected to occur during construction of the Project. During construction activities, it is estimated that a total of 0.97 kg/h of dust emissions will be occured, mainly due to excavation activities and vehicle movements. There will also be exhaust emissions from the vehicle movements. Emissions from vehicles can potentially contribute to minor and short-term air pollution. Nevertheless, these emissions are unlikely to significantly alter the existing levels of air pollution. The activity may lead to temporary and insignificant dust pollution, particularly when the soil is dry.

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[1] *The current environmental permit and licence status of facilities or enterprises can be inquired from the official website of the General Directorate of EIA Permit and Inspection (https://eizin.cevre.gov.tr/Rapor/BelgeArama.aspx)*

[2] *https://eizin.cevre.gov.tr/Rapor/BelgeArama.aspx*

Project area is located within the 3rd degree earthquake risk zone, which indicates a moderate level of seismic activity. Being in this zone suggests that design criteria for the planned activities for construction and operation phases should be suitable for the seismic risk, and careful selection of materials such as pipes and joints is essential.

There will be no direct soil pollution during or after the activity, but risk of accidental spillages that will be managed with appropriate mitigation measures. Along the irrigation route, topsoil (vegetative soil) will be stripped to a total width of 12 m (6 m for the pipeline and 6 m for the operation and maintenance road) and a depth of 30 cm. Topsoil will be stored temporarily on the pipeline with a maximum height of 2 m and a maximum slope of 45 degrees. Trenches of 1.5 m width will be excavated on the opened pipeline. The subsoil material from the excavation material will be temporarily stored in a way that it will not mixed with the topsoil, after the pipes are placed in the trenches, they will first be backfilled with subsoil and finally the topsoil of the pipeline side will be laid back. The excess subsoil will be stored in excavation storage areas to be approved by Alaca Municipality or Alaca District Governorship within the scope of the relevant regulation [3]. In the section stripped for the Operation and Maintenance Road, the topsoil will not be laid back, and the topsoil obtained from here will be used primarily to meet the demands of the local people or for landscaping the areas that will be needed. This process will only occur on the specific route where the irrigation pipes will be placed, and it will account for a very small portion of the entire irrigation area.

The irrigation channel will pass through agricultural field roads or along roadsides. No cutting of trees or removal of vegetation is expected since the project area is already an agricultural area.

Existing subsoil will be used as bedding material under the pipe. However, if the subsoil is not technically suitable, material will be obtained from querry sites nearest the project area. Likewise, material will be obtained from querry sites to be laid one the Operation and Maintenance Roads and camp site. In this context, the material to be needed will be procured by the Contractor in line with the contract to be made with the mining sites with Environmental Permit Certificate.

In terms of social impacts, no changes in the size and composition of the population are expected as a result of the project. Injuries may occur as a result of potential work accidents that may arise from the tasks to be performed. It is necessary to comply with national and international occupational health and safety legislation to manage these processes effectively throughout both construction and operation processes. It is predicted that limited temporary employment will be provided for construction works of the sub-project. Priority will be given to contributing to the local economy through the use of local materials during the construction and the procurement of various goods and services from local resources. It is anticipated that the local people will be affected by the traffic activities that are expected to intensify during the construction phase. Impacts are expected in the access routes of the villages passing through the project site. These impacts may include possible risk of traffic accidents due to shared use of these roads by the community accessing their settlements and the heavy construction machinery such as trucks, excavators, mobile cranes etc. Permanent easement right is needed for this sub-project. The main type of land acquisition needed is permanent easement.

The cultural heritage site, Höyük is located within the borders of the project influence area. The Chance Find procedure (see Annex 2) will be applied. The project will keep a safe distance to the mound, which will be surrounded by a protective barricade, and will be protected during construction.

During the sub-project construction, no major labor influx is expected. It is anticipated that 15 workers will be mobilized. Additionally, approximately 5 personnel will be responsible for the operation phase, which is a negligible number.

All mitigation activities including those impacts for pre-construction, construction, operation, and maintenance phases are explained in the report in detail.

[3] *Regulation on Control of Excavation Soil, Construction and Demolition Wastes (O.G. Date 18.03.2004, O.G. Number: 25406)*

The ESMP implementation will undergo close and continuous monitoring through ESMRs prepared weekly by the Contractor at the project site. These reports will be validated by environmental, social, and OHS experts assigned to the project. The reports will then be independently monitored and reported to the 54th Regional Branch Office of DSİ for supervision and validation, which will send them weekly to the DSI Regional Project Implementation Unit (PIU). If any issues with ESMP, LMP, or SEP implementation are noticed by the DSI Regional PIU, they will inform the DSI Regional Branch Office and agree on steps to rectify these problems. In case of any incidents or accidents with significant adverse effects, the Contractor will promptly notify the DSI Regional Branch Office, which will inform the DSI Regional PIU, and then the Project Coordination Unit (PCU) within 48 hours. The PCU will then inform the World Bank within the same timeframe, providing details of the incident or accident and the measures taken or planned to address it. A detailed report including root cause analysis, precautions, and compensation measures will be provided to the Bank within 30 business days upon request. Monthly ESMRs will be prepared and submitted to DSI Central PIU, concluding with quarterly ESMRs cleared by the DSI Central PIU to the World Bank.

Objective and Structure of the ESMP

The objective of the ESMP is to manage and mitigate the potential environmental and social impacts of the Çorum Irrigartion Projects. The ESMP ensures compliance with national legislation and international standards, particularly those of the World Bank Environmental and Social Framework (ESF).

The ESMP is structured as follows:

1. **Introduction:** Overview of TULIP, project objectives, and World Bank ESF implementation.
2. **Sub-Project Description:** Details on project components and activities.
3. **Legal Framework:** National and international legal requirements, including occupational health, labor conditions, and environmental permits.
4. **Baseline Information:** Environmental and social conditions in the project area.
5. **Identification of Impacts:** Potential environmental and social impacts.
6. **Mitigation Measures:** Actions to mitigate impacts during pre-construction, construction, and operation phases.
7. **Implementation:** Consultation principles, roles, stakeholder engagement, and grievance mechanisms.
8. **Monitoring:** Monitoring frequency, reporting to the World Bank, and monitoring plan.
9. **Capacity Development and Training:** Training and capacity-building initiatives.
10. **Annexes:** Supporting documents, including official letters and management plans.

1. INTRODUCTION

1.1. Information about Türkiye Resilient Landscape Integration Project (TULIP)

Türkiye Resilient Landscape Integration Project (TULIP) will be implemented by the General Directorate of Agricultural Reform (TRGM), the General Directorate of State Hydraulic Works (DSI), and the General Directorate of Highways (KGM) affiliated with the Ministry of Transport and Infrastructure, under the coordination of the General Directorate of Forestry of the Ministry of Agriculture and Forestry (OGM), with the financing of the World Bank (WB) loan. TULIP will support the State of the Republic of Türkiye in addressing the environmental and socio-economic problems encountered in the Bolaman sub-basin in the Eastern Black Sea Basin and the Çekerek sub-basin in the Yeşilırmak Basin and will increase the livelihood security and resilience of local communities against the risks and effects of climate-related landslides, floods, and droughts. TULIP will adopt an integrated landscape management approach from the target basins to achieve these goals. The past experiences of the State of the Republic of Türkiye and the World Bank on watershed rehabilitation will be utilized. Within the project's scope, a participatory planning process is envisaged, considering the contributions of different stakeholder groups, which ensures the coordination and integration of solution proposals between various public institutions, state and local stakeholders.

1.2. Project Description

The project development objective of TULIP is to strengthen integrated landscape management and increase access to improved livelihood opportunities and resilient infrastructure for rural communities in targeted areas of Türkiye. Within the project scope, subcomponent 1.2.A “Resilient infrastructure for water security” will be implemented by DSI.

Sub-component 1.2.A. Resilient infrastructure for water security

This sub-component of TULIP will be implemented by DSI and aims to provide local communities with resilient infrastructure systems for drinking water storage, irrigation water supply, protection against climate-induced flooding, and sedimentation control. Irrigation related sub-project typologies under this sub-component will include:

Irrigation works, including small irrigation ponds and irrigation systems, will supply water to support agricultural activities in targeted basins with drought and/or water scarcity problems. The availability of irrigation water will help local communities in these basins adapt to current and future climate change impacts and improve their agricultural productivity and farm incomes. Irrigation technologies employed will be drip and low-pressured sprinkler systems, which will save both water and energy, and hence will be more efficient and cost-effective.

The Çorum Kızılhamza Irrigation Project aims to:

Enhance Landscape Resilience:

- Mitigate impacts of climate change (floods, droughts)
- Preserve natural habitats and biodiversity

Livelihood Improvement of Rural Communities:

- Develop resilient irrigation infrastructure systems
- Enhance agricultural productivity and local economic opportunities

Improvement of Environmental Quality:

- Promote sustainable land use practices, water quality improvement, and conservation
- Contribute to ecosystem quality

Capacity Building:

- Provide technical assistance for scaling up the project approach
- Develop a national strategy for resilience and recovery
- Strengthen project management, monitoring, and risk management

1.3. Project's World Bank Environmental and Social Framework Screening

For TULIP, in accordance with the WB Environmental and Social Framework (ESF), an Environmental and Social Management Framework (ESMF) [4] was prepared as the specific locations/footprints and technical information about the sub-projects would only be known during implementation. The ESMF examined the overall risks and impacts of the project and determined the scope of the comprehensive environmental and social management approach to be adopted to address the potential environmental and social impacts of the TULIP. The ESMF is compliant with both the WB ESF and the national legal framework for environmental and social management and is the key document committed by the Ministry of Agriculture and Forestry (MoAF) and shared and consulted with stakeholders before the project implementation starts. The ESMF determines the scope of the comprehensive environmental and social management approach that has been adopted for identifying and addressing the potential environmental and social impacts of TULIP and its sub-projects such as the Çorum Kızılhamza Irrigation Project.

Environmental and social assessment starts with the Environmental and Social Screening of proposed sub-projects. The main purpose of the environmental and social screening is to get relevant concerns addressed in the design phase of the project. Environmental and Social Screening determines whether the proposed sub-project will require an Environmental and Social Management Plan (ESMP) or a full-scale Environmental and Social Impact Assessment (ESIA).

The environmental and social screening in line with the ESF requirements would involve: (i) reconnaissance of sub-project area and its surroundings; (ii) identification of major sub-project activities; and (iii) preliminary assessment of the impacts of these activities on the ecological and socio-economic environment of the sub-project surrounding areas and considerations that need to be further investigated through ESMP or ESIA.

Environmental and social risk classification considers relevant potential risks and impacts, such as:

- The type, location, sensitivity, and scale of the project including the physical considerations of the Project; type of infrastructure; waste management and disposal, etc.
- The nature and magnitude of the potential environmental and social (E&S) risks and impacts, including impacts on greenfield sites; impacts on brownfield sites including (e.g., rehabilitation, maintenance or upgrading activities); the nature of the potential risks and impacts (e.g., whether they are irreversible, unprecedented or complex); resettlement activities (including a legacy of past land acquisitions); the presence of vulnerable groups/people; and possible mitigation measures considering the mitigation hierarchy;
- The capacity and commitment of the Borrower to manage such risks and impacts in a manner consistent with the Environmental and Social Standards (ESSs), including the country's policy, legal and institutional framework; laws, regulations, rules, and procedures applicable to the Project sector; the technical and institutional capacity of the Borrower; the Borrower's track record of past Project implementation; and the financial and human resources available for management of the Project; and
- Other areas of risk that may be relevant to the delivery of environmental and social (E&S) mitigation measures and outcomes, depending on the specific Project and the context in which

[4] https://documents1.worldbank.org/curated/en/845271617291419849/pdf/Revised-Environmental-and-Social-Management-Framework-ESMF-Turkey-Resilient-Landscape-Integration-Project-TULIP-P172562.pdf

it is being developed, including the nature of the mitigation and technology being proposed, considerations relating to domestic and/or regional stability, conflict or security.

The outcome of the screening process is categorizing the sub-project in terms of its environmental and social risks as: High, Substantial, Moderate or Low based on ESSs of WB ESF. The environmental and social screening for the Çorum Kızılhamza Irrigation Project was carried out by making use of an Environmental and Social Screening Form as stipulated in the ESMF of TULIP that contains the relevant questions for identification of anticipated environmental and social risks and impacts due to execution of the sub-project.-

As a result of the screening process, the environmental risks associated with the Çorum Kızılhamza Irrigation Project are considered to be "**Moderate**" since,

- The project is a closed irrigation system. The water taken from the existing reservoir will be used for the irrigation of existing agricultural lands.
- There is a drainage system in place for the water returning from irrigation.
- Limited excavation will be carried out for the underground pipes, and the excavated material will be used to restore the project area to its original state.
- There are no natural protected areas along the route of the irrigation pipes.
- The route of the irrigation pipes will be determined based on the borders of Delihasan Mound that is located within the irrigation area. Therefore, no intervention will be made within the boundaries of the 1st degree archaeological site in the works to be carried out within the scope of the project.

The social risks associated with the sub-project are considered to be "**Moderate**" since,

- The project area is utilized as agricultural field.
- Land acquisition will be required (proprietary right, permanent and temporary easement) since most of the properties are private property.The owners of 246 private lands are 427 PAPs. Irrigation pipes will be built on the side of the roads between existing lands. For this reason, lands are not divided in a way that will affect agricultural activities. Except for 1 parcel belonging to DSI and 1 road which is Public Common Property, 5 Treasury lands are affected by the project. 2 of the 5 treasury lands are in Kızılhamza and 3 in Sarısüleyman. 1 informal user was identified on 1 treasury land. This person is also the owner of one of the affected private lands in Kızılhamza village.
- Possible impacts of the construction work on the local community will be low to medium, predominantly reversible, short-term, and mostly limited to the project area and its AoI .
  There will be no need for physical resettlement during the project.

Considering the above-mentioned issues and the possible risks and impacts of the construction works to be carried out within the scope of the project will be low to medium in magnitude, mainly reversible, short-term and mostly limited to the project area and its immediate surroundings the overall environmental and social risk of the sub-project is categorized as "**Moderate**".

The necessary E&S assessment documents for the Çorum Kızılhamza Irrigation Project determined as a result of screening process are provided in Table 1-1.

Table 1-1 E&S Document Analysis of the Çorum Kızılhamza Irrigation Project as a result of Screening Process

E&S Document	Explanation	Evaluation
EIA (national)	Çorum Kızılhamza Irrigation Projects is exempt from national EIA Regulation	X
ESMP	A site-specific ESMP will be required since the overall risk of the sub-project is "Moderate".	✓
ESIA	A detailed ESIA will not be required since the overall risk of the sub-project is "Moderate".	X

E&S Document	Explanation	Evaluation
SEP	A site-specific SEP will be required.	✓
RP	A site-specific RP will be required.	✓
LMP	Contractor will be prepared a Labour Management Plan according to current LMP of TULIP.	✓

1.4. Purpose of the ESMP

The primary objective of this ESMP is to assess and address the potential social and environmental impacts and risks associated with the pre-construction, construction, and operation phases of the Çorum Kızılhamza Irrigation Project. Furthermore, the ESMP evaluates measures aimed at reducing and eliminating these impacts, and it identifies the responsible parties accountable for planning and monitoring activities within the scope of the ESMP. Measures have been established to protect environmental quality and mitigate environmental and social impacts and risks.

The different authorities involved in the project are responsible for implementing and managing measures during the pre-construction, construction, and operation phases. They are required to adhere to national legislation and international standards outlined in this ESMP while fulfilling their responsibilities. These authorities will carry out their responsibilities in accordance with national legislation and international guidelines specified in the ESMP.

Additionally, the ESMF establishes procedures for conducting environmental and social screening, review, approval, and implementation of project activities. It outlines the necessary institutional arrangements, defines responsibilities, and emphasizes the importance of capacity building to ensure successful implementation of the ESMF provisions.

The ESMF also encompasses mechanisms for public consultation and disclosure of project documents. It provides a summary of stakeholder engagement practices and highlights the existence of a separate Stakeholder Engagement Plan (SEP) that provides detailed information on stakeholder engagement and the grievance mechanism.

The measures outlined in this ESMP are designed to safeguard the environment, protect the personnel involved in the construction, and ensure the well-being of the local community against the adverse effects of construction activities. Additionally, the measures in the operation phase encompass elements aimed at environmental and social protection. The measures established by the ESMP for the pre-construction, construction, and operation phases are assessed through the mitigation and monitoring plans defined within the ESMP.

2. SUB-PROJECT DESCRIPTION

Çorum Kızılhamza Irrigation Project (Project) is located at Alaca District of Corum Province, between Kizilhamza, Soğucak and Sarısüleyman villages. Kızılhamza Irrigation System will irrigate 252 ha of land (see Figure 2-3). Within the scope of the project, the existing Kızılhamza Pond will be used as a water source, and the lands located in Kızılhamza and Sarısüleyman villages will be irrigated. The project site is already utilized as cultivated land.

The distance of the irrigation area to the city center is 38 km, to Ortaköy district center is 18 km and to Alaca district center is 19 km. The closest settlement to the Project area is Sarısüleyman Village, 170 m away. The distance of the pipeline to be opened within the scope of the Project to the nearest household in Kızılhamza Village is 780 m and the distance to Soğucak Village is 1.57 km. Construction of a new access road is not required since the area is connected by an asphalt road.

The main purpose of Kızılhamza Pond, which was created by a homogeneous clay-fill dam built on Çınar Stream approximately 750 m south of Kızılhamza Village, is to provide irrigation water for agricultural areas. The official website of the 5th Regional Directorate of State Hydraulic Works (DSİ) does not provide information on when the construction of the dam started, but the date of commissioning is stated as 1985. The crest elevation of the dam is 1211 m and the maximum water level elevation is 1210 m while the minimum water level elevation is 1198 m. The crest width is 7.00 m, the crest length is 141.5 m and the height of the pond from the thalweg is 20.8 m. As a water intake structure within the scope of the project, there is a reinforced concrete dipsluice water collection pool with a base elevation of 1202 m and a water intake valve here.

It is estimated that the construction works of the project will take 1 year. Within the scope of the Project, water intake will be provided from the dipsluice water collection pool and no additional structure will be required. In terms of technical specifications, it is planned to use 10,590.09 meters (Ø110–Ø630) polyethylene pipes for the irrigation line and construct 10,399.88 meters of operational and maintenance road. Irrigation pipes will be placed in the pits to be opened 1.5 m wide and 2.5 m deep on the irrigation line. Operation and Maintenance Roads will not be covered with concrete or asphalt, but will be established as dirt roads with an average width of 6 m to be used when needed.

It is planned to employ 15 personnel during the construction phase under the project. A camp area, whose location will be determined at a later stage, will be established for the accommodation of the personnel involved in the Project. At a minimum, this area will include dormitories, mess halls, shower/toilet facilities and rest areas. Although the location of the camp site has not been finalized as of the date of preparation of the ESMP, the camp site will be identified and constructed by the Contractor prior to the commencement of works on site, considering E&S social issues. While determining the camping area, precaution will be taken not to select private lands, protected areas, areas where critical habitats are located. The camping areas are planned to be built on treasury lands that will not require land acquisition, taking into account the E&S issues mentioned. Mukhtars' site selection recommendations will be considered, and regular monitoring will be conducted to ensure compliance with all environmental and social criteria. In the operation phase, it is stated that 5 personnel will be employed by the 5th Regional Directorate of DSI.

During the construction of the project, 3 trucks, 1 excavator, 1 grader, 1 mobile crane, 1 loader, 1 oil truck, 1 service minibus, 1 pick-up truck, 1 tractor, and 1 sprinkler will be in operation.

The electrical energy that will be needed during the construction works will be provided by the Contractor through a connection agreement with Yesilirmak Electricity Retail Sales Inc. (YEDAŞ) before the construction of the camp site begins.

In addition to the camping area, the project includes surface art structures for the irrigation system (6 Low Pressure Water Intake Valve Structures, 10 Low Pressure Water Intake Valve Air Valve Structures, 48 High Pressure Water Intake Valve Structures, 4 High Pressure Water Intake Valve Air Valve Structures, 3 Air Valves, 8 Surface Type Line Shut-off Valve Structures, 7 Well Type Line Shut-off Valve

Structures, 6 End of Line Pumped Relief Valve Structures, 5 Interline Surface Type Pumped Relief Valve Structures, 2 Interline Well Pumped Relief Valve Structures, 1 Interline Pumped Relief Valve Structure, 1 End of Line Pumped Relief Valve, 13 elbow structures) will also be needed.

The concrete material that will be needed for the construction of the camp area and art structures under the Project will be supplied from concrete plants in the region that have Environmental Permit or Environmental Permit and License Certificate. In addition, the cushion material to be laid under the pipes and the gravel materials to be laid in the camp site will be supplied by the Contractor from the material quarries in the region.

It will be the Contractor's responsibility to inquire about the EIA decisions (EIA Positive, EIA Not Required or Exemption) and Environmental Permits (Temporary Activity Certificate, Environmental Permit or Exemption) of both concrete batching plant and quarry sites. Under no circumstances will materials be procured from any facility operating in violation of the EIA or Environmental Permit and License Regulations.

In case of encountering any cultural property or other possible chance finds that need to be preserved during the activities, the provisions regarding the immediate suspension of the works, contacting the responsible authorities, recording these, and postponing or changing the actions to consider such finds are discussed in the ESMP. Detailed chance find procedure is prepared within the scope of ESMP (Annex 3). Delihasan (Sarısüleyman) Höyük (Mound), registered as a 1st Degree Archaeological Site, is located within the borders of the project area. There will be no project related activities to be conducted within the boundaries of the protected area and the project will maintain a safe distance to the mound, which will be surrounded by a protective barricade, and will be protected during construction works. If any archaeological remains or objects are found, the construction activities will be stopped and the Museum Directorate will be informed immediately pursuant to Article 4 of the Law No. 2863 as also elaborated in Annex 2 of this ESMP.

A total expropriation area of 44257.58 m² (property + permanent easement- 7172.48 + temporary easement- 18514.64) is foreseen for 252 parcels, 246 parcels of which are private property, 7 parcels of the public lands. There are 427 right holders. Detailed information will be discussed in the Resettlement Plan (RP). The potential impacts of the project on the livelihoods of land users (legal, illegal, tenant, etc.) due to expropriation/consolidation will be evaluated in the RP. Sensitive receptors close to the project area will be residential units in the village.

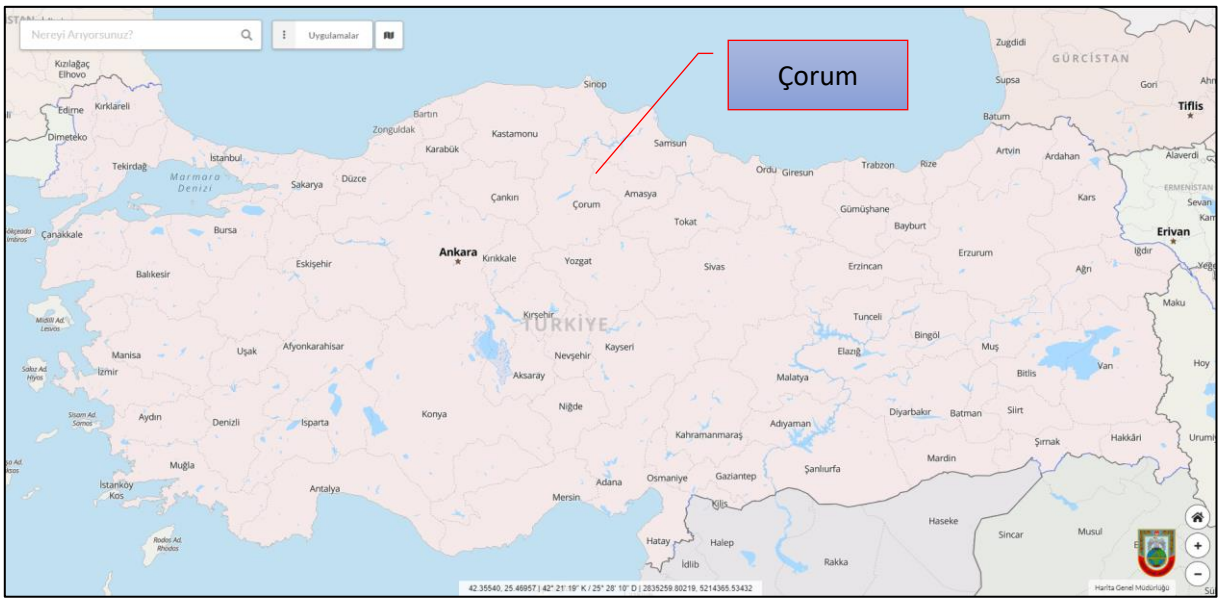

Figure 2-1 Location of Çorum on the Administrative Map of Türkiye

Source: Official website of the General Directorate of Mapping, https://www.harita.gov.tr

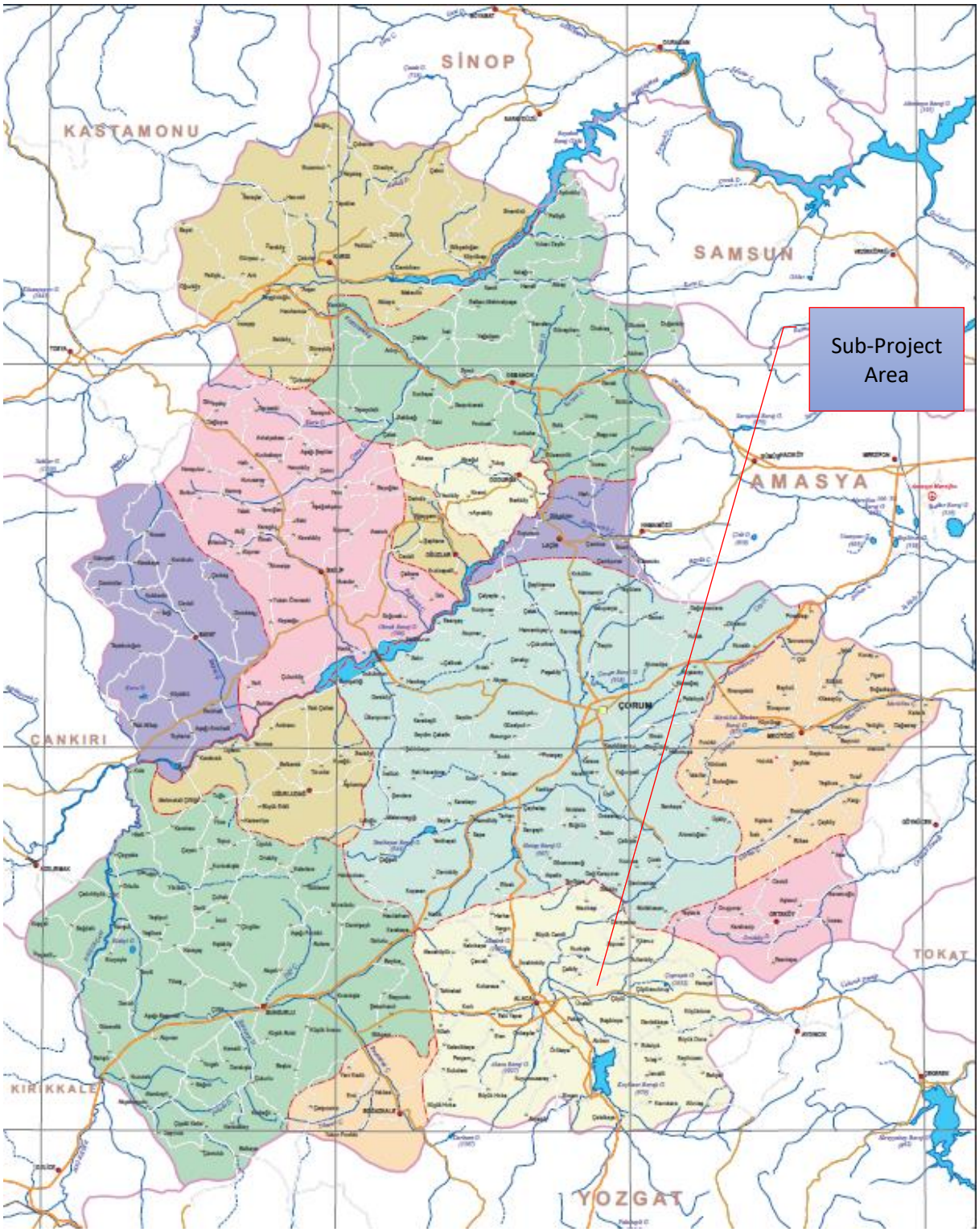

Figure 2-2 Location of the Sub-Project Area on the Administrative Map of Çorum

Source: Official Website of the General Directorate of Mapping, https://www.harita.gov.tr

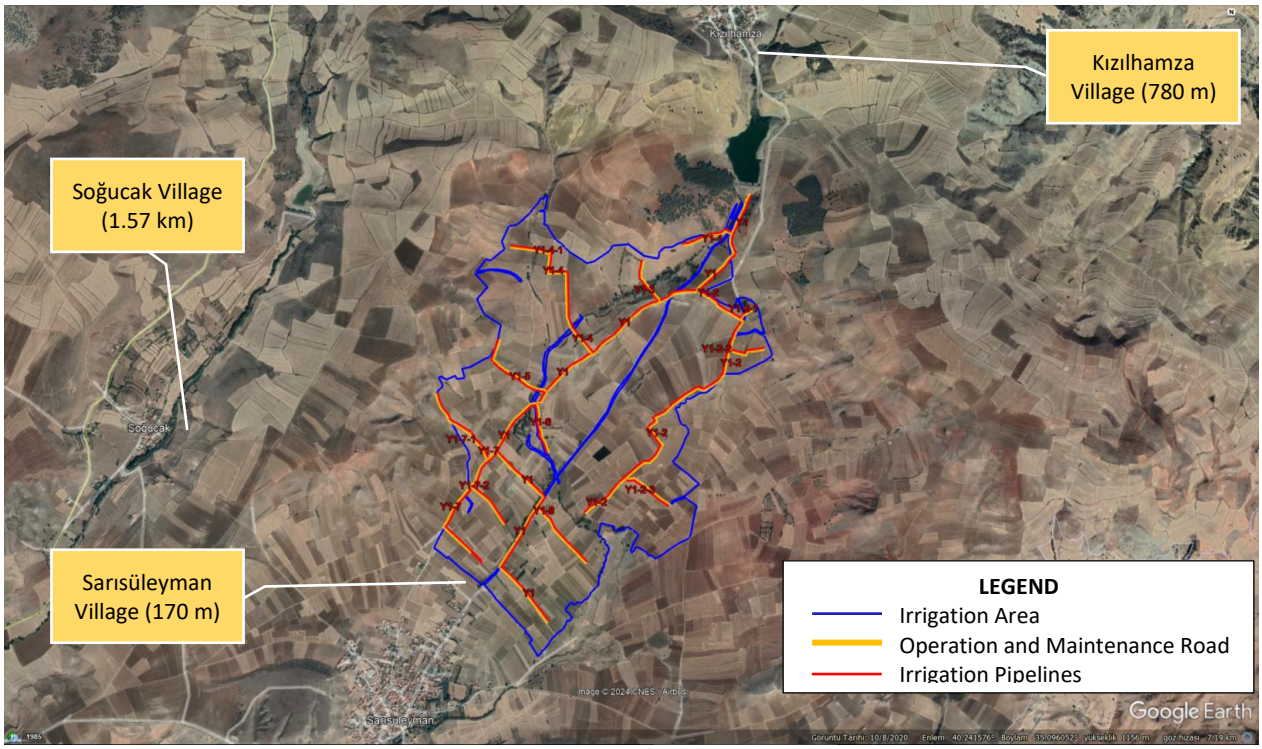

Figure 2-3 Location of Kızılhamza Irrigation System and Most Sensitive Receptors

3. LEGAL FRAMEWORK

3.1. National Legislation

The section contains a compilation of important national laws and by-laws that provide a legal context for addressing environmental and social management issues. The primary goal of these laws is to minimize any potential adverse environmental and social risks and impacts that may arise from the construction and operation of the sub-project.

The ESMP provides detailed explanations about the legislation concerning environmental protection, pollution prevention and control, as well as occupational and community health and safety. The table below presents the specific laws and regulations that are relevant to the environmental and social issues of the project.

Impacts regarding environmental quality will be managed based on the legal framework listed in Environment, Water, Air, Noise, Soil, and Waste section of the Table 3-1. Despite not fully meeting international standards for social impacts and stakeholder engagement, the Turkish EIA Regulation does include certain legal provisions aimed at addressing various social impacts. Social impacts and risks will be managed based on Labor and Working Conditions, Land Acquisition, and Stakeholder Engagement sections of the Table 3-1.

Table 3-1 National Environmental and Social Legal Framework

Topic	Legal Framework	Date of Official Journal	Issue of Official Journal
Environment	The Environmental Law	August 11, 1983	18132
	By-law on Environmental Impact Assessment	July 29, 2022	31907
	By-law on Strategic Environmental Assessment	April 08, 2017	30032
	By-law on Environmental Permit and Licenses	September 10, 2014	29115
	By-law for Starting up and operating a Workplace and Working Licences	August 10, 2005	25902
	By-law on Environmental Auditing	June 12, 2021	31509
	Regulation on Prevention and Mitigation of Major Industrial Accidents	March 02, 2019	30702
	Regulation on the Transportation of Dangerous Goods by Road	June 18, 2022	31870
Water	By-law on Water Pollution Control	December 31, 2004	25687
	Regulation on Monitoring of Surface Waters and Groundwaters	February 02, 2014	28910
	Regulation on Control of Water Use and Reduction of Water Losses in Irrigation Systems	February 16, 2017	29981
	Urban Wastewater Treatment Regulation	January 08, 2006	26047
Air	By-law on Assessment and Management of Air Quality	June 6, 2008	26898
	Regulation on Control of Industrial Air Pollution	July 03, 2009	27277
	By-law on the Control of Exhaust Emissions	March 11, 2017	30004
	Regulation on the Control of Odorous Emissions	July 19, 2013	28712
Noise	Environmental Noise Control Regulation	Nov 30, 2022	32029
Soil	Law on Soil Conservation and Land Use	July 03, 2005	25880
	By-law on the Control of Soil Pollution and Polluted Areas by Point Sources	June 8, 2010	27605

Topic	Legal Framework	Date of Official Journal	Issue of Official Journal
Waste	By-law of Waste Management	April 2, 2015	29314
	Zero Waste Regulation	July 12, 2019	30829
	By-law on the Control of Excavation Materials, Construction and Demolition Wastes	March 18, 2004	25406
	By-law on the Control of Medical Wastes	January 25, 2017	29959
	By-law on the Control of Packaging Wastes	July 26, 2021	31523
	By-law on the Control of Waste Batteries and Accumulators	August 31, 2004	25569
	By-law on the Control of Waste Oils	December 21, 2019	30985
	By-law on the Control of Vegetative Waste Oils	June 06, 2015	29378
	By-law on the Control of End-of-Life Waste Tires	November 25, 2006	26357
	By-law on the Control of End-of-Life Waste Vehicles	December 30, 2009	27448
	Regulation on Incineration of Wastes	October 16, 2010	27721
	Regulation on Sanitary Landfill of Waste	March 26, 2010	27533
	Mining Waste Regulation	July 15, 2015	29417
	Communiqué on Waste Derived Fuel, Additional Fuel and Alternative Raw Materials	June 20, 2014	29036
	Communiqué on the Transport of Waste on Highways	March 20, 2015	29301
Labor and Working Conditions	Occupational Health and Safety Law	June 30,2012	28339
	Labor Law (No. 4857)	June 10 ,2003	25134
	Law on Trade Unions and Collective Bargaining Agreements	November 7, 2012	28460
	By-law On Duty, Authority, Responsibility and Training of Occupational Safety Experts	December 29, 2012	28512
	By-law on Occupational Health and Safety in Construction Works	October 5, 2013	28786
	First Aid By-law	July 29, 2015	29429
	By-law on Health and Safety Measures in the Use of Work Equipment	April 25, 2013	28628
	By-law on Methods and Essentials of Occupational Health and Safety Training for Workers	May 15, 2013	28648
	By-law On Occupational Health and Safety Risk Assessment	December 29, 2012	28512
	By-law on the Procedures and Principles of Employing Child and Young Workers	April 6,2004	25425
	By-law on the Conditions of Women Employees Working In Night Shifts	July 24,2013	28717
	By-law on the Working Conditions of Pregnant or Nursing Women and Nursing Rooms and Child Care Residences	August 16,2013	28737
	By-law on Work Permits of Foreigners Provided with Temporary Protection	January 15,2016	29594
	By-law on the Special Procedures and Principles Regarding Works in Shifts Conducted	April 7,2004	25426

Topic	Legal Framework	Date of Official Journal	Issue of Official Journal
	by Workers		
	Regulation on Personal Protective Equipment	May 1, 2019	30761
	Regulation on Safety Data Sheets on Harmful Substances and Mixtures	December 13, 2014	29204
	Regulation on the Protection of Employees from Noise-Related Risks	July 28, 2013	28721
	Regulation on the Protection of Employees from Vibration Related Risks	August 22, 2013	28743
	Regulation on Combating Dust	November 05, 2013	28812
	Regulation on Contractors and Sub-contractors	September 27, 2008	27010
Land Acquisition	Expropriation Law	November 8, 1983	18215
	Amendment on Expropriation Law	May 5, 2011	24393
	Expropriation Law	March 27, 2015	2942
	Notification Law	March 19, 2003	7201
	Land Registry Code	January 1, 2002	4721
Stakeholder Engagement	Right of petition, Right to Information and Appeal to the Ombudsperson	October 18, 1982	Constitution, Article 74
	Right to Constitutional Complaint	October 18, 1982	Constitution, Article 148
	Law on the Right to Information	October 18, 1982	Constitution, Articles 11
	Law on the Right to Information	October 24, 2003	25269
	Participatory Planning Approach (Public Financial Management and Control Law	December 12, 2003	5018

3.1.1. Occupational Health and Safety

Türkiye has recently implemented a reform aimed at enhancing its national Occupational Health and Safety (OHS) system. This reform involves the adoption of a range of international and regional standards into Türkiye's national-level requirements for preventing occupational risks, as outlined in the International Labor Organization (ILO) Occupational Safety and Health Convention, 1981 (No. 155). Türkiye ratified both this convention and the Occupational Health Services Convention, 1985 (No. 161) in 2005, and has been a party to the Labor Inspection Convention, 1945 (No. 81) since 1951. Additionally, in 2014, Türkiye ratified the Promotional Framework for Occupational Safety and Health Convention, 2006 (No. 187).

As part of this reform, Türkiye introduced a standalone Law on OHS (No. 6331) in 2012, which came into effect on June 20, 2012. This law applies to various workplace environments and industries, including both public and private sectors, and covers a wide range of employees, such as full-time and part-time workers, interns, and apprentices. The legislation is comprehensive in nature and generally applicable across all sectors and many industries.

3.1.2. Labor and Working Conditions

Türkiye is a signatory to numerous International Labour Organization (ILO) conventions, encompassing a wide range of topics such as equal treatment of employees, gender equality, child labor, forced labor, occupational health and safety (OHS), the right of association, and minimum wage. As a result, the existing Turkish Labor Law (No. 4857) aligns to a significant extent with the requirements of Environmental and Social Standard 2 (ESS2). The list of the conventions is below:

Convention	Date of Convention	Date Turkey Signed
Fundamental		
Forced Labor Convention	1930	October 30, 1998
Freedom of Association and Protection of the Right to Organise Convention	1948	July 12, 1993
Right to Organise and Collective Bargaining Convention	1949	January 23, 1952
Equal Remuneration Convention	1951	July 19, 1967
Abolition of Forced Labor Convention	1957	March 29, 1961
Discrimination (Employment and Occupation) Convention	1958	July 19, 1967
Minimum Age Convention	1973	October 20, 1998
Occupational Safety and Health Convention	1981	April 22, 2005
Worst Forms of Child Labour Convention	1999	August 2, 2001
Promotional Framework for Occupational Safety and Health Convention	2006	January 16, 2014
Governance (Priority)		
Labour Inspection Convention	1947	March 5, 1951
Employment Policy Convention	1964	December 13, 1977
Tripartite Consultation (International Labour Standards) Convention	1976	July 12, 1993

In addition, there are supplementary regulations that could potentially be applicable to the project. The LMP can be accessed for details on issues such as annual leave, working hours, overtime, minimum wage, employment of women and children.

3.1.3. Environmental Permits, Licenses, and Approvals Required to Develop and Implement the Project

Irrigation Projects are not covered by the national EIA Regulation. However, an "exemption letter" must be obtained from the Provincial Directorate of Environment, Urbanization and Climate Change of Çorum Governorship. Within the scope of the Project, the letter of Çorum Governorship, Provincial Directorate of Environment, Urbanization and Climate Change numbered E-63173305-220.03-8514584 stating that the EIA is out of scope has been received (Please see Annex 5).

Since the irrigation project is not listed in Annexes 1 or 2 of the Environmental Permit and Licenses Regulation, it is not subject to an environmental permit/license. .

If the construction activities result in the production of more than 2 tons of construction waste during a single operation, a Waste Transportation and Acceptance Certificate from the relevant Municipality/Governor is required for that specific construction process. This requirement is outlined in the Regulation on the Control of Excavation Materials, Construction and Demolition Wastes.

In accordance with the provisions of the Waste Management Regulation, the wastes generated during the construction and operation of the project must be temporarily stored at the place of generation in compliance with predetermined criteria based on their types. The temporarily stored waste should be classified according to its characteristics, and it must bear labels indicating whether it is hazardous or non-hazardous waste, along with waste code, quantity of stored waste, and storage date. At this point, the establishment of temporary waste storage areas is essential. Waste producers generating less than a thousand kilograms of hazardous waste per month are exempt from obtaining a temporary storage permit for the areas/containers where they temporarily store their hazardous waste. However, waste producers generating a thousand kilograms or more of hazardous waste per month are required to obtain a temporary storage permit from the provincial directorate for the areas/containers where they temporarily store their hazardous waste. It is not anticipated that more than a thousand kilograms or more of hazardous waste per month will be generated within the scope of the project and the project is

expected to be exempt from temporary storage permit for hazardous waste".

In the case of involvement in waste transport, the construction project must acquire a Transport Licencse from the appropriate city representative of the Ministry of Environment, Urbanization and Climate Change. This condition is specified in the Communiqué on the Transport of Waste on Highways

If hazardous materials are used during the construction process, they must be transported using suitable vehicles with a Vehicle Adequacy Certificate according to the ADR (Agreement on the International Carriage of Dangerous Goods by Road) regulations and Regulation on the Transportation of Dangerous Goods by Road, especially when utilizing motorways for transport.

According to the provisions of the Waste Management Regulation, registration must be made in the "Integrated Environmental Information System" and the waste will be sent through the MOTAT application; additionally, annual waste declarations will also be made.

3.2. International Standards

3.2.1. International Agreements and Conventions

The formulation of Türkiye's national policy regarding environmental protection, preservation of cultural heritage, and conservation of biological resources has been influenced by various international agreements that Türkiye has signed or ratified. The following are the relevant agreements and conventions in the fields of environment, occupational health and safety (OHS), and international labor that have been ratified by Türkiye:

- Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal
- Bern Convention on Protection of Europe's Wildlife and Living Environment
- Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES)
- Convention on Long-range Transboundary Air Pollution
- European Convention on the Protection of the Archaeological Heritage
- European Landscape Convention
- International Convention for the Protection of Birds
- Paris Convention on the Protection of the World Cultural and Natural Heritage
- Ramsar Convention on Wetlands of International Importance Especially as Wildfowl Habitat
- Stockholm Convention on Persistent Organic Pollutants
- UN (Rio) Convention on Biological Diversity
- ILO Occupational Safety and Health Convention
- Occupational Health Services Convention
- Labor Inspection Convention
- Promotional Framework for Occupational Safety and Health Convention
- Worst Forms of Child Labor Convention
- Forced Labor Convention
- Freedom of Association and Protection of the Right to Organise Convention
- Right to Organise and Collective Bargaining Convention
- Equal Remuneration Convention
- Abolition of Forced Labor Convention
- Discrimination (Employment and Occupation) Convention
- Minimum Age Convention
- Worst Forms of Child Labour Convention
- Labour Inspection Convention
- Employment Policy Convention
- Tripartite Consultation (International Labour Standards) Convention

3.2.2. World Bank Environmental and Social Framework

The World Bank (WB) is dedicated to supporting borrowers in developing and implementing projects that prioritize environmental and social sustainability. The WB aims to enhance Borrowers' capacity to assess and manage the environmental and social risks and impacts associated with projects. To achieve this, the Bank has within its ESF established specific Environmental and Social Standards (ESSs) that aim to prevent, minimize, reduce, or mitigate adverse environmental and social risks and impacts. A summary of the relevant WB ESSs applicable to the project is provided in

Table 3-2.

Table 3-2 The World Bank's Environmental and Social Standards

ESS No:	Topic	Scope of the Standards
ESS1	Assessment and Management of Environmental and Social Risks and Impacts	This standard sets out responsibilities to assess, manage and monitor environmental and social risks and impacts associated with each phase of the project, supported by the World Bank with Investment Project Financing (IPF).
ESS2	Labor and Working Conditions	This standard, describe the importance of creating employment and income for comprehensive financial development and poverty reduction.
ESS3	Resource Efficiency and Pollution Prevention and Management	This standard refers to resource efficiency and pollution prevention and pollution management requirements with a holistic approach to project implementation.
ESS4	Community Health and Safety	This standard emphasizes health, safety and security risks and their impact on communities due to project activities.
ESS5	Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	This standard require avoiding compulsory resettlement, if not avoided, necessary measures should be taken to reduce negative effects on displaced people
ESS6	Biodiversity Conservation and Sustainable Management of Living Natural Resources	This standard requires the conservation and protection of biodiversity and habitats and promoting sustainable management of living natural resources.
ESS8	Cultural Heritage	This standard requires the maintaining tangible and intangible connections between the past, present, and future. It outlines specific actions aimed at safeguarding cultural heritage at every stage of a project's life cycle.
ESS10	Stakeholder Engagement and Information Disclosure	This standard emphasizes the importance of open and transparent participation between the client and stakeholders, and good international practice is an essential element. It contributes to projects in terms of effective stakeholder engagement, improving environmental and social sustainability, increasing project acceptance and successful project design.

The project will adhere to the Environment, Health, and Safety (EHS) Guidelines of the World Bank Group (WBG) in accordance with the ESSs. Therefore, the applicable requirements outlined in the WBG EHS Guidelines will be implemented. If there are any variations between the Turkish requirements and the levels and measures specified in the WBG EHS Guidelines, the more stringent requirement will take precedence in the project specifications. This includes applying the most rigorous standards for discharge and emission levels.

The specific WBG EHS Guidelines applicable to this project include, but are not limited to, the following:

- World Bank Group's EHS General Guidelines (2007)

- World Bank Group's EHS Guidelines for Construction Materials Extraction (2007)
- Introduction to Health Impact Assessment (2009)
- Handbook on Project Migration Problems (2009)
- Environmental and Social Management System Implementation Manual: Construction (2014)
- Environmental and Social Management System Implementation Manual: General (2015)
- Contractor's Environmental and Social Performance Management Good Practice Rating (2017)

3.2.3. World Bank Safeguard Policies Regarding OP 7.50 & 7.60

With the implementation of the Environmental and Social Framework (ESF), several environmental and social safeguard policies of the World Bank were replaced by the ESF but certain policies remain in effect. One such policy is OP 7.50 - Projects on International Water. This policy outlines the types of waterways and projects to which it applies, as well as the requirements and conditions for financing projects on international waterways. In the case of TULIP, the project coordination unit is responsible for ensuring that the sub-projects financed are situated exclusively on national water. Çorum Kızılhamza Irrigation Project, is located in the Kızılırmak Basin, which is not a watershed having international water, it will thus not trigger OP.

Another policy that remains in force is OP 7.60, which outlines the procedure for projects in disputed areas. In the case of the Çorum Kızılhamza Irrigation Project, it will not trigger OP 7.60 as it is not located in a disputed area.

3.2.4. Major Gaps between the Turkish EIA Regulation and World Bank's ESF Policy

The Turkish Environmental Impact Assessment (EIA) procedures generally align with the World Bank's Environmental and Social Standards (ESSs), with a few exceptions. The main areas where differences exist are in project categorization, the scope of environmental and social assessment, and public consultation. If there are discrepancies between Turkish legislation and the ESSs, the more stringent requirements will be applied during project implementation.

Unlike the Turkish EIA Regulation, which categorizes projects into Annex I and Annex II projects, the World Bank does not have predefined thresholds or lists for project classification. Instead, project screening for environmental and social risk classification is conducted on a case-by-case basis, taking into consideration the specific project's circumstances and potential impacts.

Project categorization is an important aspect of the World Bank's Environmental and Social Framework (ESF). Projects, including those involving FIs, are classified into four categories: **High Risk**, **Substantial Risk**, **Moderate Risk**, or **Low Risk**. This classification considers various factors such as the type, location, sensitivity, and scale of the project, as well as the potential environmental and social risks and impacts.

The required Environmental and Social (E&S) assessment for the project, as per ESS1, varies depending on the potential risks and impacts involved. It involves a comprehensive evaluation of all relevant direct, indirect, and cumulative E&S risks and impacts throughout the project's life cycle, in accordance with ESSs 2-10.

When comparing the suggested framework for an ESIA provided by the World Bank with the general structure of a Turkish Environmental Impact Assessment (EIA), several significant distinctions can be observed and listed below.

- The Turkish EIA lacks an executive summary and information about the legal and institutional framework, which may not meet the requirements of the WB. The technical level of information provided in the non-technical summary of the Turkish EIA may not align with WB requirements.
- The integration of social impact assessment in the Turkish EIA is incomplete, leading to the absence of a proper social baseline, identification, and assessment of project-induced social impacts, including impacts on disadvantaged or vulnerable groups and gender-related issues.
- The Turkish EIA has limited requirements for addressing risks and impacts related to community health and safety, occupational health and safety, and labor and working conditions.

- The Turkish EIA places limited emphasis on the associated facility of the project.

However, it should be noted that the project-specific format for the Turkish Environmental Impact Assessment (EIA) may demand additional details under certain sections compared to the general format. Therefore, a thorough examination of individual Turkish EIAs is essential to identify any disparities with the requirements of the WB.

The disparities between the WB ESF and the National Legislation are outlined in Table 3-3.

Table 3-3 Comparison between the World Bank ESSs and the National Legislation

WB Environmental and Social Standards (ESS)	Gaps	ESF Documents/study to fill the Gaps
ESS1: Assessment and Management of Environmental and Social Risks and Impacts	The major gaps between national EIA and ESS1 are as follows: -Social impact assessment is not completely integrated to the Turkish EIA and this results in the absence of proper social baseline, identification and assessment of the project induced social impacts including impacts on disadvantaged or vulnerable and gender related issues, - The absence of an executive summary and information on the legal and institutional framework in the Turkish EIA (Technical level of information in the non-technical summary required in the Turkish EIA may not meet WB requirements); - Limited emphasis on the associated facilities. - Limited information regarding sub-management plans such as Water Quality Management Plan, Air Quality Management Plan, Noise Management Plan, Hazardous Waste Management Plan, Community Health and Safety Management Plan etc.	Sub-project specific Environmental and social assessment studies such as ESIA or ESMP will be prepared in line with ESS1. In this respect, as it is defined in World Bank's Project Categorization provided in Annex 2 of ESMF that was approved by WB for TULIP, potential social impacts of the sub-project will be the part of the assessment. The environmental and social assessment will include impacts of the associated facilities and potential cumulative impacts. Depending on the level of the impacts and proposed mitigation measures together with residual impact analysis, sub-management plans will be annexed to the ESIA/ESMP. Therefore, this ESMP for Çorum Kızılhamza Irrigation Project has been prepared in this respect.
ESS2: Labour and Working Conditions	In general, Turkish national laws and regulations regarding labour and working conditions satisfies ESS2 requirements. Worker grievance mechanism is the main gap between national legislative	Labor Management Procedure (LMP) is developed as a part of ESF documents. LMP will also provide guidance on the required mitigations or management implementations such as workers GM, code of conduct etc. stipulated by ESS2 and relevant WB EHS guidelines.

WB Environmental and Social Standards (ESS)	Gaps	ESF Documents/study to fill the Gaps
	requirement and ESS2. Per the Turkish national legislation on labour and working conditions, there is no specific requirement related to grievance mechanism that allows workers to communicate their complaints to the employer.	
ESS3: Resource Efficiency and Pollution Prevention and Management	Most of the relevant national legislations regarding laws and regulations are in line with EU directives. There is no major gap between ESS3 and legislative requirements. Local EIA does not provide detailed management perspective on potential impacts, mitigation measures and residual impacts and monitoring. In other words, sub-management plans are not specifically defined in local EIA process. Additionally, the specific studies regarding resource use and pollution prevention such as Water Source Vulnerability Analysis (WSVA), Greenhouse Gas (GHG) estimations etc. are not specifically included in local EIA Process.	Sub-management plans will be developed as a part of ESIA/ESMP. These management plans also provide requirement stipulated in relevant WBG EHS Guidelines. In case a requirement, additional studies (i.e., WSVA, GHG etc.) will be performed in the scope of ESIA/ESMP.
ESS4: Community Health and Safety	In general, there is no gap in terms of policy level. On the other hand, project level management of specific risks such as labour influx, sexual exploitation and abuse and sexual harassment are the key gaps in terms of ESS4. In relation to dam safety; despite that there is no specific legislation for dam classification and their required safety measures are available but the general requirements are identified following many laws and regulations, such as Law on Protection Against Flood	The plans such as Traffic Management Plan and Community Health and Safety Plan etc. will be prepared as a part of ESIA/ESMP, as needed. DSI will comply with the dam safety requirements of the WB by means of conducting risk assessment procedures and preparing and implementing Emergency Preparedness Plans; conducting monitoring and reporting procedures, ensuring reviews by an independent panel of experts throughout investigation, design, and construction of the dam and the start of operations, preparation and implementation of detailed plans for construction supervision and quality assurance, a plan for instrumentation, an operation and maintenance plan, and an

WB Environmental and Social Standards (ESS)	Gaps	ESF Documents/study to fill the Gaps
	Waters and Floods (1943), Civil Defense Act (1958), Measures and Assistance Regarding Natural Disasters affecting General Public Life Precautions Act (1959), DSI Regulation on Flood and Sediment Control (2019), The Environmental Law (1983), and Regulation on the Environmental Impact Assessment (2022).	emergency preparedness plan; prequalification of bidders during procurement and bid tendering; and periodic safety inspections of the storage structures and dams after completion. As per ESS4, a Dam Safety Report has been prepared to assess the safety status, operational status or procedure and performance history of Kizilhamza Dam and related structures in accordance with national standards and international guidelines and practices, taking into account the potential risk of the dam and the urgency of interventions. Within the scope of the Report, it has been determined that the water in the reservoir is not turbid. Over time, the pond volume can be filled with debris from the rivers. For this reason, necessary measurements (bathymetric measurements, etc.) should be made by DSİ to investigate how much of the pond volume is filled with debris. As a result of the study, the physical, strength and permeability properties of the bedrock on which the pond is located, the physical, strength and permeability properties of the body fill materials and finally the design flood capacities of the spillway structure should be re-determined. The report recommends that DSİ should prepare an instruction report for operation and maintenance works and periodic maintenance of the pond should be carried out in line with this instruction. The report also emphasized that DSİ should prepare an earthquake risk analysis report for the location of the dam and determine the cross-sections of the dam by geophysical methods. As a result of the stability analysis, it was observed that there is no problem in slope stability. The results of infiltration analysis also reveal that there is no significant water loss in the pond. The report also states that no erosion, cracks, deviations from the axis line, animal holes were found on the crest. However, it has been recommended that the partial riprap structure on the upstream side of the pond has decomposition and

WB Environmental and Social Standards (ESS)	Gaps	ESF Documents/study to fill the Gaps
		degradation, that the riprap structure used does not have protective properties and that the upstream side should be covered with riprap immediately. In addition, settlements and heaves were observed on both the upstream and downstream sides of the pond and it was advised by DSİ that measurements should be taken at least quarterly. There is also no slope protection structure on the downstream surface and house protection is recommended. Seyitnizam pond and irrigation project will utilize security personnel in line with ESS4 requirements..
ESS5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	Turkish legislation on land acquisition mainly corresponds to requirements stipulated by ESS5. However, some differences include; preparation of a Resettlement Plan (RP), compensation at replacement costs, continuous consultation during RP implementation, impact assessment of and livelihood compensation for informal land users, vulnerable groups and land based livelihood restoration are the major gaps in terms of ESS5 requirement.	The specific Resettlement Framework (RF) is prepared to provide a guidance to assess any risk of resettlement and to prepare sub-project specific RP in case a requirement in compliance with requirements under ESS5.
ESS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	There is no gap in terms of policy level. On the other hand, in some cases, level of the considerations of not legally protected sensitive ecological areas such as Key Biodiversity Areas in local EIA Process are not sustain the requirements stipulated by ESS6. Furthermore, management and monitoring of potential impacts, mitigation measures and residual impacts are not detailed in general.	Depending on the location of the sub-project and sub-project level of the impact, Biodiversity Management Plans can be annexed to the ESIA/ESMP.
ESS10: Stakeholder Engagement and Information Disclosure	Effective and transparent stakeholder engagement is the main gap in terms of	Project specific SEP is prepared and included in ESF documents. The SEP will be implemented at sub-project level as per

WB Environmental and Social Standards (ESS)	Gaps	ESF Documents/study to fill the Gaps
	ESS10 requirement. Within this scope, a Stakeholder Engagement Plan is required to identify the different stakeholders (project-affected parties and other interested parties including disadvantaged or vulnerable). Stakeholder engagement should be a continuous process.	ESS10 guidelines and include the setting up of public Grievance Mechanism.

4. BASELINE INFORMATION

4.1. Environmental Baseline

4.1.1. Water Resources

The waters from the streams within Çorum Province flow into the Kızılırmak and Yeşilırmak Basins. The segment of Kızılırmak that traverses Çorum spans a length of 182 km. The points of convergence for these streams include Bayat, İskilip, Merkez district, Osmancık, Kargı Districts, and the respective villages. Within this basin, a significant portion of Çorum Central District, along with the creeks and streams in Alaca District, Mecitözü, and Ortaköy Districts, channel their waters into the Çekerek River, which serves as an important tributary of Yeşilırmak. Table 4-1 below shows the major rivers within the Çorum province. In terms of overall length and flow rate, Kızılırmak stands out as the largest river within the province. Besides its crucial role in agriculture, Kızılırmak is also utilized for energy generation.

Table 4-1 Major Rivers of Çorum Province

Name of the River	Total Length (km)	Length within Province Boundaries (km)	Flow rate (m3/sec)	Purpose of usage
Kızılırmak	1355	182	137.500	Agricultural Irrigation and Energy Production
Delice Creek	305	71	23.647	Agricultural Irrigation
Devrez Creek	186	11	5.158	Agricultural Irrigation
Çorum Creek (Derinçay-Alaca Creeks)	119	93	7.200	Agricultural Irrigation
İncesu (Çekerek Creek)	256	16	25.817	Agricultural Irrigation

Source: Çorum Environmental Status Report for the year 2021, Çorum Provincial Directorate of Environment, Urbanization and Climate Change, 2022[5]

Eymir (Gölünyazı) Lake, situated in the central district, has a marshy and swampy appearance, with its water levels significantly decreasing during the summer. During spring, small ponds known as Uyuz Lake and Kırkgöz can be found in the central district; however, these ponds dry up during the summer months.

The groundwater potential in the city holds significant importance as a valuable water resource. The following Table 4-2 presents the study that evaluates the quantity of groundwater. Çorum Creek-Efendik Basin has the largest groundwater potential with 40.5 hm^3/year, followed by Merzifon-Gümüşhacıköy Basin with 28 hm^3/year. As of 2021, the groundwater potential in Çorum is 201.8 hm^3/year.

Table 4-2 Çorum's Groundwater Potential

Sub-basin Name	Groundwater Potential (hm^3/year)
Alaca Basin	13
Derinçay (Aşağı) Basin	17
Derinçay (Yukarı) Basin	10.8
Çorum Creek-Efendik Basin	40.5
Ortaköy-Göynücek Basin	5
Merzifon-Gümüşhacıköy Basin	28
Delice (İnegazili-Kavşut) Basin	1
Çavuşçayı Basin	5
Budaközü (Sungurlu) Basin	10

[5] https://webdosya.csb.gov.tr/db/ced/icerikler/corum-ilcdr-2021-20220602094419.pdf

Sub-basin Name	Groundwater Potential (hm³/year)
Budaközü (Demirşeyh) Basin	6
Budaközü (Boğazkale) Basin	3.5
Kızılırmak (Uğurludağ) Basin	8
İskilip-Bayat Basin	15
Total	201.8

Source: Çorum Environmental Status Report for the year 2021, Çorum Provincial Directorate of Environment, Urbanization and Climate Change, 20226

Urban water supply in the province relies on the utilization of dams, wells, and spring waters. A total of 9,335,443 m³ of water was sourced from dams such as Yenihayat Dam, Hatap Dam, Çomar Dam, and Koçhisar Dam. Additionally, 10,468,766 m³ of water was supplied from various other sources including Elmalı, Kavacık, Pınarbaşı, and Sağmaca, as well as wells like Tarhan, Cement, and Melikgazi Well. Among the water supplied by municipalities for distribution through drinking and utility water networks in 2021, dams accounted for the largest proportion at 47%, followed by springs at 28% and wells at 25%.

The province also receives water supply from deep wells and natural springs. Deep wells can be found in Pınarbaşı, Melikgazi, Tarhan, Çimento, Ayarık, and Konaklı areas. Similarly, spring waters are sourced from Pınarbaşı, Elmalı, Kavacık, and Sağmaca locations. In 2021, a total of 4,920,924 m³ of water was supplied from the wells. Table 4-3 outlines the attributes of the sources used for supplying drinking water. The primary sources, including Eskice and Yenihayat Dam, are responsible for the majority of water supply.

Table 4-3 Characteristics of Drinking Water Sources

Name	Amount of Groundwater Extracted from the Source (m³/year)	Surface water drawn from the source (m³/year)	Total (m³/year)
Eskice	4,231,592	0	4,231,592
Ayarık	121,974	0	121,974
Kavacık	0	21,990	21,990
Elmalı	0	47,760	47,760
Yenihayat Baraj	0	4,559,055	4,559,055
Tarhan	2,005,593	0	2,005,593
Mürsel	1,154,576	0	1,154,576
Çimento	1,638,781	0	1,638,781
Sağmac	0	1,246,500	1,246,500
Hatap baraj	0	2,464,570	2,464,570
Çorum Baraj	0	2,234,578	2,234,578
Koçhisar Baraj	0	77,240	77,240
Total	9,152,516	10,651,693	19,804,209

Source: Çorum Environmental Status Report for the year 2021, Çorum Provincial Directorate of Environment, Urbanization and Climate Change, 20227

The closest water reservoir to the project area is Kızılhamza (Gürbüz) Pond, which will be the main source of water for irrigation during the irrigation. Irrigation water will be provided by that pond. Figure 4-1 illustrates the Kızılhamza Pond and the project area.

The main purpose of Kızılhamza Pond, which was constructed with a homogeneous clay fill dam built on Çınar Stream approximately 750 m south of Kızılhamza Village, is to provide irrigation water to a total of 252 ha of agricultural areas. Operable water volume of the pond is 600,000 m³. The official website of

[6] https://webdosya.csb.gov.tr/db/ced/icerikler/corum-ilcdr-2021-20220602094419.pdf
[7] https://webdosya.csb.gov.tr/db/ced/icerikler/corum-ilcdr-2021-20220602094419.pdf

the 5th Regional Directorate of State Hydraulic Works (DSİ) does not provide information on when the construction of the dam started, but the date of commissioning is stated as 1985. The crest elevation of the dam is 1211 m and the maximum water level elevation is 1210 m while the minimum water level elevation is 1198 m. The crest width is 7.00 m, the crest length is 141.5 m and the height of the pond from the thalweg is 20.8 m.

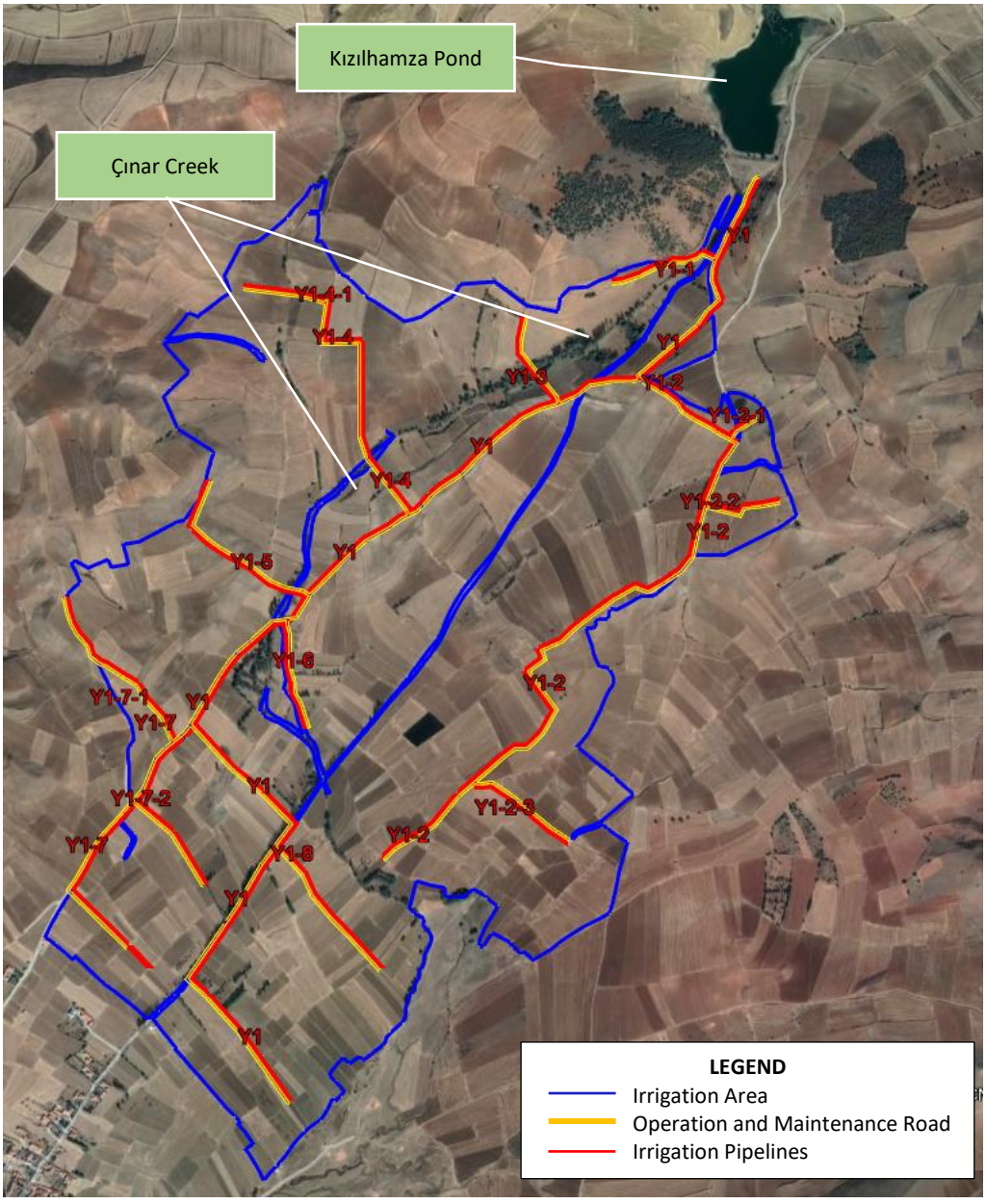

Figure 4-1 Kızılhamza Pond, Çınar Creek and Project Area

The rivers in the Çorum Province discharge their water into the basins of two significant rivers in Türkiye, the Kızılırmak and Yeşilırmak. A large part of the central district of Çorum, as well as the rivers and streams in Alaca District, Mecitözü, and Ortaköy Districts, flow into the Çekerek River, which is an important tributary of Yeşilırmak, in this basin. Derinçay and Büyüköz merge to pour into the Çekerek River. The Çekerek River, in turn, flows for 256 km before merging into the Yeşilırmak.

The Project area is located at the lower elevations of Kızılhamza Pond, which is located on Çınar Creek as shown in Figure 4-1. The general slope of the project area is from east to west and towards Çınar Creek.

The Creek continues westward with the same name within the irrigation area. The other closest streams to the project area are Büyüköz Creek and Elmaağacı Creek which are around 9.6 km, and 1.3 km away from the project area, respectively (see Figure 4-2). The white lines in Figure 4-2 show the rivers closest to the project area. Çınar Creek has a continuous flow, provided by the water released from Kızılhamza pond, and will pass through the pipe systems to be constructed under the Project. None of those streams are considered as sensitive water body according to "Sensitive Water Bodies and Areas affecting These Bodies Regulation on Determination and Improvement of Water Quality" regulation. However, Çekerek and Yeşilırmak Rivers are considered as sensitive water according to the regulation.

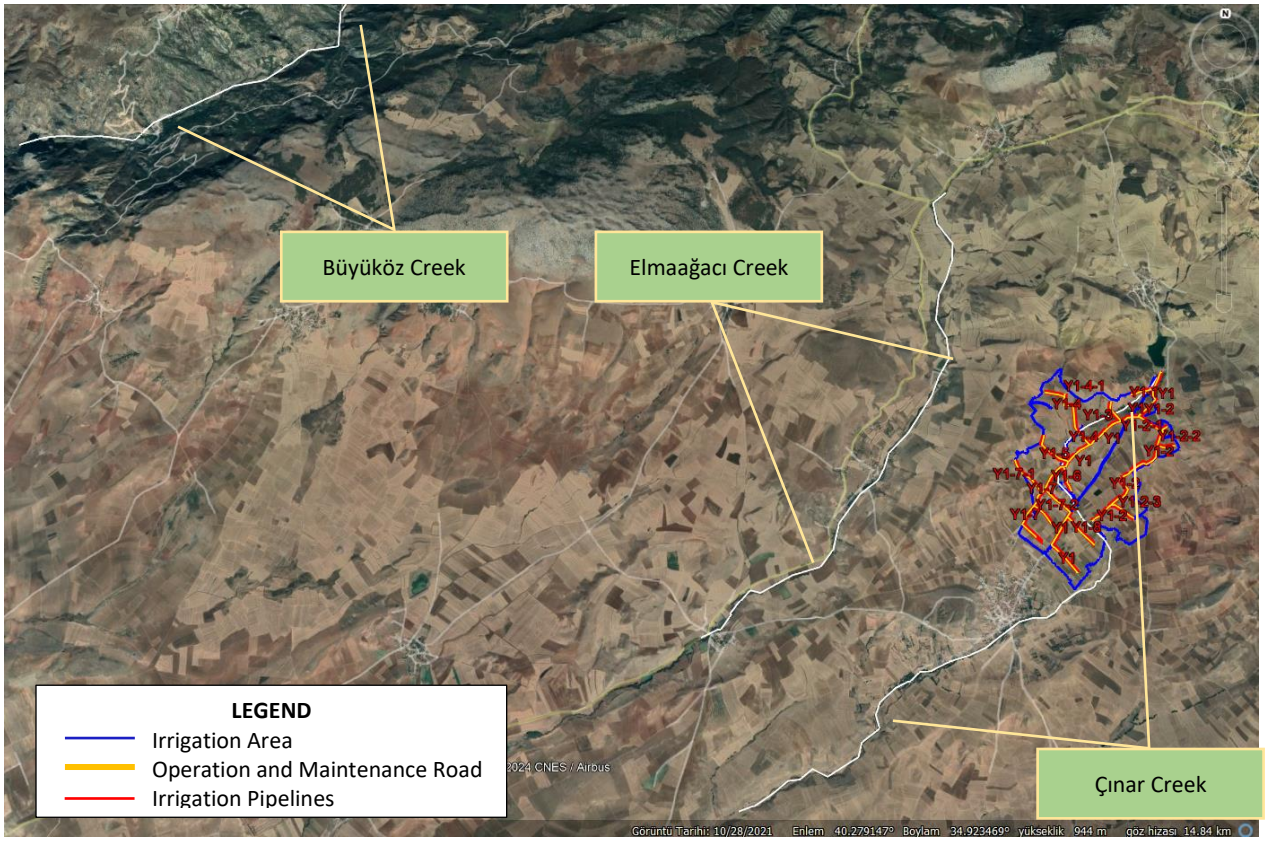

Figure 4-2 Closest Streams to Project Area

Koçhisar dam built on the Büyüköz Creek is approximately 20 km away from the project area. The lake area of this dam is 12.2 km^2 and its height from the thalweg is 37.4 meters. The lake volume of this dam is 161.7 hm^3.

The drinking water requirements of Sarısüleyman, Soğucak and Kızılhamza villages, which are the closest settlements to the project area, are met by groundwater resources. Related groundwater resource is shown in Figure 4-3. This groundwater body is numbered TR14050374 and named Ortaköy Groundwater Body. The available operating reservoir is 5 hm^3/year in Ortaköy Groundwater Body [8].

[8] https://corum.afad.gov.tr/kurumlar/corum.afad/Haberler/2022/nisan/Corum_I%CC%87RAP_SON.pdf

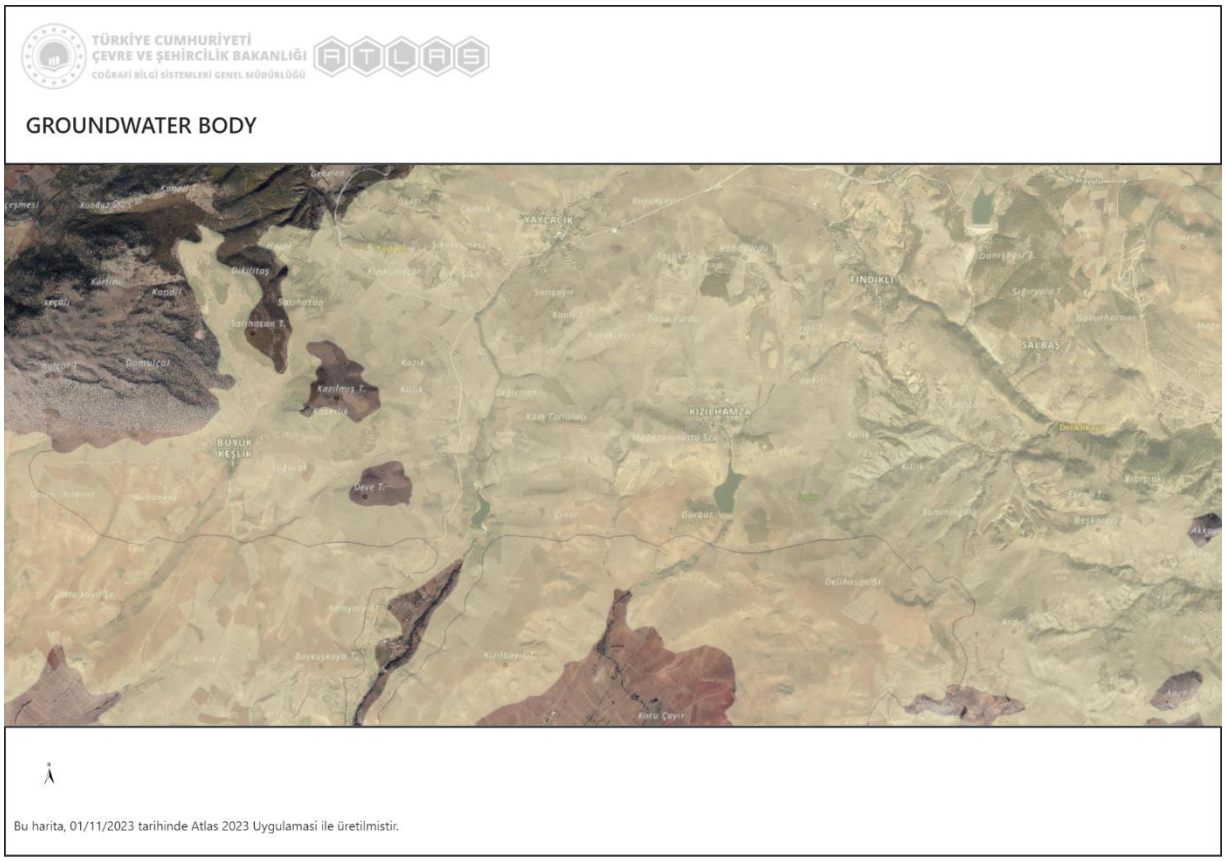

Figure 4-3 Groundwater Body in Project Area

4.1.2. Agricultural Activities

The irrigated agricultural area within the Çorum covers approximately 87,000 hectares and involves the participation of DSI, the Special Provincial Administration, and public irrigation entities. This area supports various agricultural activities, including vegetable and fruit farming, as well as a significant amount of grain cultivation.

Irrigation in this region is facilitated through open concrete channels, closed pipe systems, and groundwater sources. The wild irrigation method covers an estimated 500,000 square meters of green areas. Irrigation takes place for duration of 7 months annually, with an average water usage of approximately 16 liters per square meter per day. The irrigated land lacks proper drainage. Drip irrigation is employed for approximately 120,000 trees, allowing for targeted water delivery. In forest regions, drip irrigation is utilized for 7 months, with an average water supply of 10 liters per day. Sprinkler irrigation covers a total area of roughly 720,000 square meters for grassy areas. Irrigation is conducted for 7 months per year, with an average water usage of 2230 liters per square meter per day. Like other irrigated areas, there is a lack of proper drainage[9].

The agricultural lands in the province encompass fields, vineyards, and fruit and vegetable areas. Field lands are utilized for growing cereals, legumes, industrial crops, tuber crops, and forage crops. The province is known for cultivating significant agricultural products such as wheat, barley, rice, chickpeas, green lentils, vetch, sugar beet, sunflower, onions, clover, sainfoin, melons, tomatoes, watermelons, grapes, apples, pears, and walnuts. Notably, products grown without irrigation dominate due to the limited availability of irrigation facilities.

[9] https://oka.ka.gov.tr/assets/upload/dosyalar/corum-yatirim-rehberi-2022.pdf

Irrigation plays a crucial role in the agricultural sector of Çorum Province, as highlighted by the comparison of sectoral distribution in the Gross Domestic Product (GDP) between Çorum and Turkey. The Figure 4-4 below demonstrates that Çorum has a significantly higher percentage in agriculture, accounting for 22.14% of its GDP, whereas the national average for Turkey stands at 7.51% by 2022 [10]. This emphasizes the importance of irrigational activities in Çorum, contributing to its agricultural productivity and overall economic growth.

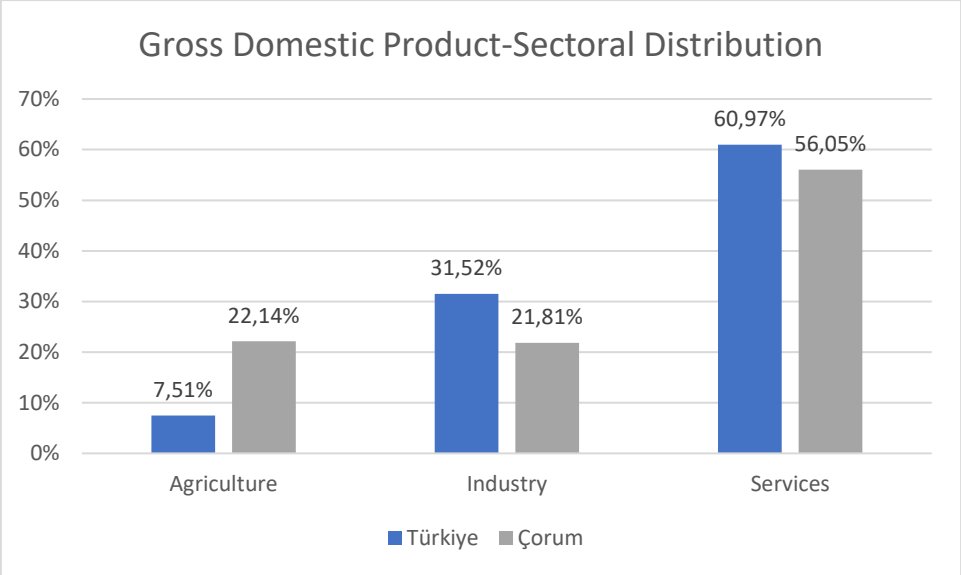

Figure 4-4 Comparison of GDP by Sectors

The Ministry of Agriculture and Foresty anticipates that agricultural production will reach $150 billion, and exports will amount to $30 billion by 2023. With Çorum possessing significant agricultural potential, it is believed that these targets can be achieved, contributing to the region's growth. Therefore, there is a focused effort to enhance agricultural production in Çorum promptly and efficiently. Çorum Kizilhamza Irrigation Project will also be one of the powerful tools to achieve these goals together with other planned irrigation projects in the region.

Another study aimed at strengthening agriculture in the region is The Basin-Based Support Model. It is implemented by the Ministry of Agriculture and Forestry focuses on 21 strategically important agricultural products, including wheat, barley, rice, corn, lentils, and hazelnuts. The selection of supported products for the production year of 2022 was based on factors such as climate, soil conditions, water availability, statistical data, crop rotation, and recommendations from provincial/district directorates and non-governmental organizations (NGOs). Support applications encompass diesel-fertilizer subsidies, certified seed use, difference payments, forage crops, and hazelnut field-based income support. Supported products within the scope of Turkey Agricultural Basin Production and Support Model are listed in the table below.

Table 4-4 Distribution of Products to be Supported in Agricultural Basins

Basin Name	Supported Products within the Scope of Türkiye Agricultural Basins Production and Support Model
Çorum-Alaca	**Barley**, Safflower, **Wheat, Corn (Grain)**, Lentil, **Chickpea**, Triticale, **Sunflower (Oil)**, Forage Crops, Oats, Potatoes, Onions (Dry)
Çorum-Bayat	Barley, Wheat, Rice, Corn (Grain), Dry Beans, Lentils, Chickpeas, Sunflowers (Oil), Forage Crops, Potatoes

[10] https://www.investcorum.com/Documents/corum-yatirim-rehberi-2022-59.pdf

Basin Name	Supported Products within the Scope of Türkiye Agricultural Basins Production and Support Model
Çorum-Boğazkale	Barley, Wheat, Corn (Grain), Lentil, Chickpea, Sunflower (Oil), Forage Crops
Çorum-Dodurga	Barley, Wheat, Rice, Corn (Grain), Triticale, Forage Crops, Oats
Çorum-İskilip	Barley, Safflower, Wheat, Rice, Corn (Grain), Dry Bean, Chickpea, Sunflower (Oil), Triticale, Forage Crops
Çorum-Kargı	Barley, Wheat, Rye, Paddy, Lentil, Corn (Grain), Triticale, Forage
Çorum-Laçin	Crops, Oats
Çorum-Mecitözü	Barley, Wheat, Rice, Corn (Grain), Chickpea, Triticale, Sunflower (Oil), Forage Crops, Onion (Dry)
Çorum-Merkez	Barley, Safflower, Wheat, Corn (Grain), Chickpea, Triticale, Sunflower (Oil), Forage Crops, Onion (Dry)
Çorum-Oğuzlar	Barley, Wheat, Corn (Grain), Lentil, Chickpea, Triticale, Sunflower (Oil), Forage Crops, Oats, Potatoes, Onions (Dry)
Çorum-Ortaköy	Barley, Wheat, Dry Beans, Forage Crops, Oats
Çorum-Osmancık	Barley, Wheat, Corn (Grain), Lentil, Chickpea, Triticale, Forage Crops, Onion (Dry)
Çorum-Sungurlu	Barley, Wheat, Rice, Corn (Grain), Chickpea, Triticale, Forage Crops, Oats, Potatoes, Onions (Dry)
Çorum-Uğurludağ	Barley, Wheat, Rice, Corn (Grain), Lentil, Chickpea, Triticale, Sunflower (Oil), Forage Crops, Onion (Dry)

Source: 2023 Product List to be supported in Basins, Official website of the Ministry of Agriculture and Forestry, https://www.tarimorman.gov.tr/BUGEM/Belgeler/

According to the 1/100.000 scale environmental plan, some of the Project Area is marginal agricultural land and some of it is qualified agricultural land. There are agricultural fields in the project area. According to the interview with the farmers, it was determined that the dry grain-fallow, grapes, sunflower, clover, and oats are grown in the agricultural fields within the project area.

With the opening of the area to irrigation, wheat, sugar beet, onion, sunflower, chickpea, alfalfa, barley and corn crops can be grown.

4.1.3. Climate

The Köppen-Geiger climate classification for Çorum is Dsb. Dsb refers to a warm-summer humid continental climate with Mediterranean influences, characterized by a coldest month that typically has an average temperature below 0 °C (or −3 °C), a warmest month with an average temperature below 22 °C, and at least four months where the average temperature remains above 10 °C. The average annual temperature in Çorum is documented as 10.9 °C. Notably, the lowest average temperature is recorded in January at -4.3 °C, while the highest average temperature is observed in August, reaching 29.5 °C. The lowest recorded air temperature in Çorum was -27.2 °C (23 February 1985), while the highest recorded air temperature was 42.6 °C (30 July 2000).

Figure 4-5 presents the monthly average temperatures throughout the year. The coldest months are January with an average temperature of -0.3°C and February with 1.2°C. On the other hand, the highest temperatures are observed in July and August, with averages of 21.3°C and 21.4°C respectively. The graph shows a gradual increase in temperatures from winter to summer, followed by a decline towards the end of the year.

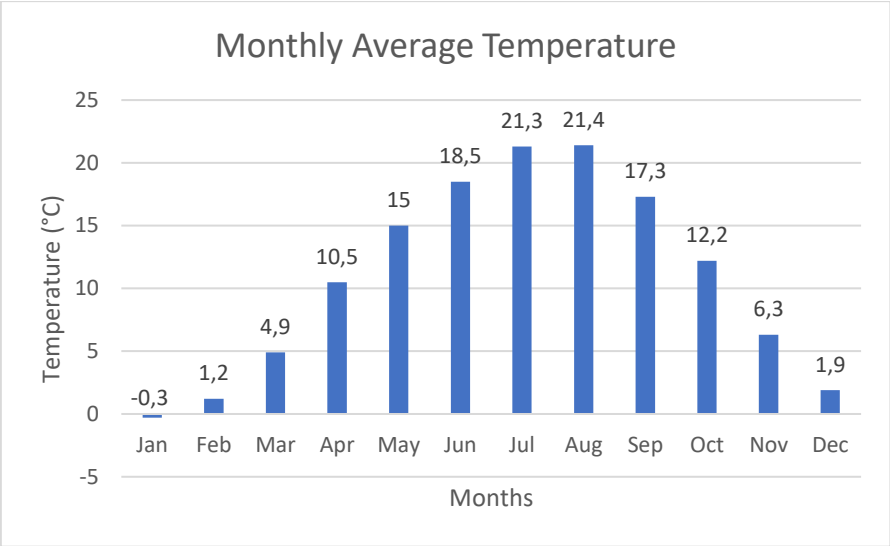

Figure 4-5 Monthly Average Temperature between 1929 and 2022 in Çorum[11]

Figure 4-6 presents the monthly average precipitation in millimeters (mm) over the course of a year. It reveals distinct patterns and variations in rainfall throughout the different months. The highest levels of precipitation are observed in May (61.5 mm) and June (54.8 mm), indicating a relatively wet period. The months of April (46 mm), December (43.7 mm), and January (39.5 mm) also experience notable rainfall. On the other hand, July (19.7 mm) and August (15.1 mm) have the lowest average precipitation values, suggesting drier conditions during the summer months. Approximately 34% of the annual precipitation occurs during the spring months.

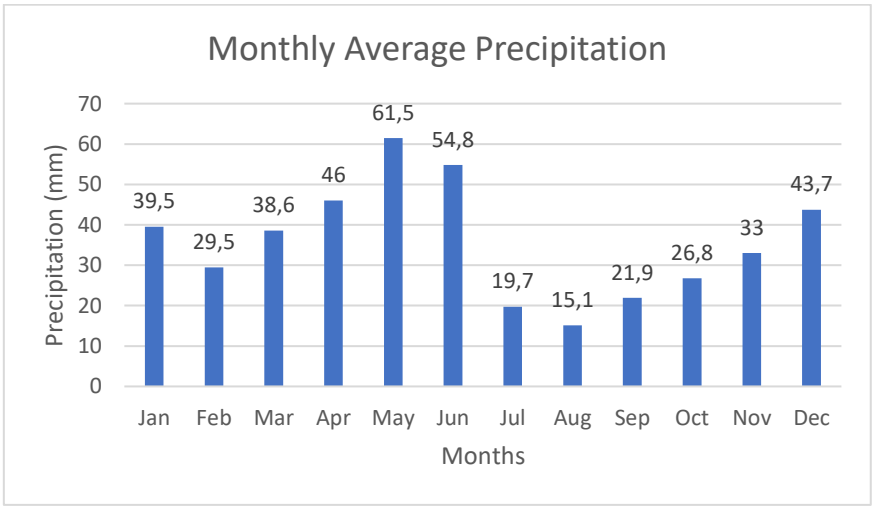

Figure 4-6 Monthly Average Precipitation between 1929 and 2022 in Çorum

A thorough analysis of the climate features specific to the project's location in the Alaca District of Çorum Province was conducted. Kızılhamza Pond is located in the Ortaköy, the project area is located within the borders of the Alaca District. The border between the two districts is defined by Kızılhamza Pond. The project area exhibits a climate that falls between the transitional characteristics of the Black Sea Region and the Central Anatolia Region. During the summer months, the weather is generally hot and dry, while winters are cold and rainy. The temperature difference between summer and winter seasons is large. The Çorum Meteorology Station, which is part of the State Meteorology Directorate, is

[11] https://www.mgm.gov.tr/veridegerlendirme/il-ve-ilceler-istatistik.aspx?m=CORUM

the closest weather station to the project area. The annual precipitation in the project area is 450.8 mm. Although the average annual temperature stands at 10.4 °C, temperatures rise to 20.4 °C in July and August. On the other hand, the coldest month is January with an average temperature of -0.6 °C.

4.1.4. Geology

The geological formations in the Kızılhamza Village irrigation area and its immediate vicinity are; Paleozoic aged Kızılcın limestone (kb), Eocene aged Yoncalı Formation (Tey), Pliocene aged Büyükşeyhefendi Formation (plQb) and recent alluvial units deposited in stream beds[12].

4.1.5. Vegetation and Forest

Figure 4-7 represents the distribution of forest areas around the project area. The project area is within the jurisdiction of Amasya Regional Directorate of Forestry.

There are forest areas without trees (yellow) around the project area. Additionally, there is a distorted forest area to the east of the project area.

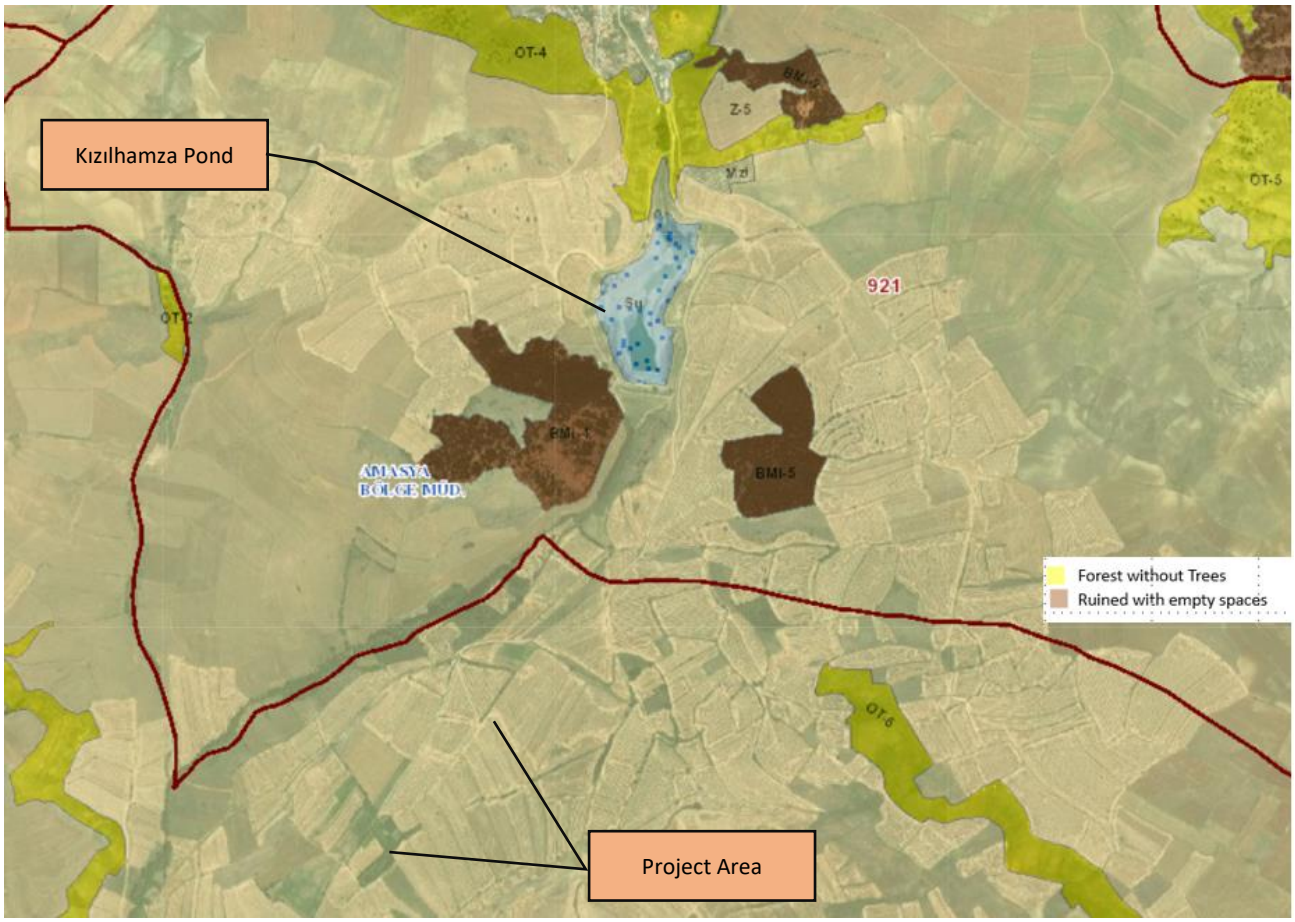

Figure 4-7 Forest Map

Source: Turkey National Geographic Information Systems, National Geographic Information Platform http://www.atlas.gov.tr

4.1.6. Biodiversity and Protected Areas

The General Directorate of Nature Conservation and National Parks has identified protected areas that encompass significant regions with aesthetic, scientific, and natural value, as well as natural beauty. These protected areas include "National Parks," "Nature Parks," "Nature Monuments" and "Nature Conservation Areas," as defined in Article 2 of the National Parks Law and evaluated in accordance with

[12] *based on pre-feasibility report of the project (Çorum Ortaköy Kızılhamza Köyü Göleti Sulama Projesi Ön Raporu)*

Article 3 of the same law. It was stated that there are no protected areas around the project area in the official letter written by the relevant regional directorate of the Ministry of Agriculture and Forestry on 07.09.2022 (Annex 4). In the letter numbered 4540966 of the General Directorate for the Protection of Natural Assets, it is stated that there are no natural protected areas, potential natural protected areas and registered natural assets in the project area (Annex 8)

Based on the information obtained from Turkey National Geographic Information Systems, National Geographic Information Platform (atlas.gov.tr), there are no monumental trees, caves, protected areas, or special environmental protection zones within the scope of the General Directorate for the Protection of Natural Assets in the project area.

According to the information obtained from the General Directorate of Nature Conservation and National Parks system, the closest protected area to the project area is Boğazköy-Alacahöyük National Park. National Park is 42 km away from the project area. Cultural (archaeological) values comprise the national park's primary resource value. Remains of the Hittite capital, Boğazköy (Hattuşaş), one of the most significant Anatolian civilizations, can be found. No impacts of any project activities will be seen in the protected area since there is a considerable distance between them. Additionally, there are no national parks, nature parks or wildlife development areas within the borders of the Çekerek Basin in Çorum province. There are no internationally recognized areas of high biodiversity value within the project area considering internationally recognized areas of high biodiversity value include World Heritage Natural Sites, Biosphere Reserves, Ramsar Wetlands of International Importance, Key Biodiversity Areas, Important Bird Areas, and Alliance for Zero Extinction Sites, among others. The closest protected areas to the Project area are given in Figure 4-8 along with their distances.

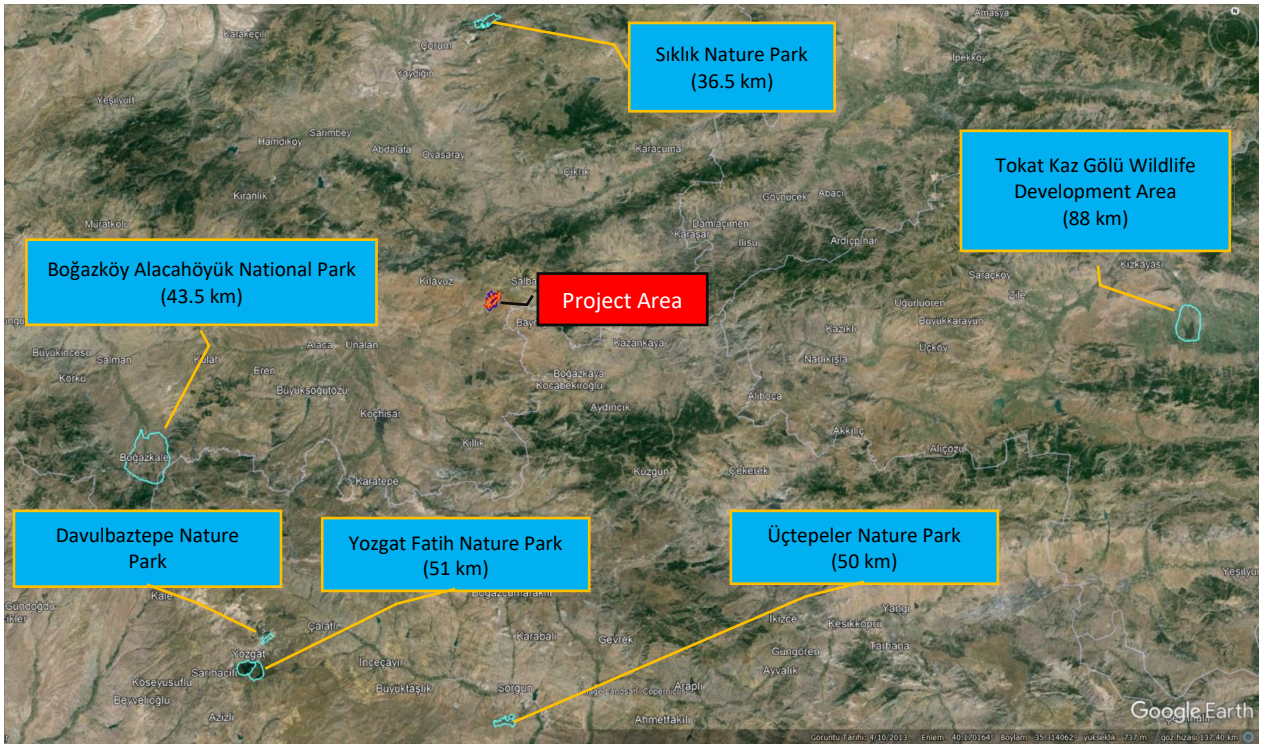

Figure 4-8 Protected Areas around the Project Area

Source: National Parks Application of the General Directorate of Nature Conservation and National Parks https://www.arcgis.com/apps/View/index.html?appid=5f3978146c4643438ab446620e275269

In order to determine the flora and fauna of the project area and its surroundings, literature research and previous studies and publications of these studies were examined. The phytogeographical region elements, endemism status, Red Data Book Endangerment Classes, habitats and occurrence rates of the species were indicated. TUBIVES (Plants of Turkey Data Service) was utilized for species identification. The species likely to be found in the project area were analyzed according to the Bern Convention, the

European Convention for the Conservation of Wildlife and Habitats.

The project area consists of agricultural lands that are periodically irrigated, and there are riperian species and willow and poplar trees on the banks of Çınar Creek.

When the previous studies conducted in the area were examined, no endemic species that may be found in and around the project area were found.

The flora fauna species identified within the scope of the project are generally widely distributed in our country and are not expected to be endangered in the near future. As a result, it is not foreseen that the flora fauna species in the area will be negatively affected by the project.

The project area is classified as “modified habitat” considering that (i) agricultural activity has substantially modified an area’s primary ecological functions and species composition, (ii) project area includes areas managed for agriculture, (iii) and it has not been converted in anticipation of the project, the agricultural activities has long been ongoing in the area.

4.1.7. Seismicity

Çorum is located in a shearing zone between the North Anatolian Fault Zone, the East Anatolian Fault Zone, and the NAFS (North Anatolian Fault System) and its extension known as the Sungurlu Fault. The fault systems that affect it are the NAFS, Merzifon-Esençay Fault, Sungurlu Fault, and Salhançayı Fault. NAFS is one of the fastest moving and most active faults in the world. It is an approximately 1200 km long, right-lateral, and strike-slip active fault system. It is not composed of a single fault but rather a fault zone consisting of many segments. North Anatolian Fault, being situated between the Arabian Plate to the south (experiencing compression at a rate of approximately 21 mm per year) and the Eurasian Plate to the north (virtually immobile), and due to its rapid westward movement, exhibits high seismic activity[13].

The largest earthquake in history that happened close to project area was in Osmancık with 5.5 MAG (Ms) in 1942. In this earthquake, a total of 150 buildings were damaged and two people died. The project area is approximately 80 kilometers away from the Osmancık district, the epicenter of the earthquake. Therefore, considering the magnitude of the earthquake and its proximity to the project area, it is predicted that the active fault line in the region may produce an earthquake at a similar level. The earthquakes that have occurred on the North Anatolian Fault Line recently show that it is active now. The spatial distribution of earthquakes in history around the project area is shown in Figure 4-9. Project area is shown in Figure by black box. Figure 4-9 illustrates that the closest active fault to project area is Sungurlu Fault. There have been some earthquakes with a magnitude between 4 to 6.

[13] https://corum.afad.gov.tr/kurumlar/corum.afad/Haberler/2021/Corum_I%CC%87RAP_SON.pdf

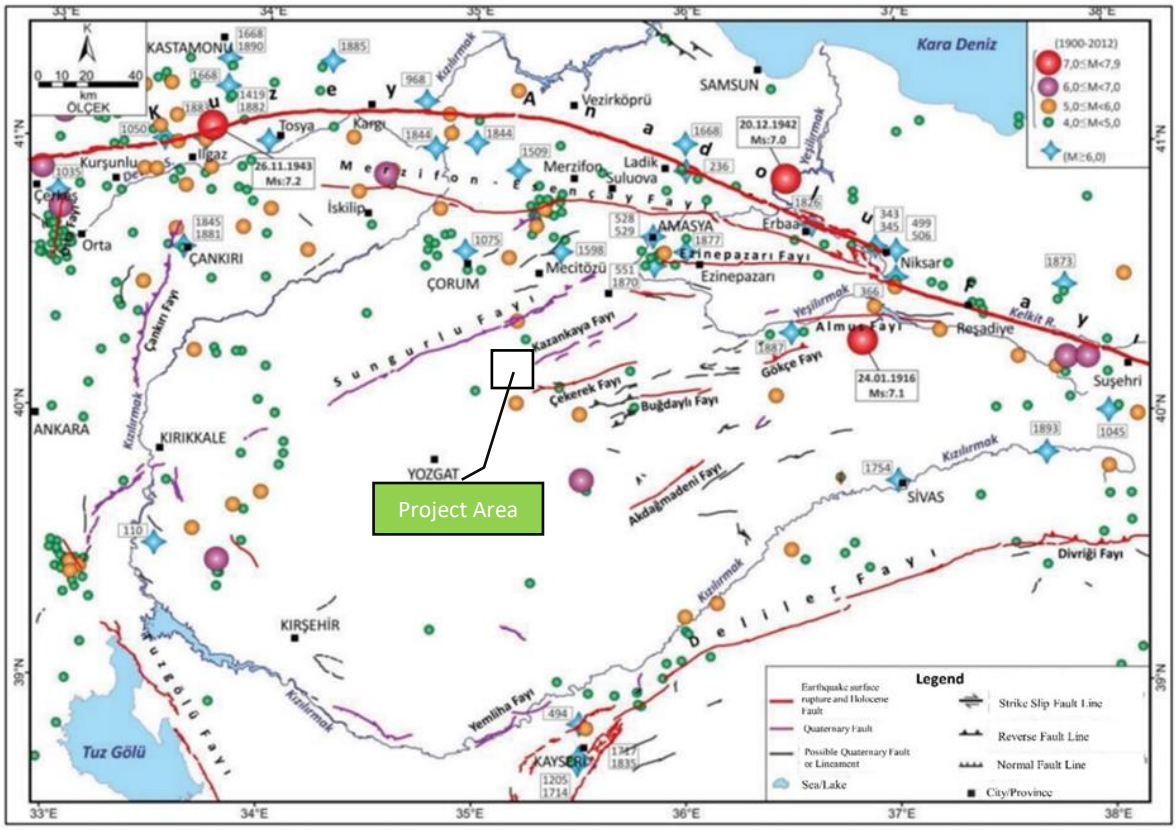

Figure 4-9 Active faults around Project Area[14]

The risk of earthquakes in the project area is depicted in Figure 4-10 and Figure 4-11. This figure, which supports the information above, shows that the project area is situated in regions with a medium-low earthquake risk.

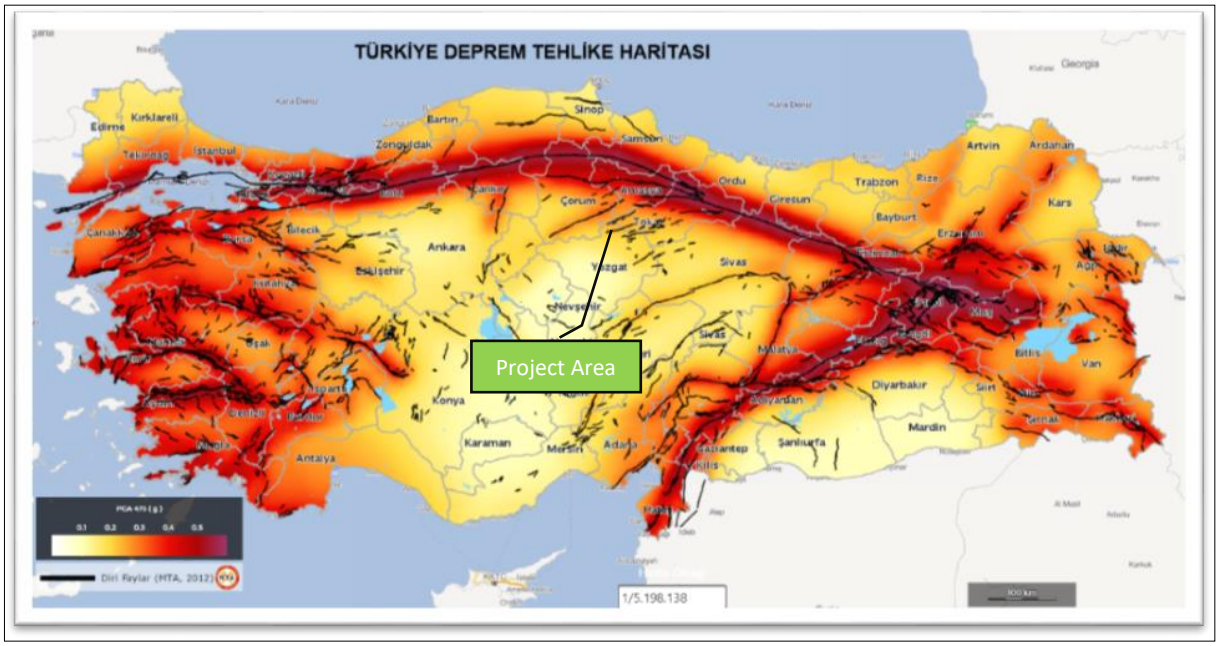

Figure 4-10 Distribution of Earthquake Risk in Türkiye

[14] http://www.koeri.boun.edu.tr/sismo/2/deprem-bilgileri/buyuk-depremler/

Figure 4-11 represents Maximum acceleration value of PGA 475(year) in project area. Maximum acceleration value is around 0.272 g which is classified as 3rd degree earthquake zone according to Regulation on Structures to Be Constructed in Disaster Areas.

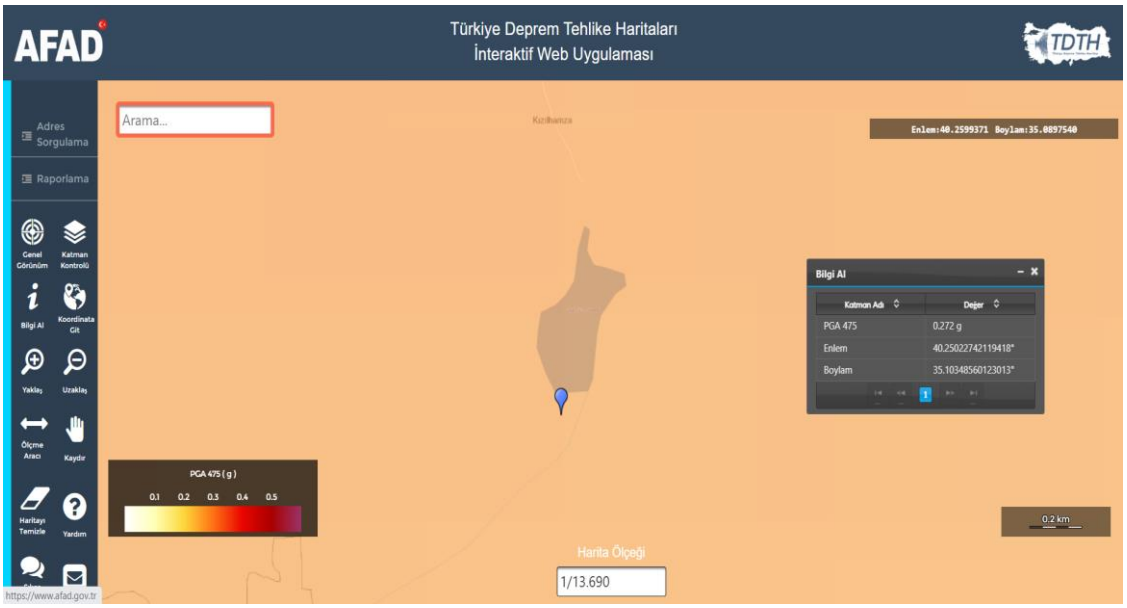

Figure 4-11 Earthquake Risk for Project Area

4.1.8. Other Natural Hazards Risk

Within the scope of the Preliminary Flood Risk Assessment studies carried out within the scope of the Yeşilırmak Basin Flood Management Plan, no Preliminary Flood Risk was detected in the project area. For this reason, flood risk has not been evaluated in the project area. The degree of slope in the project area is between 1-6%. Therefore, there is no landslide risk.

4.1.9. Air Quality

There are three ambient air quality measurement stations in Çorum. Çorum station is 36 km and Çorum Bahabey station is 34.6 km and Çorum Mimar Sinan station is 33 km away from project location[15]. The distances of the three air measurement stations close to the project area are also shown on the map below. The closest air quality station is Çorum Mimar Sinan station which is next to Çorum OIZ. Therefore, it can be expected that this station mainly measures industrial air pollution. The station belongs to Ministry of Environment, Urbanization, and Climate Change and began taking measurements in February 2015. In addition to air quality, meteorological data (air temperature, wind direction, wind speed, relative humidity, air pressure) are also measured at this station. Çorum Bahabey station is located in front of Fuarium Shopping Mall since June 2015. This station, which was established in a region where traffic is crowded, measure air pollution caused by traffic. The furthest station to the project area is Çorum. This station was established in 2004 to measure air pollution caused by heating. Figure 4-12 illustrates the locations of Air Quality Measurement Stations. Measurement stations and measured parameters are listed in Table 4-5.

Table 4-5 Characteristics of Air Quality Stations

Station	Coordinates	Station Type	Parameters	Date
Çorum	40º 33'N-34º 57' E	Heating	PM_{10}, SO_2	03.2005
Bahabey	40º 32'N-34º 58' E	Traffic	PM_{10}, $PM_{2.5}$, SO_2, NOx, NO, NO_2, O_3, CO	06.2015
Mimar Sinan	40º 31'N-34º 56' E	Industry	SO_2, NOx , NO, NO_2 , PM_{10}, $PM_{2.5}$	02.2015

[15] https://webdosya.csb.gov.tr/db/ced/icerikler/corum-ilcdr-2021-20220602094419.pdf

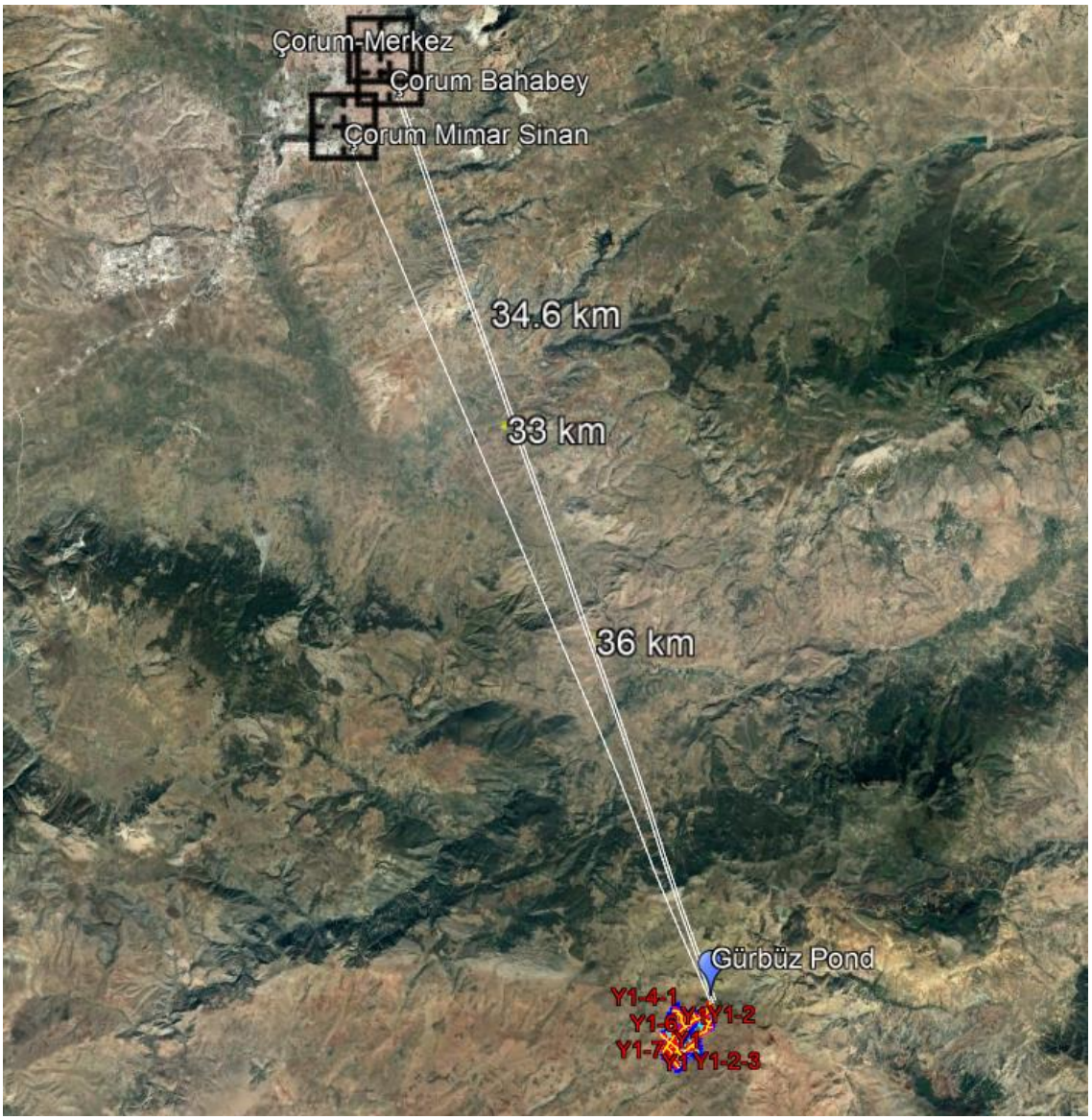

Figure 4-12 Locations of Air Pollution Measuring Devices in Çorum Province

The Air Quality Assessment and Management Regulation sets the following limit values for SO_2:

- 350 µg/m^3 per hour (not to be exceeded for more than 24 times in a year)
- 125 µg/m^3 per day (not to be exceeded for more than 3 times in a year)
- 20 µg/m^3 per year or winter season.

Table 4-6 shows the measurements taken in 2021 at the stations where SO_2 levels were monitored, along with the count of days when these measurements exceeded the limit value. However, the limit value for SO_2 was exceeded was not recorded in both stations.

Table 4-6 Monthly Average SO_2 Concentrations and Limit Exceed Days per Month

Months	Çorum (µg/m³)	Mimar Sinan (µg/m³)	Limit Exceed Days (SO_2)
Jan	11.83	20.02	0
Feb	9.82	26.6	0
Mar	11.03	31.13	0
Apr	10.36	26.66	0
May	10.91	21	0

Months	Çorum (µg/m³)	Mimar Sinan (µg/m³)	Limit Exceed Days (SO_2)
Jun	10.17	18.39	0
Jul	11.42	22.77	0
Aug	12.31	23.67	0
Sep	10.23	21.27	0
Oct	12.47	32.04	0
Nov	12.32	38.43	0
Dec	12.6	45.38	0
Average	11.24	27.28	0

In Table 4-6, there are no significant variations observed throughout the year at Çorum Station,, whereas Mimar Sinan Station experiences fluctuations in SO_2 concentration. As can be seen on Figure 4-13, the highest recorded SO_2 levels at Mimar Sinan Station are typically observed during the autumn and winter seasons. Based on the average monthly measurements of SO_2 in 2021, it was found that the concentration of SO_2 was higher in Mimar Sinan Station compared to Çorum Station. In December, both Çorum and Mimar Sinan stations experienced the highest levels of SO_2, whereas the lowest levels were recorded in February and June, respectively.

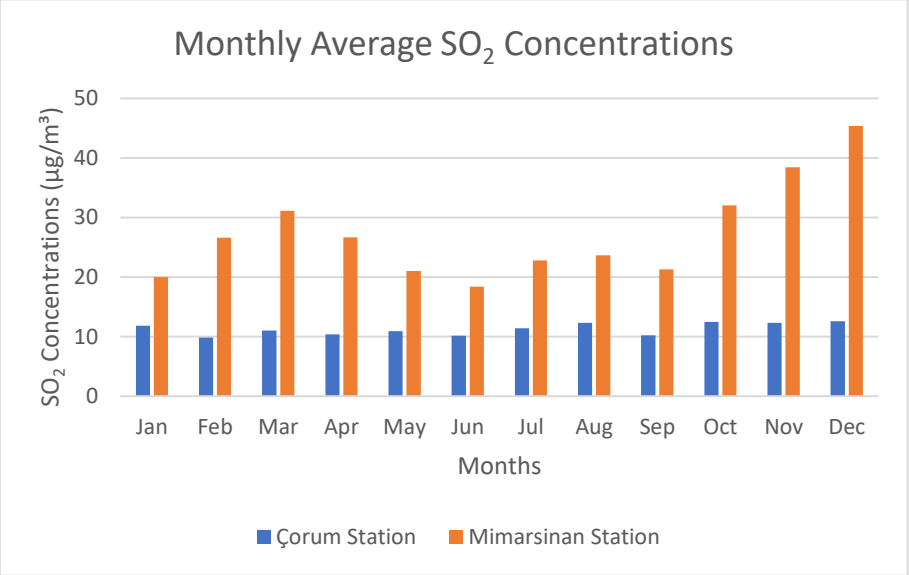

Figure 4-13 Monthly Average SO_2 Concentrations

The Table 4-7 below display the measurements taken in 2021 at the stations where PM_{10} levels were monitored, along with the count of days when these measurements exceeded the limit value (NDE).

Table 4-7 Monthly Average PM_{10} Concentrations and Cunt Days of the Exceeded Limit Values[16]

Months	Çorum		Mimar Sinan		Bahabey	
	Result (µg/m³)	NDE (day)	Result (µg/m³)	NDE (day)	Result (µg/m³)	NDE (day)
Jan	49.34	12	71.58	21	89.56	22
Feb	46.05	11	64.47	20	88.61	22
Mar	34.21	6	43.48	10	59.08	16
Apr	36.82	3	50.31	13	52.98	18
May	33.90	2	43.51	7	41.18	9

[16] https://webdosya.csb.gov.tr/db/ced/icerikler/corum-ilcdr-2021-20220602094419.pdf

Months	Çorum		Mimar Sinan		Bahabey	
	Result (µg/m³)	NDE (day)	Result (µg/m³)	NDE (day)	Result (µg/m³)	NDE (day)
Jun	34.77	1	33.28	1	34.68	3
Jul	40.83	4	34.03	2	38.70	4
Aug	38.76	3	37.84	5	45.95	9
Sep	31.10	0	27.86	1	38.66	2
Oct	39.56	7	52.73	14	67.32	18
Nov	64.28	19	79.15	23	129.04	25
Dec	52.37	15	60.42	17	98.33	23
Average	41.8	-	49.9	-	65.3	-

Note: According to the Regulation on Industrial Air Pollution Control, the 24-hour average of PM10 value is 50 µg/m3 and this value should not be exceeded more than 35 times in a year. The annual average PM10 concentration should be 40 µg/m3.

As for PM_{10}, November consistently exhibits the highest PM_{10} measurements across all monitoring stations, while the lowest readings were observed in September at the Çorum Station and Mimar Sinan Station, and in June at the Bahabey Station. Figure 4-14 illustrates that the PM_{10} measurements at the Bahabey Station mostly surpass those of the other stations in every month of the year.

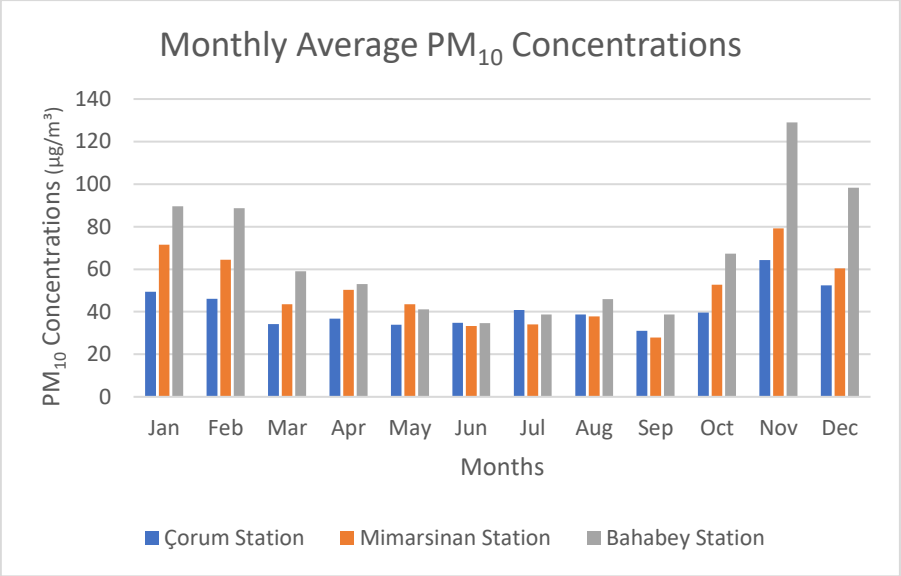

Figure 4-14 Monthly Average PM_{10} Concentrations

As can be seen from Figure 4-14, Bahabey Station consistently records the highest total numbers of limits exceed days, indicating poorer air quality compared to the other stations. On the other hand, Çorum Station has the lowest count of limit exceed days, suggesting relatively better air quality at that location. Furthermore, the data reveals a common pattern across all stations. November consistently exhibits the highest number of limits exceed days, indicating a period of elevated pollution levels. Conversely, September consistently has the lowest count of limit exceed days for all stations, indicating comparatively better air quality during that month. The summer months generally show a lower number of limits exceed days for all stations, indicating relatively cleaner air during this period. However, as the seasons transition to autumn and winter, the number of limits exceeding days increases significantly, highlighting a higher frequency of air pollution episodes during these colder months.

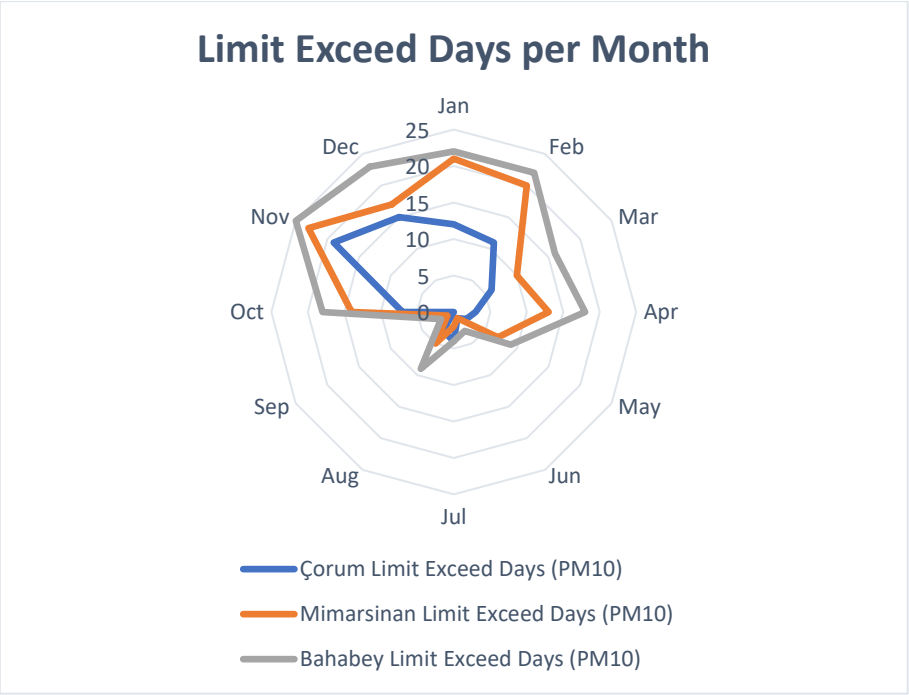

Figure 4-15 Limit Exceed Days per Month

The sources of air pollution in the city center can be listed as follows: fuels used for heating, exhaust gas emissions from motor vehicles, emissions from industry, meteorological factors, and the geographical structure (trigger factor). The city center of Çorum, situated in the Çorum Plain, is at an altitude of 800 meters and is surrounded by high hills at an altitude of 1,000 meters due to its topographic structure. During the winter months, air pollution increases due to these geographical features. The air pollution is further exacerbated by the presence of a valley within the city limits, which is highly susceptible to pollution, and the insufficient airflow. On days with high atmospheric pressure and calm, clear conditions, a layer of warm air forms above the cold air layer near the ground. This stable layer, known as the inversion layer, acts as a barrier and leads to the retention and accumulation of pollutants released from chimneys or vehicle exhaust under this layer. As a result of these meteorological conditions, particularly during the initial hours of heating, occasional increases in air pollution are observed in the city center when there is no airflow. Additionally, due to the bowl-like position of the province and frequent occurrence of inversion effects, pollution is often felt intensely, especially during the winter season. The increase in pollutants such as PM_{10}, SO_2, and NO_2 during the winter period is attributed to the higher use of fuel during this time.

The Project was developed for irrigation of agricultural lands between Kızılhamza, Sarısüleyman and Soğucak villages. The Project area is a rural area and there are no significant dust sources such as mining activities, large construction activities, etc. No dust measurements have been made in the project area, and dust emissions are currently generated mainly from dry farming activities and the movement of agricultural vehicles in certain seasons.

Additionally, it is determined that the community in the Kızılhamza has complaints about dust pollution within their villages. Currently, there is no asphalt road to reach the village. The roads used to reach the village are the main cause of dust emission. In addition, communities in Sarısüleyman, Kızılhamza and Soğucak villages have no complaints regarding dust pollution.

4.1.10. Water Quality

The Project area is located at the lower elevations of Kızılhamza Pond, which is located on Çınar Creek as shown in Figure 4-1. The closest streams to the project area are Büyüköz Creek and Elmaağacı Creek which are around 9.6 km, and 1.3 km away from the project area (Figure 4-2). The white lines in Figure

4-2show the rivers closest to the project area. Çınar Creek passes through the location of the pipe systems to be constructed under the Project. None of those streams are considered as sensitive water body according to "Sensitive Water Bodies and Areas Affecting these Bodies Regulation on Determination and Improvement of Water Quality" regulation.

According to the Regulation on Identification of Sensitive Water Bodies and the Areas Affecting these Bodies and Improvement of Water Quality (Official Gazette No.29927 Date 23.12.2016), some areas are considered as urban and nitrate sensitive areas. Figure 4-16 illustrates the nitrate sensitive areas around the project area. Project area is not in the nitrate sensitive area. However, the borders of nitrate sensitive areas are close to the project area. Nitrate sensitive areas are defined in the regulation as: drainage areas containing agricultural and non-agricultural lands where nitrate occurs, affecting natural freshwater lakes, other freshwater resources, estuaries, and coastal waters, which are determined to be eutrophic or may become eutrophic soon, if necessary, measures are not taken. According to regulation, good agricultural practices should be implemented to prevent agricultural pollution in nitrate-sensitive areas. The implementation of good agricultural practices is considered in Chapter 6, as the project area is adjacent to nitrate sensitive area.

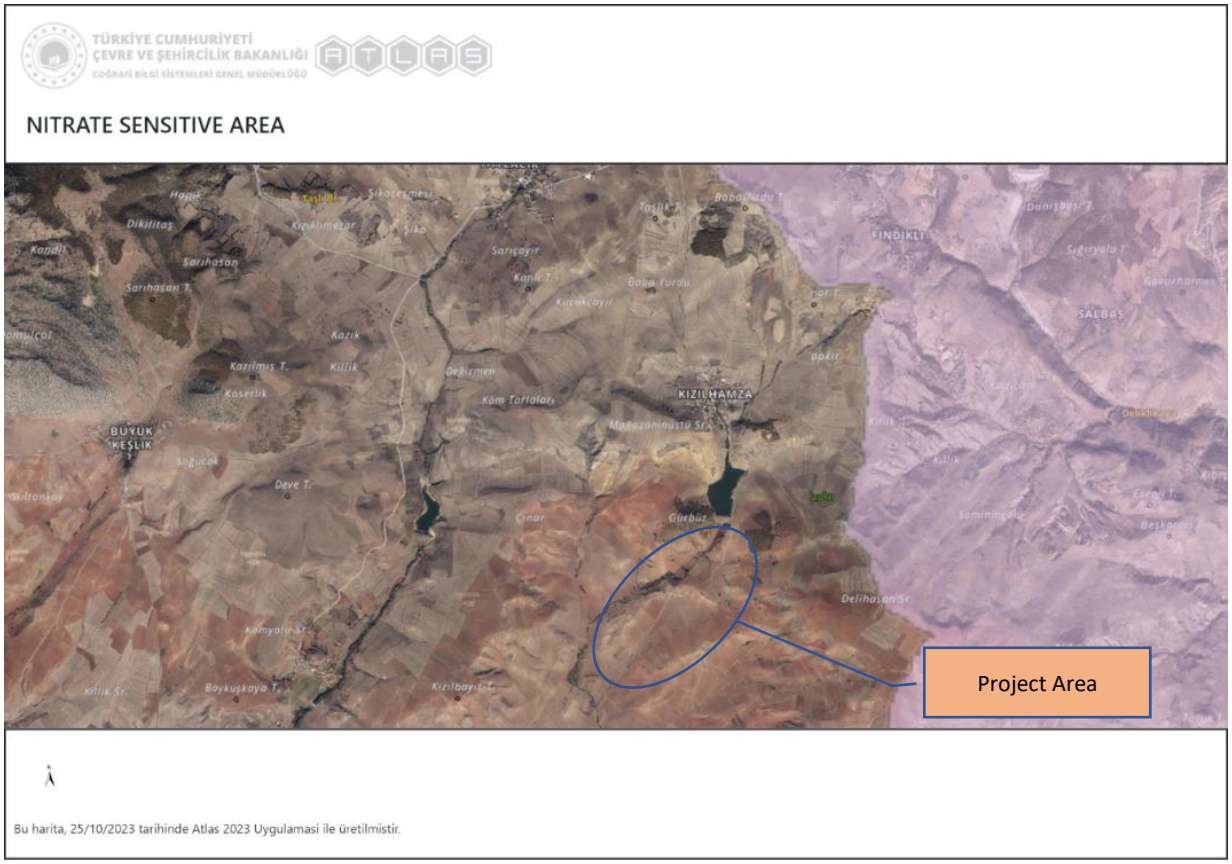

Figure 4-16 Nitrate Sensitive Areas

Figure 4-17 illustrates the urban sensitive areas around the project area. Project area is located in the urban sensitive area according to "Sensitive Water Masses and Areas Affecting These Masses Regulation on Determination and Improvement of Water Quality" regulation. Urban sensitive areas are defined in the regulation as: the drainage area of a sensitive water body and the urban wastewater drainage areas located upstream of this water body, which create pressure on the sensitive water body and cause water quality targets not to be met. According to the regulation, projects should be carried out to reduce the nutrient load resulting from industrial facilities in urban sensitive areas.

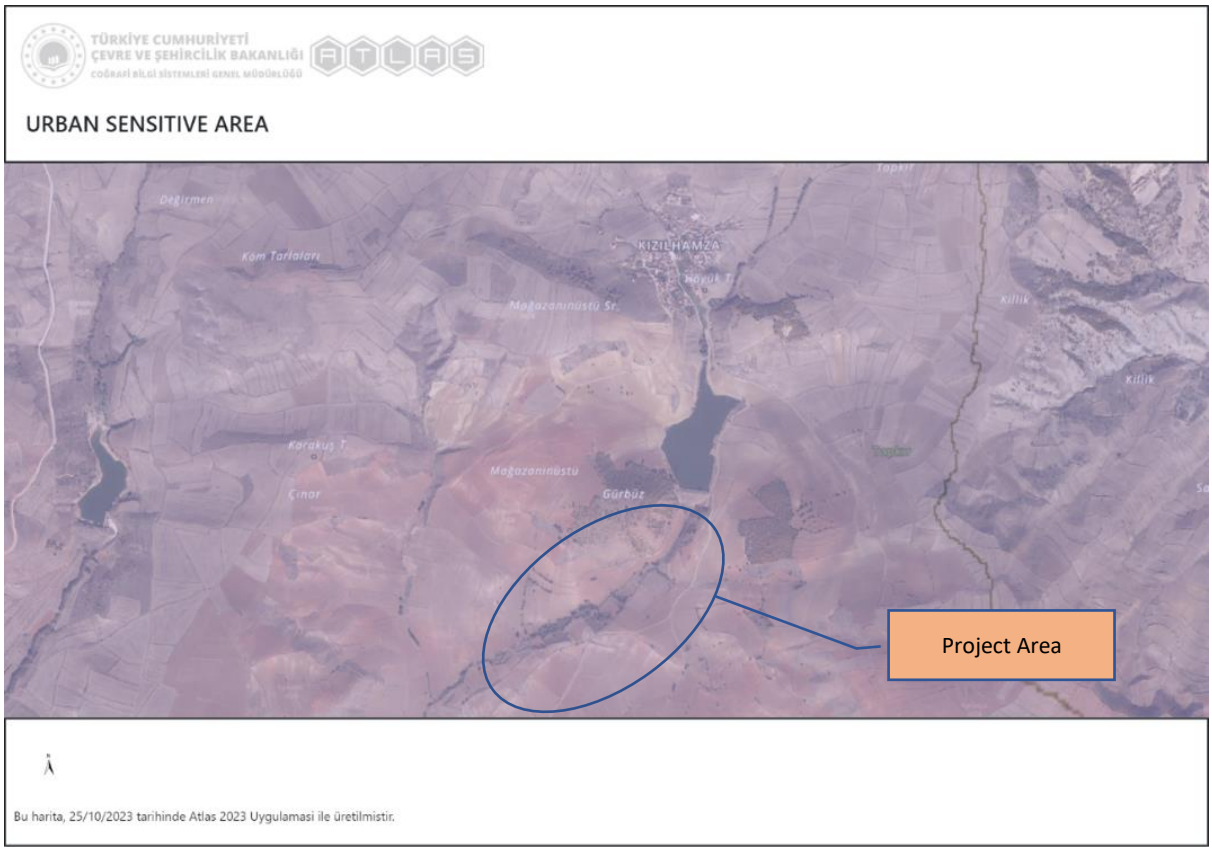

Figure 4-17 Urban Sensitive Area

The region where the project will be implemented is currently an agricultural landscape, and the project area is modified habitat.

4.1.11. Noise

The noise complaint, inspection, and evaluation data collected in 2021 were utilized to establish the baseline noise pollution level. One of the primary concerns expressed in the complaints pertains to the noise generated by weddings and entertainment activities held on the streets within Çorum's city center, particularly during the summer months. Additionally, noise sources such as cooling fans and dough mixers used in businesses operating below residential areas have also received complaints.

Complaints lodged with the Provincial Directorate are thoroughly assessed through on-site measurements and analysis, leading to the implementation of appropriate administrative procedures. In 2021, a total of 37 complaints were registered, and each complaint underwent an audit process. The majority (45%) of these complaints were related to entertainment activities. Only 5% of the noise complaints are caused from building site. The Project area is a rural area and there are no significant noise sources such as industrial activities or traffic other than agricultural activities. In addition, communities in Sarısüleyman, Kızılhamza and Soğucak villages have no complaints regarding noise pollution.

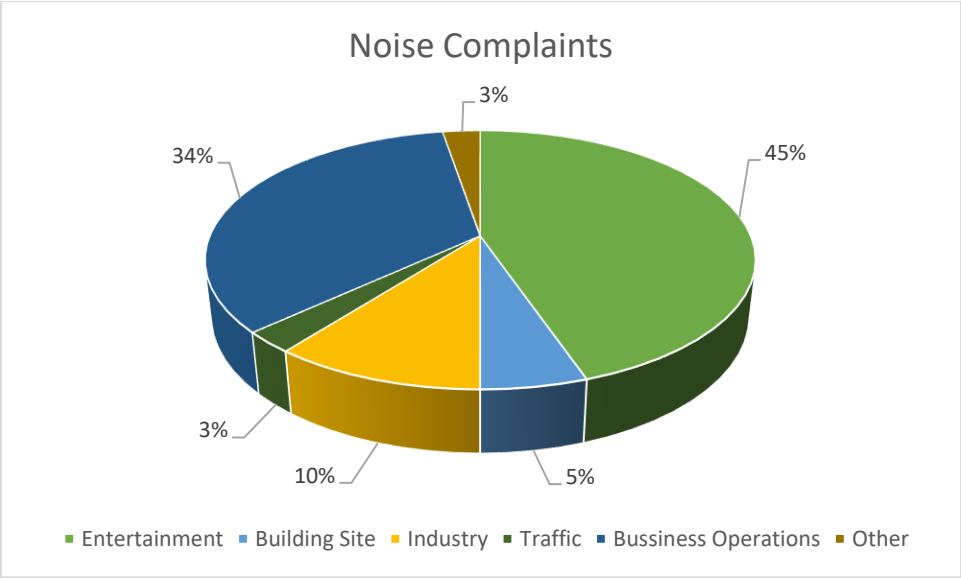

Figure 4-18 Distribution of Complaints with Noise Sources

4.1.12. Soil Properties and Soil Quality

It is determined that the project area falls into the class of brown and chestnut-colored steppe soil according to Soil Map of Türkiye. This type of soil has been found in parts of Southeastern Anatolia that receive high rainfall and in a large part of Eastern Anatolia. Annual rainfall in these areas varies between 400 and 600 mm. The vegetation is steppe. It is slightly rich in hummus. It is suitable for grain farming and small livestock farming.

Soil texture class in the project area is Silty Clay Clay Loam. The soils of the project area are from the Alluvial Large Soil group and consist of in situ formed soils with medium deep profile, medium texture, medium organic matter, and productive soils. According to the information given in the "Ortaköy Kızılhamza Pond Project Report" prepared by DSİ, the depth of silty-clay loam soil in the project area is 60-90 cm[17].

No problems with soil quality were recorded during the field visits to the project area and in the documents related to the project area. In addition, there is no industrial activities, mining activities, etc, in the project area that might have an impact on the soil quality. However, mitigation measures to be prevented from possible soil pollution due to project activities are listed in Chapter 6.

4.1.13. Existing Environmental Infrastructures

During the construction phase domestic wastewater will be generated by the employees. There is no sewerage network near the Project area, which eventually connects to a wastewater treatment plant. The domestic wastewater will be collected with a sealed septic tank and transferred to the Çorum Municipality's WWTP located approximately 40 km north of the project area by sewage truck (Please see Annex-9). In case Çorum Municipality's WWTP is not suitable for wastewater disposal, Sungurlu Municipality's WWTP located approximately 80 km west of the project area and Yozgat Municipality's WWTP located approximately 90 km away can be considered as alternatives. According to the information received from the official website of the General Directorate of the EIA Permit and Inspection, the aforementioned wastewater treatment plants have Environmental Permit Certificates for wastewater discharge [(18)]. A contract or protocol will be signed by the contractor before the starting of the construction works with the relevant municipalities regarding wastewater acceptance.

[17] *from the pre-feasibility report of the project (Çorum Ortaköy Kızılhamza Köyü Göleti Sulama Projesi Ön Raporu)*
[18] https://eizin.cevre.gov.tr/Rapor/BelgeArama.aspx

Wastewater to be generated within the scope of the project will not be given to facilities without an environmental permit for wastewater discharge, and will not be discharged to the soil, surface water, lake, or any other receiving bodies in any way without obtaining an environmental permit for wastewater discharge.

Although the excavation material from the trench is planned to be used as bedding material under the pipe, if the subsoil is not technically suitable, material will be obtained from the quarry sites closest to the project area. Likewise, material will also be procured from quarry sites to be laid on the Operation and Maintenance Roads and the camp site. The material that will be needed in this context will be supplied by the Contractor in accordance with the contract to be made with the mining sites having Environmental Permit Certificate. Materials will not be supplied from quarries that have not completed their obligations under the provisions of the EIA Regulation and Environmental Permit and License Regulation.

The domestic wastes generated during the construction phase will be handed over to the 2nd Class Landfill Facility operated by Çorum Municipalities Environmental Union as part of an agreement to be signed by the contractor during the pre-construction period. The 2nd Class Landfill Facility has Environmental Permit and Licence Certificate on Municipal Wastes and Non-Hazardous Waste Landfill, Biodegradable Waste Processing valid until 02.01.2025. It is the responsibility of the Contractor to transfer other types of wastes (hazardous wastes, waste oils, waste tires, etc.) that will arise during the construction activities of the Project to the Environmental Permit and License holder organizations that are authorized to dispose of the relevant type of waste in and around Çorum province.

During the operation phase of the project the wastes that will be generated from maintenance and repair activities should also be sent to the permit and license holder organizations in the region by DSİ 5th Regional Directorate.

4.2. Social Baseline

4.2.1. Population

The population of Çorum province is 524,130 million recorded in 2022. In the province of Çorum, there are 260,355 men and 263,775 women. As seen in Table 4-8, the number of women living in the city has always been more than the number of men. In percentage: the ratios are 50.32 female and 49.67 male. The population density of Çorum is 41/km2. The population change in Çorum is demonstrated both in Table 4-8 and Figure 4-19.

Table 4-8 Population of Çorum Province over the Years – TURKSTAT, 2023

Years	Population	Male Population	Female Population
2022	524,130	260,355	263,775
2021	526,282	261,366	264,916
2020	530,126	262,590	267,536
2019	530,864	263,354	267,510
2018	536,483	265,678	270,805
2017	528,422	261,605	266,817
2016	527,863	261,606	266,257
2015	525,180	259,993	265,187
2014	527,220	261,187	266,033
2013	532,080	263,906	268,174
2012	529,975	262,155	267,820
2011	534,578	265,163	269,415
2010	535,405	264,759	270,646
2009	540,704	268,501	272,203
2008	545,444	270,107	275,337

Years	Population	Male Population	Female Population
2007	549,828	271,942	277,886

When Figure 4-19 is examined, it is clear that the population of Çorum has declined over time. Male and Female populations have also declined between 2007-2022.

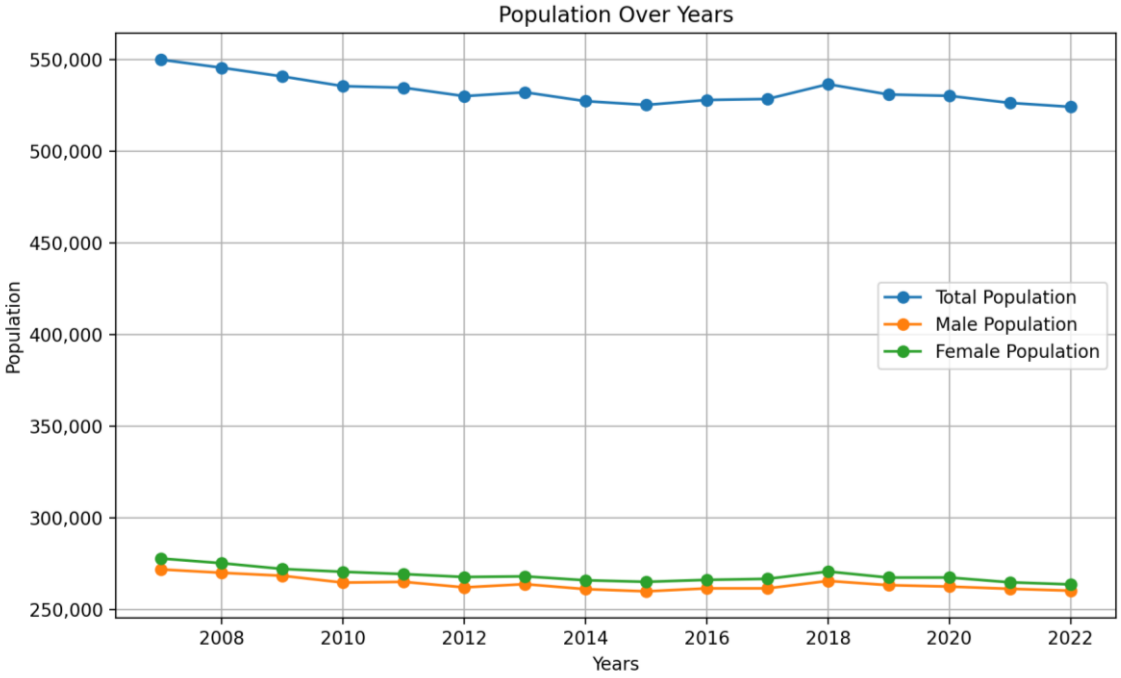

Figure 4-19 Population Change in Çorum

The project's location, Kızılhamza village, is in the Ortaköy district of Çorum. Ortaköy is among the districts in Çorum province with the lowest population, as can be observed in the population evaluation map below Figure 4-21. Total population of Ortaköy is 6,264 with 3,129 male and 3,315 female. Population of Ortaköy has decreased between 2007-2022 with approximately 35%. Similarly, the male population has decreased by approximately 36%, while the female population has decreased by about 34%

Table 4-9 Population of Ortaköy over the years-TURKSAT 2023

Years	Population	Male Population	Female Population
2022	6,264	3,129	3,135
2021	6,425	3,210	3,215
2020	6,691	3,356	3,335
2019	7,069	3,565	3,504
2018	8,696	4,374	4,322
2017	6,848	3,396	3,452
2016	7,537	3,794	3,743
2015	8,371	4,172	4,199
2014	8,155	4,170	3,985
2013	8,430	4,233	4,197
2012	8,090	4,028	4,062
2011	8,124	4,051	4,073
2010	8,646	4,298	4,348
2009	9,491	4,786	4,705
2008	10,725	5,453	5,272

Years	Population	Male Population	Female Population
2007	9,711	4,921	4,790

Figure 4-20 indicates that male population is larger than female population almost every year except 2021, 2017, 2015, 2012, and 2012. Both portion of population shows decreasing trend.

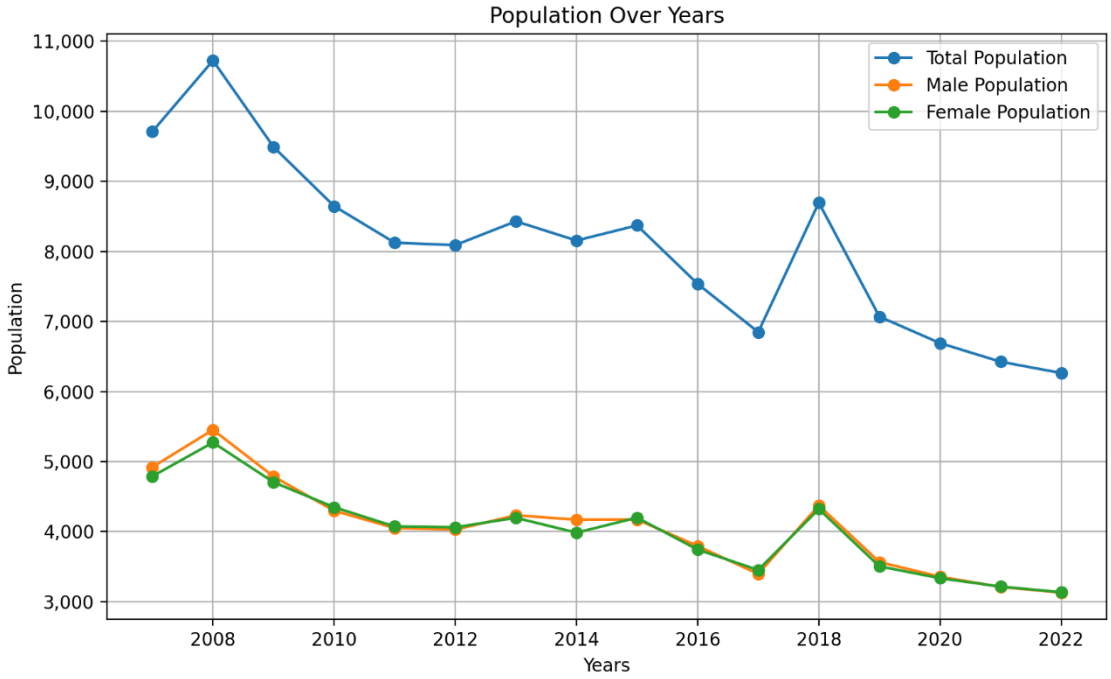

Figure 4-20 Population Change in Ortaköy

The location of the Project, Kizilhamza village, is in Ortakoy district of Corum. However, since Alaca district is also located in the project area, population assessment has been made comprehensively. The population of Alaca district is more than the population of Ortaköy district. While the total population of Alaca is 29.952 according to the census of 2023, the female population (15.082) is more than the male population (14.870).

Table 4-10 Population of Alaca over the years-TURKSAT 2023

Years	Population	Male Population	Female Population
2023	**29,952**	14,870	15,082
2022	**29,929**	14,893	15,036
2021	**30,592**	15,278	15,314
2020	**31,264**	15,559	15,705
2019	**31,121**	15,522	15,599
2018	**31,460**	15,669	15,791
2017	**31,594**	15,738	15,856
2016	**32,017**	16,000	16,017
2015	**32,669**	16,311	16,358
2014	**33,468**	16,710	16,758
2013	**34,677**	17,355	17,322
2012	**35,324**	17,578	17,746
2011	**36,840**	18,462	18,378
2010	**37,985**	18,996	18,989
2009	**38,628**	19,224	19,404
2008	**39,738**	19,785	19,953

Years	Population	Male Population	Female Population
2023	**29,952**	14,870	15,082
2007	**40,770**	20,257	20,513

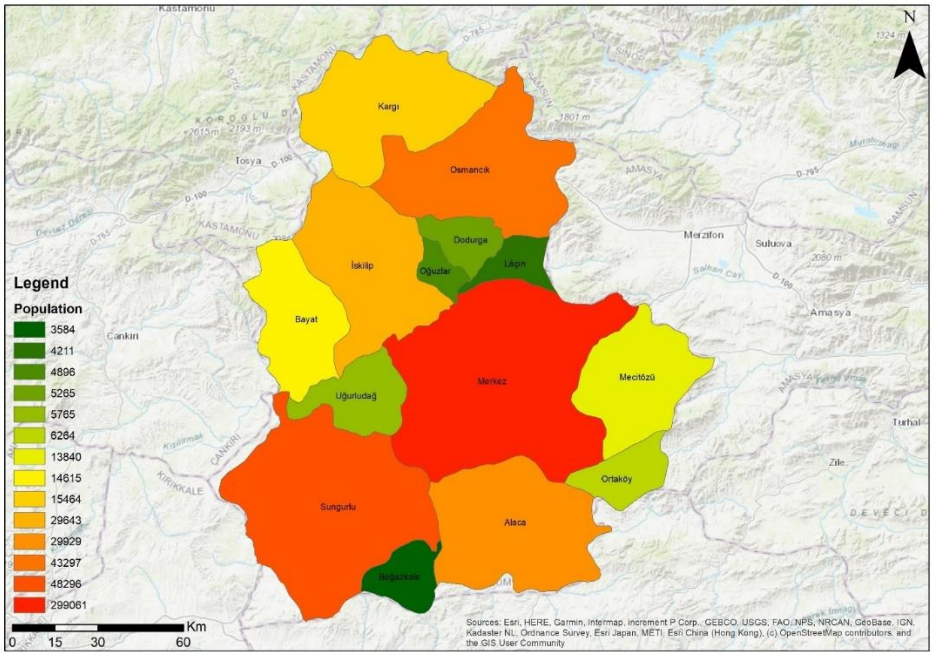

Figure 4-21 Spatial Distribution of Population among Çorum Province

The population is Kızılhamza is 91 with 50 male and 41 female. The population change of Kızılhamza is illustrated in Figure and Table below.

Table 4-11 Population of Kızılhamza over the years-TURKSAT 2023

Years	Population	Male Population	Female Population
2022	91	50	41
2021	92	48	44
2020	97	50	47
2019	116	59	57
2018	171	85	86
2017	59	28	31
2016	61	29	32
2015	77	39	38
2014	69	37	32
2013	88	48	40
2012	84	47	37
2011	95	54	41
2010	118	67	51
2009	129	73	56
2008	141	80	61
2007	131	76	55

Figure 4-22 illustrates a decline in the population of Kızılhamza Village between 2007 and 2017. However, there is a sudden increase in population in 2018. Subsequently, the population began to decrease again between 2018 and 2022. The male population is larger compared to the female

population until 2016. After 2016, the female population becomes larger for three years. Then, between 2019 and 2022, the male population is larger again.

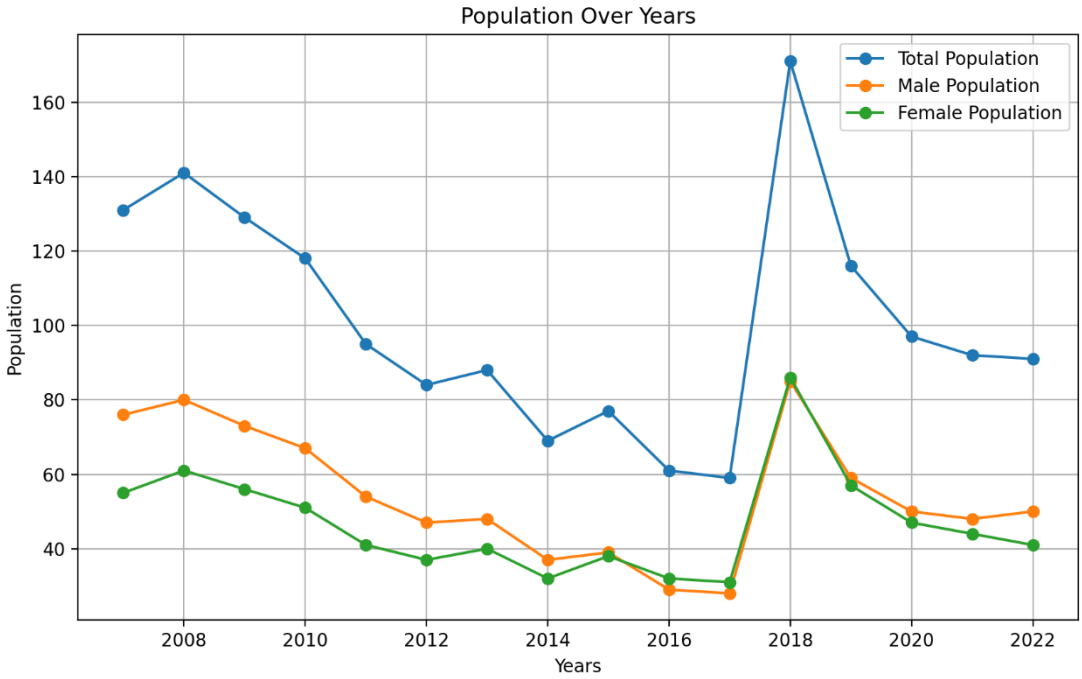

Figure 4-22 Population Change in Kızılhamza

The population is Sarısüleyman is 448 with 202 male and 246 female. The population change of Sarısüleyman is illustrated in Table 4-12.

Table 4-12 Population of Sarısüleyman over the years-TURKSAT 2023

Years	Population	Male Population	Female Population
2023	448	202	246
2022	481	217	264
2021	508	233	275
2020	545	254	291
2019	574	265	309
2018	576	264	312
2017	611	278	333
2016	626	283	343
2015	636	291	345
2014	675	311	364
2013	700	327	373
2012	731	342	389
2011	782	370	412
2010	857	406	451
2009	884	423	461
2008	907	447	472

Project affects parcels in Kızılhamza and Sarısüleyman settlements. A total of 252 parcels are affected by the project, 246 of which are private parcels (67 parcels in Kızılhamza, 178 parcels in Sarısüleyman). There are a total of 424 PAPs, 131 in Kızılhamza and 296 in Sarısüleyman.

Table 4-13 Population Affected by the Project

Village	Number of affected parcels	Number of affected private parcels	Number of PAPs (owners of the lands needed)
Kızılhamza	70	68	131
Sarısüleyman	182	178	296
Total	**252**	**246**	**427**

4.2.2. Education in the region

Figure 4-23 shows that majority of the population in Ortaköy have completed primary, middle, and high school (72.8%). Only 8.3 % of the population have completed Bachelor's and Graduate degree studies.

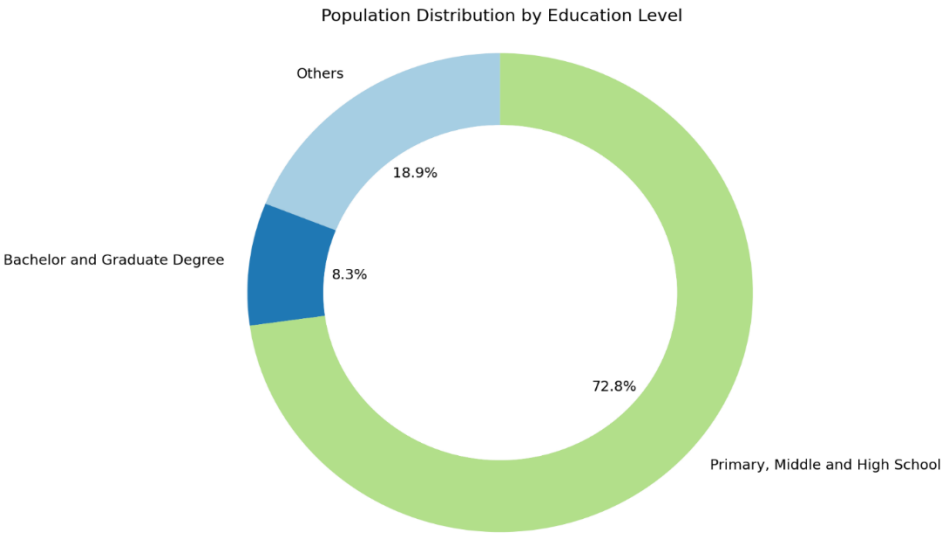

Figure 4-23 Education in Ortaköy District

4.2.3. Public Health in the Region

Within the borders of the Çorum, there are 9 state hospitals, 1 oral and dental health center, 5 community health centers, 5 integrated district hospitals, and 2 private hospitals. The closest hospital to the project area is Ortaköy Integrated District Hospital, which is 12.8 km. It is determined that the community in the Kızılhamza, Sarısüleyman, and Soğucak villages uses Ortaköy Integrated District Hospital; and Çorum Alaca Hospital as a primary healthcare unit, which is 20.7 km. There is no health unit in the Kızılhamza village. Distance between nearest health units and project areas are given in **Hata! Başvuru kaynağı bulunamadı.** and Figure 4-24.

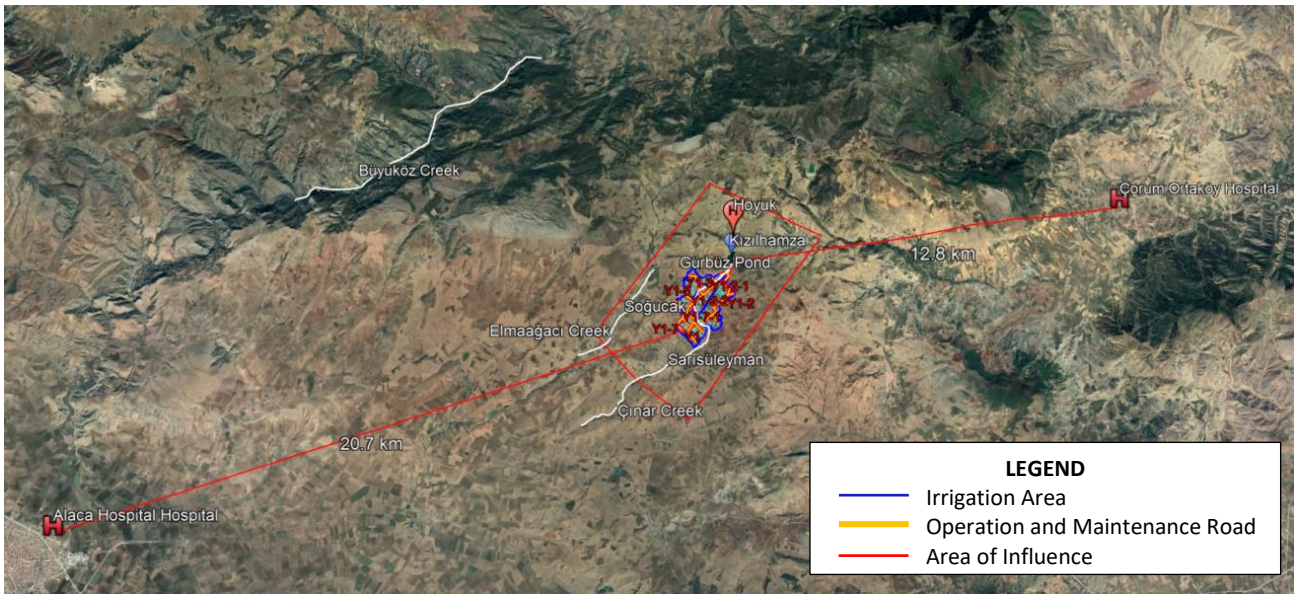

Figure 4-24 Distance between Project Area and Nearest Health Unit

4.2.4. Economy in the region

The main source of income of Kızılhamza and Sarısüleyman village is agricultural activities. In the in-depth interview with the mukhtars of Kızılhamza and Sarısüleyman villages, the age distribution of the population in the settlements was also asked. According to the information received from the mukhtars, a significant portion of the population is over the age of 65. Therefore, livestock activities are not conducted in the Kızılhamza and Sarısüleyman villages. The main agricultural products grown in villages are wheat, cereals, and barley. Farming practices are conducted without irrigation. It has been indicated that with the implementation of irrigation, the production of high-value economic crops such as sugar beets and silage corn can be started.

4.2.5. Religious Facilities

The closest religious structures/places are Sarısüleyman Mosque located 800 m away and Djemevi located in 1.11 km away.(Figure 4-25).

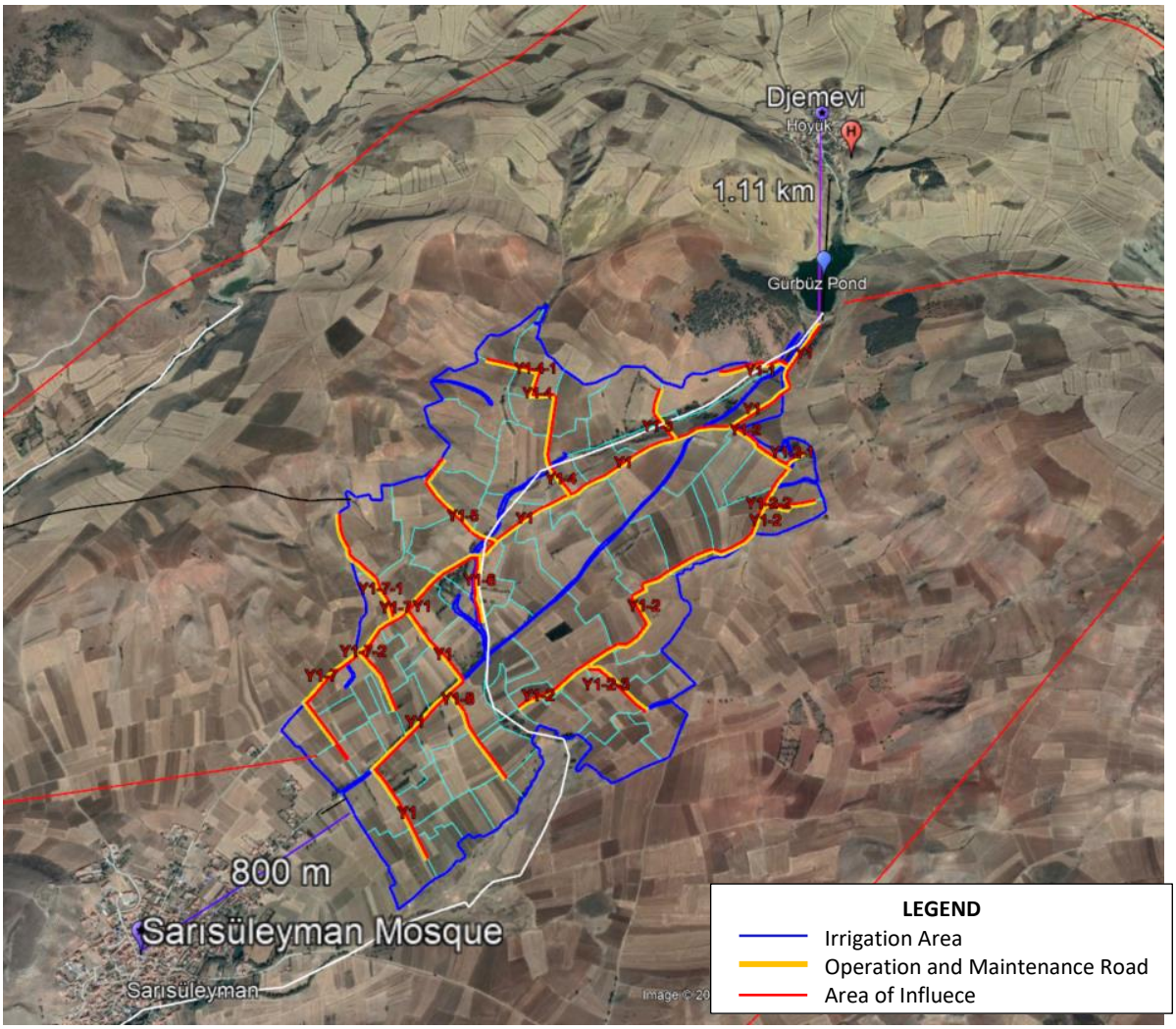

Figure 4-25 Religious Places/Structures

4.2.6. Cultural Heritage

The opinion of Ankara Cultural Heritage Preservation Regional Board Directorate regarding whether there is an archaeological site within the project area is included in Annex 1. As stated in the official letter, within the area to be irrigated within the scope of the irrigation project, there is Delihasan (Sarısüleyman) Höyük, registered as a 1st Degree Archaeological Site. In addition, the presence of an archaeological site in the region was identified during the field study. It was assessed that there are no cultural assets that needed to be protected within the scope of Law No. 2863 in the archive records, and that there will be no harm in implementing the project outside the boundaries of the protected area. The location of the cultural heritage in question is shown in Figure 4-26. The project area and the protected area boundaries are far from each other. No activities related to the sub-project will be carried out within the boundaries of the protection area.

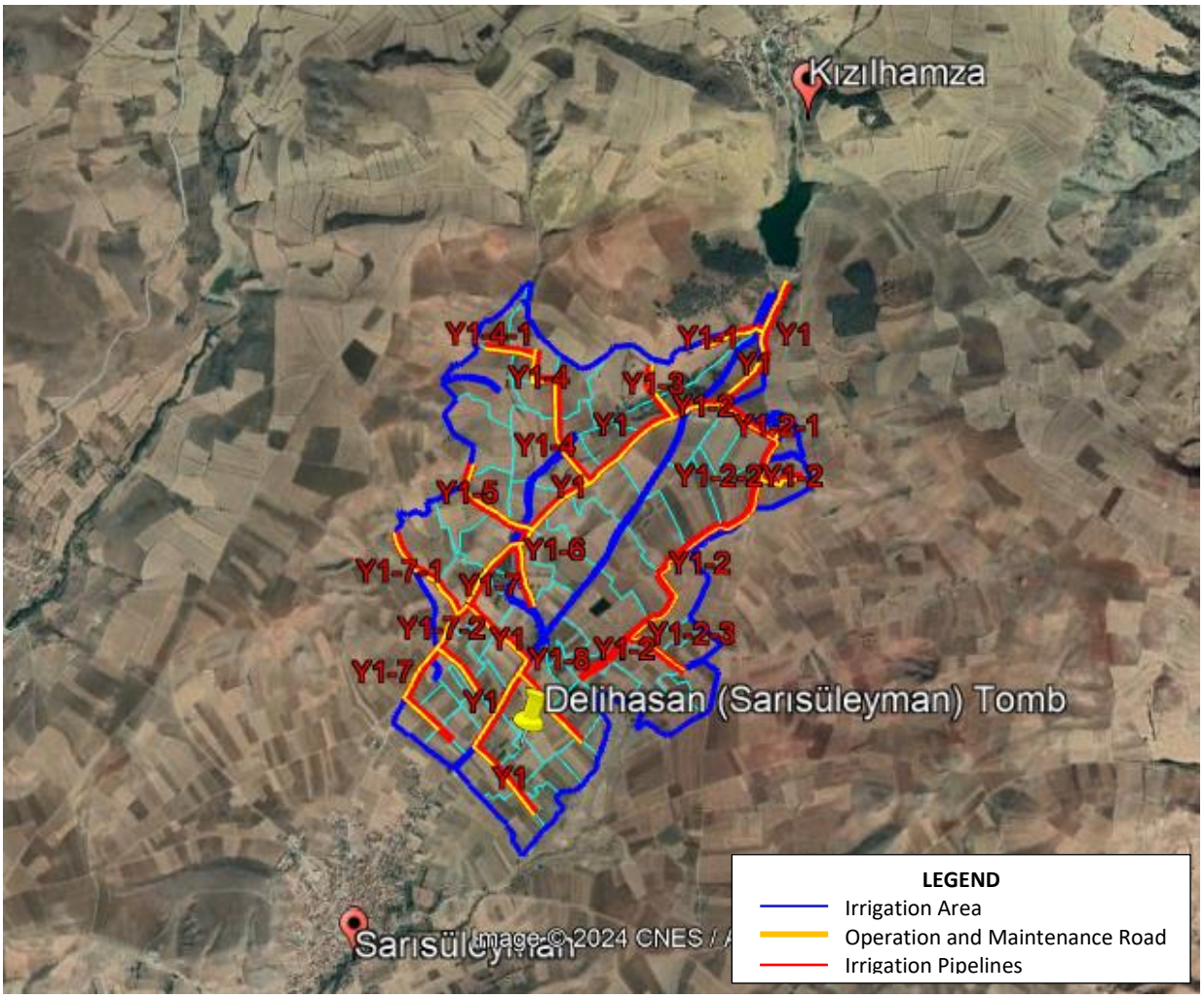

Figure 4-26 Cultural Heritage Site

4.2.7. Socio-Economic Development in the region

Each province and district in Türkiye was evaluated by comparing their socioeconomic development. Çorum province is ranked 50th with a score of -0.262 in Türkiye in terms of the Socioeconomic Development Index (SEDI) (Ministry of Industry and Technology, 2022). SEDI scores for each province are listed in Table 4-14. The spatial distribution of SEDI scores in the provinces of Çorum is demonstrated in Figure 4-27. Both Table 4-14 and Figure 4-27 indicate that Merkez has the highest SEDI scores among the provinces in Çorum which means that the population in Merkez province is more socio-economically developed. Ortaköy district, where the project area is located, has -0.697 SEGE score. Ortaköy has the 9th best SEDI score out of 15 districts. This demonstrates how the residents around the project area are not able to benefit from social and economic development.

Table 4-14 2022 SEDI Scores for the Provinces of Çorum

District	Ranking	Score	Stage
Merkez	129	1.026	2
Osmancık	430	-0.194	4
Sungurlu	463	-0.243	4
Alaca	516	-0.339	4
İskilip	627	-0.492	4
Dodurga	639	-0.511	5
Kargı	700	-0.583	5

District	Ranking	Score	Stage
Boğazkale	717	-0.604	5
Ortaköy	780	-0.697	5
Mecitözü	793	-0.719	5
Laçin	830	-0.789	5
Oğuzlar	850	-0.820	5
Bayat	874	-0.868	6
Uğurludağ	887	-0.923	6

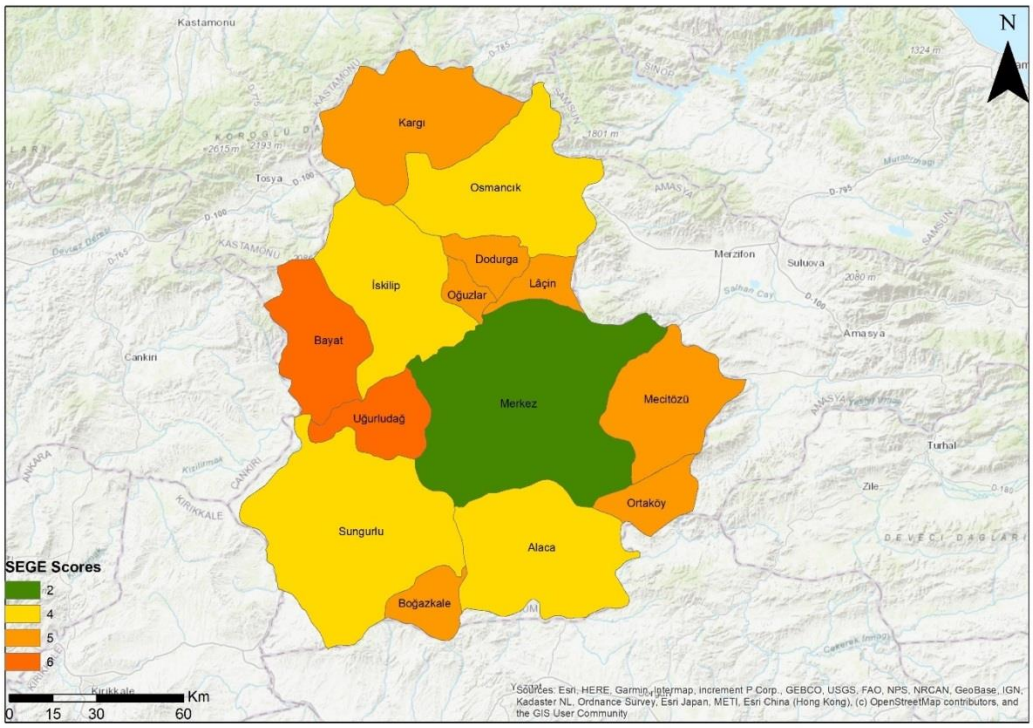

Figure 4-27 Socio-Economic Development of Districts [19]in Çorum Province

A community level survey was conducted with the headmen of Kızılhamza and Sarısüleyman. During the interviews with the headmen of the settlements, it was revealed that the main sources of income of the settlements are agriculture (vegetable production), animal husbandry (animal production), retirement, paid work salary, workplace and self-employment income. According to the information received from the headmen, it was learned that the main sources of income of the households are social supports provided by institutions (disabled pension, widow's pension, municipality, district governor's aid, etc.), student scholarship and rental income.

[19] *Legend for Figure 4-27: 1st development level refers to the most developed cities; 6th development level refers to the least developed cities. The level of development decreases from 1st development level to 6th development level.*

5. IDENTIFICATION OF ANTICIPATED ADVERSE ENVIRONMENTAL AND SOCIAL IMPACTS

5.1. Area of Influence

Within the scope of Çorum Kızılhamza Irrigation Project, the construction of Kızılhamza Irrigation System involves excavation, pipe installation, and soil filling. After the completion of excavation and restoration, no significant environmental risks or impacts are expected The environmental impacts of the operation phase are very limited and only potential risks such as chemical spills during maintenance/repair activities, wastes generated during these operations and temporary dust emissions from the movement of maintenance/repair vehicles have been considered. The mitigation measures to reduce the impacts identified in these sections are explained in detail in Chapter 6. All impacts and mitigation measures are considered to address any effect on project area and nearest sensitive receptors. The project impact area is defined as a polygon, 2 km away from the endpoints of the project area in terms of dust emissions within the framework of the provisions of the national Industrial Air Pollution Control Regulation. The Area of Influence (AoI) determined by considering the geographical, geological and hydrogeological structure of the region will cover both the impacts on surface waters and groundwater and the impacts of the project on the local people who are likely to be affected in the first stage. The project area, AoI and the nearest sensitive receptors are represented in Figure 5-1. Sarısüleyman, Soğucak, and Kızılhamza villages are within the AoI of the project.

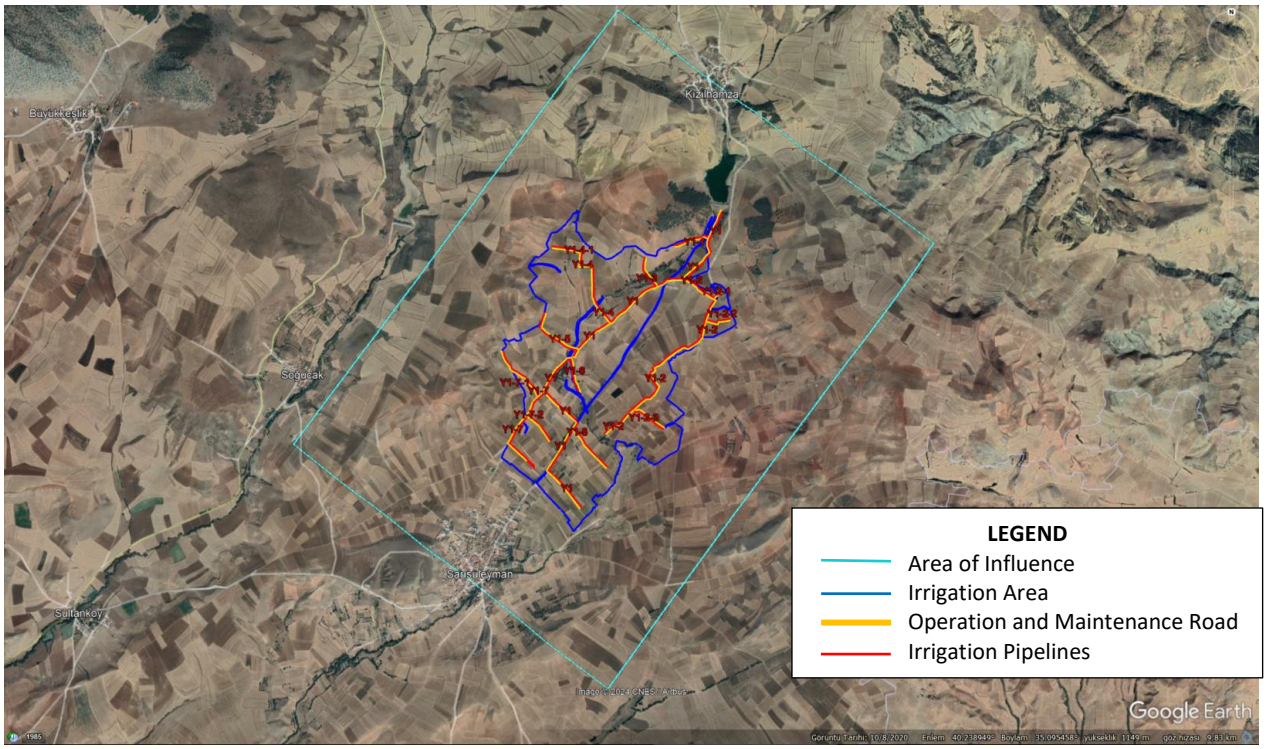

Figure 5-1 Area of Influence

5.2. Nearest Sensitive Receptors

Nearest sensitive receptors are Sarısüleyman, Kızılhamza, and Soğucak villages as they are represented in Figure 5-1.

Table 5-1 Nearest Sensitive Receptors

Nearest Sensitive Receptors	Distance
Sarısüleyman	170 m

Nearest Sensitive Receptors	Distance
Kızılhamza	780 m
Soğucak	1.57 km

Figure 5-2 and Table 5-1 illustrate that the closest sensitive receptor is Sarısüleyman village which is approximately 170 meters away from the project area.

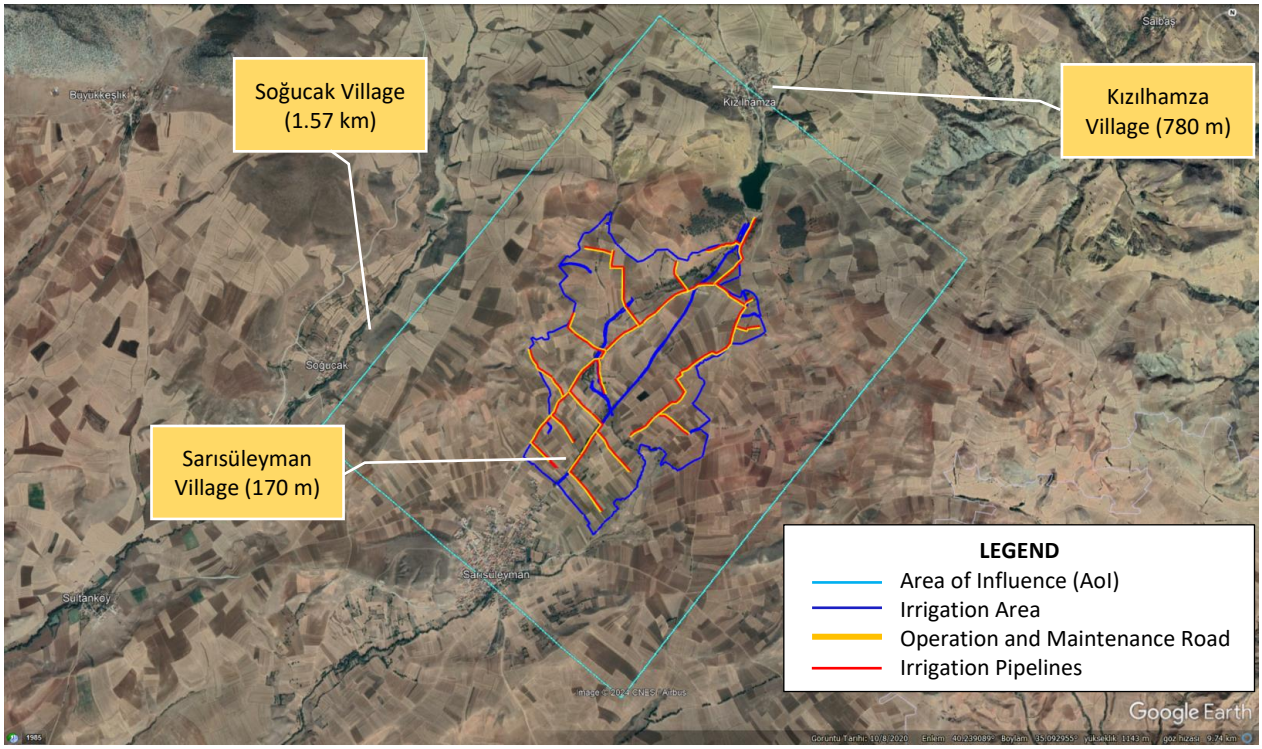

Figure 5-2 Distance to Nearest Receptors and Area of Influence

The distance between the settlements in the closest village and the project area is 170 meters. In this regard, the most sensitive receptors close to the project area will be the population in the village.

5.3. Environmental Impacts

Environmental impacts that are associated with the proposed project will be evaluated under this section. The impacts of the project on water resources, soil quality, biodiversity and protected areas, seismicity of the project area, as well as the potential impacts of the use of chemicals and hazardous substances, waste generation, noise generation and dust emissions under the project were considered.

5.3.1. Impact on Water Resources

Water Use

Water supply must be ensured to fulfill the requirements of both the project personnel and construction processes and operation phase.

Bottled and authorized drinking water that will comply with the requirements of the Regulation on Water for Human Consumption will be provided for the drinking water needs of the personnel during both construction and operation phases. The need for potable water to be used for other needs of the personnel has been calculated separately for both the construction and operation phases.

Construction Phase:

Approximately 15 personnel are expected to be employed at the construction site during the construction phase. The average daily water consumption per person is 299 liters[20]. Based on this information, the water demand for the construction phase can be calculated as follows.

Daily Water Demand (Personnel)=Number of Personnel x Average Water Consumption

=15 capita x 299 L/day.capita

=4485 L/day=4.49 m^3/ day

Additionally, there will be water requirement for water spraying on roads that are used in order to prevent dust emissions. It is assumed that 10 m^3/day water is required for that purpose. The water needed will also be met from groundwater and irrigation will be conducted by water truck.

Within the scope of the project, concrete will be used in the construction of the camp site and in the artistic structures, and the concrete in the region where it will be needed will be supplied from ready-mixed concrete facilities that have completed their obligations within the framework of the provisions of the Environmental Permit and License Regulation. At this stage, the concrete to be supplied and the water to be needed cannot be calculated exactly.

In addition, washing water will be needed to wash the vehicles that will take part in the project. This washing station, where approximately 0.2 m^3 of water will be consumed for each vehicle, will be established on a leak-proof concrete floor in the camp area. However, at this stage, it can be determined exactly how often the vehicles (12 vehicles) that will take part in the project will be washed, and it can be predicted that a maximum of 0.5 m^3/day.

Total Daily Water Demand= Daily Water Demand for Personnel + Daily Water Demand for Spraying + Daily Water Demand for Vehicle Washing =15 m^3/day. Water requirements will be supplied from groundwater resources as similar to the current situation. As per DSI Establishment Law No. 6200 and Groundwater Law No. 167, the task of surface and groundwater use, planning and permitting has been given to the DSI. According to the regulation, a groundwater permit will be taken. All activities will be complied with Water Quality Control Regulation (31.12.2004) No.25687 and update of Water Quality Control Regulation No 26786 (13.02.2008), No 27914 (24.04.2011), No 28244 (25.03.2012), and No 29589 (10.01.2016).

Operation Phase:

For the operation phase, 5 personnel will be responsible for operating the irrigation system.

Daily Water Demand (Personnel for Operation) =Number of Personnel x Average Water Consumption

=5 capita x 299 L/day.capita

=1495 L/day=1.495 m^3/ day

It is assumed that there will be three different durations depending on the maintenance work.

1. Short Duration: The duration of maintenance will be 3-10 days of work.
2. Medium Duration: The duration of maintenance will be 3-10 days of work.
3. Long Duration: The duration of maintenance will be 10-30 days of work.

Water consumption from the maintenance works is listed below according to the duration of maintenance works.

[20] https://cip.tuik.gov.tr

Table 5-2 Water Consumption of Maintenance Works

Duration of Work	
Short Duration (3 days)	4.485 m^3
Medium Duration (10 days)	14.95 m^3
Long Duration (30 days)	44.85 m^3

Depending on the duration of the maintenance and repair works there might be additional water consumption including water required for maintenance and repair works Water requirements will also be supplied from groundwater resources.

Wastewater Generation

Wastewater generated during the construction phase will primarily consist of domestic wastewater from the personnel involved. It is projected that 15 personnel will be employed during this phase, and it is expected that these individuals will not be residing at the villages adjacent to the project area.

Construction Phase:

The estimated daily wastewater generation per capita is 199 liters per capita/day[21].

Daily Wastewater Generation =Number of People x Daily Wastewater Generation

=15 people x 199 liters/per capita/day.

=2985 lt/day = 2.99 m^3/day

Wastewater generation is calculated as 2.99 m^3/day.

However, at this stage, it can be determined exactly how often the vehicles (12 vehicles) that will take part in the project will be washed, and it can be predicted that a maximum of 0.5 m^3/day.

The water demand for dust suppression is calculated as 10000 L/day (10 m^3/day). Additional wastewater generation is not anticipated because some of the sprayed water will be absorbed by the soil and the rest will evaporate. During the construction period, no industrial wastewater will be generated. It is expected that ready-mixed concrete will be used in the construction. Therefore, it is not expected that water will be used for concrete preparation.

Wastewater will be collected with a sealed septic tank and conveyed to the Çorum Municipality's Wastewater Treatment Plant by sewage truck. In case Çorum Municipality's WWTP is not suitable for wastewater disposal, Sungurlu Municipality's WWTP and Yozgat Municipality's WWTP can be considered as alternatives. All three wastewater treatment plants are municipal wastewater treatment plants and have Environmental Permit Certificates for wastewater discharge [(22)]. A contract or protocol will be signed by the contractor before the starting of the construction works with the relevant municipalities regarding wastewater acceptance. Wastewater to be generated within the scope of the project will not be given to facilities without an environmental permit for wastewater discharge, and will not be discharged to the soil, surface water, lake, or any other receiving bodies in any way without obtaining an environmental permit for wastewater discharge.

Operation Phase:

Wastewater generated during the works will also be collected in the sealed septic tank.

For the operation period 5 personnel will be responsible. Wastewater generation of those personnel will be;

[21] https://cip.tuik.gov.tr/

[22] *The current environmental permit and licence status of facilities or enterprises can be inquired from the official website of the General Directorate of EIA Permit and Inspection (https://eizin.cevre.gov.tr/Rapor/BelgeArama.aspx)*

Daily Wastewater Generation =Number of People x Daily Wastewater Generation

=5 people x 199 liters/per capita/day.

=995 lt/day = 1 m^3/day

Wastewater will be collected with a sealed septic tank and conveyed to the Municipality's Wastewater Treatment Plant by sewage truck.

5.3.2. Waste Generation

Solid Waste

Construction Phase:

The waste generated by the project will be minimal in quantity. A construction site will be established to accommodate the field personnel, and it is expected that domestic solid and liquid waste will be produced at the site. The solid waste will be handed over to the Çorum Special Provincial Administration and disposed to the 2nd Class Landfill Facility operated by Çorum Municipalities Environmental Union as part of an agreement to be signed by the contractor during the pre-construction period. The 2nd Class Landfill Facility has Environmental Permit and Licence Certificate on Municipal Wastes and Non-Hazardous Waste Landfill, Biodegradable Waste Processing valid until 02.01.2025 [23]. Pre-authorization has been obtained for the transfer of wastes to Çorum Municipality's waste area under the project (Annex-9).

In case of breakdown of vehicles, during the mandatory maintenance/repair activities to be carried out in the field, waste and/or hazardous waste are likely to be generated. There will not be significant amount of hazardous waste generated as a result of the project.

The personnel working on-site will generate domestic solid waste, primarily consisting of organic waste. It is estimated that around 15 personnel will be employed during this phase. The average daily generation of domestic solid waste per capita is 0.98 kg per capita /day[24]. Therefore,

Total Amount of Domestic Solid Waste Generation = Number of Personnel x Average Domestic Soil Waste Generated

= 15 x 0.98 = 14.7 kg/day

The table provided below outlines the various types of solid waste that could be generated throughout the construction phase of the project, as well as the corresponding waste disposal practices.

Table 5-3 Solid Waste Disposal Practices for Construction Phase

Solid Waste Types	Disposal Practices
Domestic Solid Waste	Domestic solid waste will be collected in sealed containers and subsequently disposed of through the garbage collection system of Çorum Special Provincial Administration and disposed to the 2nd Class Landfill Facility operated by Çorum Municipalities Environmental Union. All activities will adhere to the Waste Management Regulation Law No. 29314 (02.04.2015).
Packaging Waste	Packaging waste will be generated from both personnel and construction activities. It will be collected separately from domestic solid waste and transferred to licensed collection, sorting, or recycling companies. Compliance with the Packaging Waste Control Regulation Law No. 31523 (26.07.2021) will be ensured.

[23] https://eizin.cevre.gov.tr/Rapor/BelgeArama.aspx

[24] https://data.tuik.gov.tr/Bulten/Index?p=Atik-Istatistikleri-2020-37198

Solid Waste Types	Disposal Practices
Recyclable Materials	Various construction materials such as concrete, and metal will be generated as construction waste. Recyclable materials among these will be segregated from other waste and delivered to licensed companies.
Hazardous Waste	It is anticipated that empty containers, contaminated with chemicals, will be generated from materials used, such as painting. Proper disposal of all hazardous waste will be ensured in accordance with the Waste Management Regulation Law No. 29314 (02.04.2015).
End-of-Life Tires	There is a possibility of generating end-of-life tires as a result of the construction activities. The responsibility for construction-related maintenance lies with the contractor company. All end-of-life tires will be disposed of in compliance with the Regulation on the Control of End-of-Life Tires, No. 26357 (25.11.2006).
Waste Oil	Waste oil may be generated from construction machinery and vehicles used during the construction process. The contractor company is responsible for the maintenance, repair, and servicing of the machinery employed. Any necessary maintenance, repair, and servicing will not be conducted within the project area. However, it is possible to occur waste oil in case of breakdown of vehicles, during the mandatory maintenance/repair activities to be carried out in the field. Waste oil resulting from that machinery will be appropriately disposed of following the Waste Oil Management Regulation No. 30985 (31.12.2019).
Waste Batteries and Accumulators	The usage of construction machinery and vehicles during the construction process may also lead to the generation of waste accumulators. The contractor company is accountable for the maintenance, repair, and servicing of the machinery involved. If waste accumulators are produced for any reason, they will be sent to authorized companies or licensed hazardous waste recycling facilities in accordance with the Control of Waste Batteries and Accumulators Law No. 25569 (31.08.2004).
Medical Waste	Construction workers' medical requirements will be addressed at health facilities located outside the project area. Basic first aid equipment will be available on-site for emergency and critical situations, and any medical waste generated due to accident interventions will be sent to licensed medical waste sterilization facilities, following the Control of Medical Waste Law No. 29959 (25.01.2017).
Waste Vegetable Oil	Within the scope of the project, waste vegetable oil will be generated from the dining hall located in the camp area. The resulting waste vegetable oils will be collected in sealed barrels and disposed of within the framework of the Regulation on the Control of Waste Vegetable Oils published in the Official Gazette No. 29378 (06.06.2015).
Electronic Wastes	Within the scope of the project, electronic wastes will be generated from the office works. The resulting electronic wastes will be sent to the licensed recycle facilities within the framework of the Regulation on Management of Waste Electrical and Electronic Goods published in the Official Gazette No. 32055 (26.12.2022).

It is not expected that a significant amount of hazardous waste, waste oil, medical waste, waste accumulators, waste vegetable oil, waste tires, and electronic waste will be produced during the construction process but necessary mitigation measures will be taken for their separate collection, temporary storage and transfer to / disposed of by licensed facilities in compliance with relevant local regulations and the WB requirements.

Operation Phase:

It is anticipated that the amount of domestic solid waste generated will be similar to the construction phase, with an average of 0.98 kg/day per capita. It is assumed that there will be 5 personnel for the operation phase.

Total Amount of Domestic Solid Waste Generation = Number of Personnel x Average Domestic Soil Waste Generated

= 5 x 0.98 = 4.9 kg/day

The table provided below outlines the various types of solid waste that could be generated throughout the operation phase of the project, as well as the corresponding waste disposal practices.

Table 5-4 Solid Waste Disposal Practices for Operation Phase

Solid Waste Types	Disposal Practices
Domestic Solid Waste	Solid waste will be collected in sealed containers throughout the operation phase and will be disposed of through the municipal collection system. All activities will adhere to the Waste Management Regulation Law No. 29314 (02.04.2015).
Packaging Waste	It is expected that packaging waste will be generated by workers responsible for operation and maintenance tasks. Packaging waste will be collected separately from domestic solid waste and delivered to licensed collection, sorting, or recycling companies, following the procedures implemented during the construction phase. Compliance with the Packaging Waste Control Regulation Law No. 31523 (26.07.2021) will be ensured.
Recyclable Materials	In case of equipment replacements, discarded items such as expired cables, lamps, pipes, and infrastructure will be collected in accordance with the Waste Management Regulation Law No. 29314 (02.04.2015). Recyclable materials will be separated from other waste and delivered to licensed companies.
Hazardous Waste	It is anticipated that empty containers contaminated with chemicals, will be generated from materials used, such as painting. Proper disposal of all hazardous waste will be ensured in accordance with the Waste Management Regulation Law No. 29314 (02.04.2015).
End-of-Life Tires	There is a possibility of generating end-of-life tires as a result of the maintenance activities. The responsibility for end-of-life tires resulting from routine maintenance of vehicles that will operate in operation belongs to the service responsible for maintenance and will be managed by DSİ. All end-of-life tires will be disposed of in compliance with the Regulation on the Control of End-of-Life Tires, No. 26357 (25.11.2006).
Waste Oil	Waste oil may be generated from machinery and vehicles used during the maintenance process. The responsibility for waste oil resulting from routine maintenance of vehicles that will operate in operation belongs to the service responsible for maintenance. However, waste oils are likely to be generated in case of breakdown of vehicles, during the mandatory maintenance/repair activities to be carried out in the field and will be managed by DSİ. Waste oil resulting from that machinery will be appropriately disposed of following the Waste Oil Management Regulation No. 30985 (31.12.2019).
Waste Batteries and Accumulators	The usage of construction machinery and vehicles during the maintenance process may also lead to the generation of waste accumulators. The responsibility for waste batteries and accumulators resulting from routine maintenance of vehicles that will operate in operation belongs to the service

Solid Waste Types	Disposal Practices
	responsible for maintenance. However, waste oils are likely to be generated in case of breakdown of vehicles, during the mandatory maintenance/repair activities to be carried out in the field, and managed by DSİ. If waste accumulators are produced for any reason, they will be sent to authorized companies or licensed hazardous waste recycling facilities in accordance with the Control of Waste Batteries and Accumulators Law No. 29214 (14.01.2015).
Medical Waste	Operation and maintenance workers' medical requirements will be addressed at health facilities located outside the project area. Basic first aid equipment will be available on-site for emergency and critical situations, and any medical waste generated due to accident interventions will be sent to licensed medical waste sterilization facilities, following the Control of Medical Waste Law No. 29959 (25.01.2017).

Excavation Waste

The excavation waste generated as a result of the excavations to be carried out as part of the project will be disposed of in accordance with the regulations.

Construction Phase:

A portion of the excavation material to be removed during the project's excavation works will be utilized as filling material, while the remaining part is planned to be transported by licensed trucks to authorized closest disposal sites. The excess subsoil will be transferred to the excavation storage areas to be approved by Alaca Municipality or Alaca District Governorship within the scope of the Regulation on the Control of Excavation Soil, Construction, and Debris Wastes Law No. 25406 (18.03.2004) (Management of excess excavation material is the responsibility of the Contractor). In the section stripped for the Operation and Maintenance Road, the topsoil will not be laid back, and the topsoil obtained from here will be used primarily to meet the demands of the local people or for landscaping the areas that will be needed.

Operation Phase:

During the operation phase, maintenance activities will be conducted, and similar to the construction phase, a portion of the excavation material will be utilized as filling material within the project. The remaining excavated material will be transported to the authorized site by licensed trucks. All maintenance procedures concerning the excavation process will adhere to the regulations stipulated in the Regulation on the Control of Excavation Soil, Construction, and Debris Wastes Law No. 25406 (18.03.2004).

5.3.3. Noise Generation

The Project area is a rural area and there are no significant impact is expected during the operation of the project, except temporary and limited noise that could be generated during maintenance and repair works.

Based on the Environmental Baseline, there have been noise complaints reported in Çorum. According to the Figure 4-18, 5% of the noise complaints are from building sites. Given the presence of sensitive receptors near the project site, it is anticipated that the construction activities may lead to an increase in complaints regarding noise.

During the construction phase, noise is expected to be generated by vehicles, machinery, and equipment. It is estimated that there will be a total of 3 vehicle involved in the construction works. It was envisaged that a maximum of 3 vehicles would be operating at the same location at the same time during the construction of the pipeline. The specific number of machinery units estimated to be used in the construction activities can be found in Table 5-5.

Table 5-5 Number of machineries estimated to be used in the construction activities

Machinery-Equipment	Number	Expected Noise Level (dBA)[25]
Trucks	3	94
Excavator	1	109
Grader	1	109
Mobile Crane	1	105
Loader	1	109
Oil Truck	1	94
Minibus	1	90
Pick-up Truck	1	92
Tractor	1	97
Street Sprinkler	1	94

The total equivalent noise level that will occur under the most adverse conditions when 1 truck, 1 mobile crane and 1 loader to be used within the scope of the sub-project operate at the same time and in the same place is calculated by using the formula below:

$$Lwt = 10log(\sum_{i=1}^{n} 10^{\frac{Li}{10}})$$

where;

n = Number of Machinery or Equipment Used

Li = Noise Power Level of Each Machinery or Equipment (dB)

L_{wt} = Total Noise Power (dB)

After the total noise power level is calculated, the total noise pressure level (Lpt) created by this noise power level at a distance "r" is calculated using the formula below:

$$Lpt = Lwt + 10\ log\ (Q/A)$$

where;

L_{pt} = Total noise pressure level from all machines at a distance "r"

Q = Directivity coefficient (Hemispherical distribution of the sound source at ground level, Q =2)

A = $4\pi r^2$

r = distance from the source (m)

Calculation of noise level is made with the help of the formula below:

$$L = L_{pt} - A_{atm} + DF$$

where;

L = Noise level (dBA)

DF = correction factor

A_{atm} = Decrease in noise pressure level (dBA) by the atmospheric absorption

Calculation of the decrease in noise pressure level (dBA) by the atmospheric absorption is also available

[25] *Regulation on Evaluation and Management of Environmental Noise(2002/49/EC)*

below.

$$A_{atm} = 7,4 \times 10^{-8} \times f^2 \times r / \phi$$

where;

f = Frequency of transmitted sound (between 500-4,000 Hz)

ϕ = relative humidity of air ([26])

Following the calculations, the overall noise level obtained was evaluated based on the distance to the nearest sensitive receptor and the related national and international legislations provided in Table 5-6.

Table 5-6 Legislative Framework for Noise

Legislative Framework		
Environmental Noise Control Regulation (Official Gazette No. 32029 Dated 30.11.2022)		
Type of Operation		Limit Value (dBA)
Infrastructure Works		65- (All sources together)**
Noise Standards - WBG EHS Guidelines: (Environmental Noise Management)		
Type of Operation	Lday * (One Hour LAeq (dBA)) (07:00-22:00)	Lnight * (One Hour LAeq (dBA)) (22:00-07:00)
Limit Value not to be exceeded by the noise from construction site activities at the sensitive receptor (Residential; institutional; educational)	55	45

**Noise impacts should not exceed the levels presented in Table above, or result in a maximum increase in background levels of 3 dB at the nearest receptor location off-site*

*** According to the Environmental Noise Control Regulation, the daytime limit value for industrial facilities and transportation resources is determined as 65 dBA, 60 dBA for the evening and 55 dBA for the night.*

The distribution of the Total Noise Level (dBA) at 4 different frequencies (500 Hz, 1000 Hz, 2000 Hz and 4000 Hz) at distance "r", which are likely to occur from all sources, is given in Table 5-7.

Table 5-7 Total Expected Noise Level at "r" Distance

r (m)	L_{PT} (dB)	Aatm (dBA) (f:500)	DF (dB) (f=500 Hz)	L (dBA) (f:500 Hz)	Aatm (dB) (f:1000 Hz)	DF (dB) (f:1000 Hz)	L (dBA) (f:1000 Hz)	Aatm (dB) (f:2000 Hz)	DF (dB) (f:2000 Hz)	L (dBA) (f:2000 Hz)	Aatm (dB) (f:4000 Hz)	DF (dB) (Hz)	L (dBA) (f:4000 Hz)	L_T (dBA)
1	106,65	0,00	-3,2	103,45	0,00	0	106,64	0,00	1,2	107,84	0,02	1	107,63	112,72
5	92,67	0,00	-3,2	89,46	0,01	0	92,66	0,02	1,2	93,84	0,09	1	93,57	98,71
10	86,65	0,00	-3,2	83,44	0,01	0	86,63	0,05	1,2	87,80	0,18	1	87,46	92,65
20	80,62	0,01	-3,2	77,42	0,02	0	80,60	0,09	1,2	81,73	0,37	1	81,26	86,56
30	77,10	0,01	-3,2	73,89	0,03	0	77,07	0,14	1,2	78,17	0,55	1	77,55	82,96
40	74,60	0,01	-3,2	71,39	0,05	0	74,56	0,18	1,2	75,62	0,73	1	74,87	80,40
50	72,67	0,01	-3,2	69,45	0,06	0	72,61	0,23	1,2	73,64	0,92	1	72,75	78,39
60	71,08	0,02	-3,2	67,87	0,07	0	71,01	0,27	1,2	72,01	1,10	1	70,98	76,74
70	69,74	0,02	-3,2	66,52	0,08	0	69,66	0,32	1,2	70,62	1,28	1	69,46	75,33
80	68,58	0,02	-3,2	65,36	0,09	0	68,49	0,37	1,2	69,42	1,47	1	68,12	74,10
90	67,56	0,03	-3,2	64,33	0,10	0	67,46	0,41	1,2	68,35	1,65	1	66,91	73,02
100	66,65	0,03	-3,2	63,42	0,11	0	66,53	0,46	1,2	67,39	1,83	1	65,81	72,04

[26] *According to the data of the General Directorate of Meteorology, 10th Regional Directorate, the relative humidity value for Çorum province is 64.6%, https://www.mgm.gov.tr/iklim/iklim-siniflandirmalari.aspx?m=CORUM*

r (m)	L_{PT} (dB)	Aatm (dBA) (f:500)	DF (dB) (f=500 Hz)	L (dBA) (f:500 Hz)	Aatm (dB) (f:1000 Hz)	DF (dB) (f:1000 Hz)	L (dBA) (f:1000 Hz)	Aatm (dB) (f:2000 Hz)	DF (dB) (f:2000 Hz)	L (dBA) (f:2000 Hz)	Aatm (dB) (f:4000 Hz)	DF (dB) (Hz)	L (dBA) (f:4000 Hz)	L_T (dBA)
125	64,71	0,04	-3,2	61,47	0,14	0	64,56	0,57	1,2	65,33	2,29	1	63,42	69,95
150	63,12	0,04	-3,2	59,88	0,17	0	62,95	0,69	1,2	63,64	2,75	1	61,37	68,21
200	60,62	0,06	-3,2	57,37	0,23	0	60,40	0,92	1,2	60,91	3,67	1	57,96	65,44
250	58,69	0,07	-3,2	55,42	0,29	0	58,40	1,15	1,2	58,74	4,58	1	55,10	63,25
300	57,10	0,09	-3,2	53,82	0,34	0	56,76	1,37	1,2	56,93	5,50	1	52,60	61,43
350	55,76	0,10	-3,2	52,46	0,40	0	55,36	1,60	1,2	55,36	6,41	1	50,35	59,88
400	54,60	0,11	-3,2	51,29	0,46	0	54,15	1,83	1,2	53,97	7,33	1	48,27	58,52
500	52,67	0,14	-3,2	49,32	0,57	0	52,09	2,29	1,2	51,58	9,16	1	44,50	56,23
600	51,08	0,17	-3,2	47,71	0,69	0	50,40	2,75	1,2	49,53	11,00	1	41,09	54,33
700	49,74	0,20	-3,2	46,34	0,80	0	48,94	3,21	1,2	47,74	12,83	1	37,91	52,72
800	48,58	0,23	-3,2	45,15	0,92	0	47,67	3,67	1,2	46,12	14,66	1	34,92	51,31
900	47,56	0,26	-3,2	44,10	1,03	0	46,53	4,12	1,2	44,64	16,50	1	32,07	50,06
1000	46,65	0,29	-3,2	43,16	1,15	0	45,50	4,58	1,2	43,26	18,33	1	29,32	48,93
1500	43,12	0,43	-3,2	39,49	1,72	0	41,41	6,87	1,2	37,45	27,49	1	16,63	44,52

The highest expected noise levels in Kızılhamza and Soğucak villages, which are the closest settlements to the Project area, are expected to be less than 52.72 and 44.52 dBA, respectively. Hence, at these receptor points noise levels are below the limit values specified in the Environmental Noise Control Regulation and WBG-EHS Guidelines.

However, in the scenario where all vehicles and equipment required constructing the irrigation line works operate at the same place at the same time, it is predicted that a noise level of 68.21 dBA will be reached in Sarısüleyman Village, which is 170m from the project area. This value is above the limit values given in both national legislation and WBG-EHS Guidelines. However, it is not possible for all vehicles to be active in the same area at the same time due to the agenda of the construction works and the geographical structure of the project area. Nevertheless, noise measurements should be carried out in accordance with the provisions of the Environmental Noise Control Regulation in all activities to be carried out under the project, and measures such as noise barriers around sensitive receptors should be considered if necessary. Again, considering that the noise levels of unmaintained vehicles will be high, maintenance and repairs of all vehicles and equipment to be operated under the project should be carried out regularly.

5.3.4. Air Quality

Within the scope of air quality, applicable standard framework includes national legislation regulations and & WBG General EHS Guidelines. The specific regulations, guidelines, and directives constitute Project Standards regarding air quality is listed below:

- Industrial Air Pollution Control Regulation
- Regulation on Assessment and Management of Air Quality
- WHO Ambient Air Quality Guidelines - WBG General EHS Guidelines

Within that scope, air quality related parameters and their respective limit and guideline values are given in below Table 5-8.

Table 5-8 Project Air Quality Standards

Parameter	Period	Limit Value	Regulation
SO_2 (µg/m3)	Hourly	350 (2019-2023) (not to exceed more than 24 times in a year)	Ambient Air Quality Limits of Turkish Regulation on Air Quality Assessment and Management (Annex I: Future Target Values) Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on Ambient Air Quality and Cleaner Air For Europe
	24 hr.	20 (guideline)	WHO Ambient Air Quality Guidelines- WBG General EHS

Parameter	Period	Limit Value	Regulation
			Guidelines: Environmental Air Emissions and Ambient Air Quality – General Guidelines for Human Health
	Yearly and Winter Season (Oct 1 – March 31) (for wildlife and ecosystem)	20 (2019-2023)	Ambient Air Quality Limits of Turkish Regulation on Air Quality Assessment and Management (Annex I: Future Target Values)
NO_2 (µg/m3)	Hourly	200 (2024) (not to exceed more than 18 times in a year)	Ambient Air Quality Limits of Turkish Regulation on Air Quality Assessment and Management (Annex I: Future Target Values) WHO Ambient Air Quality Guidelines- WBG General EHS Guidelines: Environmental Air Emissions and Ambient Air Quality – General Guidelines for Human Health Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on Ambient Air Quality and Cleaner Air For Europe
	Yearly	30	WHO Ambient Air Quality Guidelines- WBG General EHS Guidelines: Environmental Air Emissions and Ambient Air Quality – Guidelines for Europe (for ecosystem)
NO_x (µg/m3)	Yearly (for vegetation)	30 (2019-2023)	Ambient Air Quality Limits of Turkish Regulation on Air Quality Assessment and Management (Annex I: Future Target Values)
PM_{10} (µg/m^3)	24 hr. (For human health)	50 (2019-2023) (not to exceed more than 35 times in a year)	Ambient Air Quality Limits of Turkish Regulation on Air Quality Assessment and Management (Annex I: Future Target Values)
	Yearly (for human health)	20 (guideline)	WHO Ambient Air Quality Guidelines- WBG General EHS Guidelines: Environmental Air Emissions and Ambient Air Quality – General Guidelines for Human Health
$PM_{2.5}$ (µg/m^3)	24 hr.	25 (guideline)	WHO Ambient Air Quality Guidelines- WBG General EHS Guidelines: Environmental Air Emissions and Ambient Air Quality – General Guidelines for Human Health
	1 year	10 (guideline)	WHO Ambient Air Quality Guidelines- WBG General EHS Guidelines: Environmental Air Emissions and Ambient Air Quality – General Guidelines for Human Health
Lead (µg/m^3)	Yearly (human health) (LTL)	0.5	Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on Ambient Air Quality and Cleaner Air For Europe
Benzene (µg/m^3)	Yearly	5 (2019-2023)	Ambient Air Quality Limits of Turkish Regulation on Air Quality Assessment and Management (Annex I: Future Target Values) Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on Ambient Air Quality and Cleaner Air For Europe
CO (mg/m^3)	Max daily 8 hr. average	10 (2019-2023)	Ambient Air Quality Limits of Turkish Regulation on Air Quality Assessment and Management (Annex I: Future Target Values) Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on Ambient Air Quality and Cleaner Air For Europe
Ozone (µg/m^3)	Maximum daily 8 hr. average	100 (guideline)	WHO Ambient Air Quality Guidelines- WBG General EHS Guidelines: Environmental Air Emissions and Ambient Air Quality – General Guidelines for Human Health
Settled Dust (mg/m^2 / day)	Short Term Value (STV)	390	Regulation on Control of Industrial Air Pollution
	Long Term Value (LTV)	210	

Emissions from vehicles can potentially contribute to minor and short-term air pollution. Nevertheless,

these emissions are unlikely to significantly alter the existing levels of air pollution. The activity may lead to temporary and insignificant dust pollution, particularly when the soil is dry. Considering that the study area is situated within agricultural regions, it is not anticipated to have a substantial impact on nearby communities. To calculate potential dust emissions that may arise from excavation activities, mass flow-rates (see Table 5-9) and dust emission factors (see Table 4-11) given in the Regulation on Control of Industrial Air Pollution were used.

Table 5-9 Mass Flow-Rates (Regulation on Control of Industrial Air Pollution)

Pollutant	Ambient Air Quality Limit Values (kg/hour)
Carbon monoxide (CO)	50
Total Organic Compounds	3
Nitrogen oxides (NO_x as NO_s)	4
Sulfur dioxide	6
Dust	1

Table 5-10 Dust emission factors to be used in dust emission mass flow calculations

Activity	Emissions without Mitigations	Emission with Mitigations
Excavation	0.025 kg/ton	0.0125 kg/ton
Loading	0.010 kg/ton	0.005 kg/ton
Unloading	0.010 kg/ton	0.005 kg/ton

The density of the excavation soil is taken as 1.5 tons/m^3. It is foreseen that there will be 10 hours of work per day and the excavation work will take an estimated 300 days. The calculation results are shown in Table 5-11.

Estimated total vegetable soil in m^3 = (total length of the pipe + total length of road) x width x 30 cm

= (10,590.09 m x 6 m + 10,399.88m x 6 m) x 0.3 m = 75,357.9 m^3

Estimated total vegetable soil in tons = 37,781.95m^3 x 1.5 tons/m^3 = 56,672.93tons

Estimated total excavation amount in m^3 = total length of the pipe x wide x deep

= 10,590.09 x 1.5 x 2.5 = 39,750 m^3

Estimated total excavation amount in tons = (39,750 m^3) x (1.5 tons/m^3) = 59,625 tons

Table 5-11 Dust emission during excavation works

Sources		Working time (h)	Uncontrolled (kg/h)	Controlled (kg/h)
Topsoil	Excavation	3000	0,4723	0,2361
	Loading	3000	0,1889	0,0945
	Transportation	-	0,0264	0,0132
	Unloading	3000	0,1889	0,0945
	Storage	-	0,0725	0,0363
Excavation Material	Excavation	3000	0,4969	0,2484
	Loading	3000	0,1988	0,0994
	Transportation	-	0,0278	0,0139
	Unloading	3000	0,1988	0,0994
	Storage*	-	0,0725	0,0363
Total			1.94	0.97

**It is assumed that excavation waste will be stored in an area of 0.8 ha.*

Dust emission from excavation works has been calculated as 0.97 kg/hour in total for the mitigated situation. This value is below 1 kg/hour, which is the limit value given for modeling requirement for calculation of air pollution contribution values due to project activities as per the Industrial Air Pollution Control Regulation. Therefore, no significant dust emissions is expected as a result of calculations, and no modeling work was needed within the scope of dust emission. As it is explained in the Baseline for Air Quality section, there are some dust complaints mainly related to unpaved road in the Kızılhamza village close to the project area. Additional particulate matter emissions are projected to be generated throughout the construction phase as a result of construction activities such as machinery, vehicles, and ground works. Therefore, as a result, it is crucial to mitigate the impacts of dust on workers and residents in nearest receptors. Construction activities can cause dust emissions due to a combination of on-site excavation and haulage of soil materials, heavy equipment contact with the soil, and wind exposure of soil stockpiles. According to the Regulation on the Control of Excavation Soil, Construction and Debris Wastes Law No. 25406 (18.03.2004), firms who are responsible for generation of excavation waste should take precautions to prevent dust emissions during the removal of excavated soil. They are also obligated to close the activity area's surrounding area. In addition, according to the Air Quality Assessment and Management Regulation, dusty bulk materials can be stored in cylindrical containers without a lid if the air quality standards are met.

Within the scope of the Project's construction, exhaust emissions will also occur from construction vehicles. The unit fuel consumption amount accepted for all vehicles and work machines to be used during the Project's construction phase is taken as 25lt/h, and the specific weight of diesel oil is taken as 0.8654 kg/lt for calculations. The Table 5-12 shows the vehicle features that will be used in construction.

Table 5-12 Vehicle Features to be used in Construction Work

Number	Vehicle	Diesel Fuel Consumption (lt/hr)	Diesel Specific Gravity (kg/lt)	Diesel Fuel Consumption (kg/h)	Diesel Fuel Consumption (ton/h)
3	**Trucks**	25	0.8654	64.905	0.064
1	**Excavator**			21.635	0.022
2	**GSB**			43.270	0.043
1	**Oil Truck**			21.635	0.022
1	**Minibus**			21.635	0.022
1	**Pick-up Truck**			21.635	0.022
1	**Tractor**			21.635	0.022
1	**Street Sprinkler**			21.635	0.022
Total					0.24

It is assumed that diesel will be used as a fuel in the construction machines to be used. Emission factors of diesel are taken from the Air Pollution and Control Inspection (TMMOB Chemical Eng Chamber, May 1991).

Table 5-13 Emission rates of pollutants

Pollutant	Diesel (kg/ton)
Carbon monoxide	9.7
Total Organic Compounds	29
Nitrogen oxides	36
Sulfur dioxide	6.5
Dust	18

Total amount of diesel fuel consumption was calculated as 0.24 ton/h for the machinery equipment to be used within the scope of the construction activities. The mass flowrates of the pollutants in this respect are calculated as;

Table 5-14 Pollutant Calculations

Pollutant	Calculation
Carbon monoxide	9.70 kg/ton x 0.24 tons/hour = 2.33 kg/hour
Total Organic Compounds	29 kg/ton x 0.24 tons/hour= 6.96 kg/hour
Nitrogen oxides	36 kg/ton x 0.24 tons/hour= 8.64 kg/hour
Sulfur dioxide	6.5 kg/ton x 0.24 tons/hour= 1.56 kg/hour
Dust	18 kg/ton x 0.24 tons/hour= 4.32 kg/hour

The calculations above have been made with the assumption of all vehicles will work simultaneously. However, it is a worst-case scenario that every vehicle works at the same time. Cumulative pollution load will be lower than the calculated one as they may work different places and at different times in a day. Although the project area is a rural area and there are no significant noise sources such as industrial activities or traffic other than agricultural activities. As a result, this load is not expected to have a significant impact on air pollution. So, it is not expected that the emission values from the vehicles will have a significant adverse impact on the existing air quality.

For the operation phase, it is anticipated that there will be no usage of any vehicles other than temporary use of maintenance/repair vehicles. No significant impact on air quality is expected during the operation of the project, except negligible/minor local impacts due to maintenance and repair works.

5.3.5. Seismicity

Project area is located within the 3rd degree earthquake risk zone, which indicates a moderate level of seismic activity. Being in this zone suggests that design criteria for the planned activities for construction and operation phases should be suitable for the seismic risk, and careful selection of materials such as pipes and joints is essential. During the operation phase, regular inspections should be conducted to detect and repair any network leakages, particularly after each incident, including minor earthquakes. Further detailed measures can be found in Chapter 6.

5.3.6. Soil Quality

There will be no direct soil pollution during or after the activity, but risk of accidental spillages that will be managed with appropriate mitigation measures. Along the irrigation route, topsoil (vegetative soil) will be stripped to a total width of 12 m (6 m for the pipeline and 6 m for the operation and maintenance road) and a depth of 30 cm. Topsoil will be stored temporarily on the pipeline with a maximum height of 2 m and a maximum slope of 45 degrees. Trenches of 1.5 m width will be excavated on the opened pipeline. The subsoil material from the excavation will be temporarily stored in a way that it will not mixed with the topsoil, after the pipes are placed in the trenches, they will first be backfilled with subsoil and finally the topsoil of the pipeline side will be laid back. The excess subsoil will be stored in excavation storage areas to be approved by Alaca Municipality or Alaca District Governorship within the scope of the relevant regulation (27). In the section stripped for the Operation and Maintenance Road, the topsoil will not be laid back, and the topsoil obtained from here will be used primarily to meet the demands of the local people or for landscaping the areas that will be needed. This process will only occur on the specific route where the irrigation pipes will be placed, and it will account for a very small portion of the entire irrigation area.

[27] *Regulation on Control of Excavation Soil, Construction and Demolition Wastes (O.G. Date 18.03.2004, O.G. Number: 25406)*

One potential risk is accidental spillage of the gravel material used during construction. However, any such spill can be easily cleaned up from the soil, minimizing the risk of pollution. Another potential source of contamination is fuel oil and oil leakage from machinery. Nevertheless, oil changes and routine maintenance of the vehicles will not take place within the project area. Adequately sized secondary containment will also be provided for hazardous substances such as fuel tank and oil barrels that may leak. Also, in case of breakdown of vehicles, during the mandatory maintenance/repair activities to be carried out in the field, laying tarpaulins against spills in the work area, keeping spill kits, providing bottom pans under liquid equipment are also provided by the Contractor. Moreover, construction site fuel tank will be utilized, significantly reducing the likelihood of leaks and contamination.

The risks/impacts on soil quality during operation phase arising from repair and maintenance activities are similar to the ones described in this section and similar mitigation measures will be taken. Normal operation of the project does not have any risks/impacts on soil quality. Risks/impacts arising from use of pesticides for the agricultural activities during operational phase are explained in relevant sections of this ESMP.

5.3.7. Biodiversity and Protected Area

There are no internationally recognized areas of high biodiversity value within the project area considering internationally recognized areas of high biodiversity value include World Heritage Natural Sites, Biosphere Reserves, Ramsar Wetlands of International Importance, Key Biodiversity Areas, Important Bird Areas, and Alliance for Zero Extinction Sites, among others. The closest protected area is the Sıklık Nature Park and distance to the Project area is approximately 36.5 km. The closest protected areas to the Project area are given in Figure 4-8 along with their distances.

In addition, it was stated that there are no protected areas around the project area in the official letter written by the relevant regional directorate of the Ministry of Agriculture and Forestry on 07.09.2022 (Annex 4).

Based on the information obtained from Turkey National Geographic Information Systems, National Geographic Information Platform (atlas.gov.tr), there are no monumental trees, caves, protected areas, or special environmental protection zones within the scope of the General Directorate for the Protection of Natural Assets in the project area.

Along the irrigation route, the topsoil (vegetative soil) will be removed to a total width of 12 meters (6 meters allocated for the pipeline and 6 meters for the operation and maintenance road), reaching a depth of 30 centimeters. The excavated topsoil will be temporarily stockpiled alongside the pipeline, with a maximum height of 2 meters and a maximum slope of 45 degrees. The subsoil material extracted during excavation will be stored separately to prevent mixing with the topsoil. Once the pipes are installed within the trenches, they will be initially backfilled with subsoil material, followed by the restoration of the topsoil along the pipeline's path. Restoration activities on the 10,399.88 m operation and maintenance roads will not be conducted. Operation and Maintenance Roads will not be covered with concrete or asphalt, but will be established as dirt roads with an average width of 6 m to be used when needed.

The project area comprises agricultural lands subject to periodic irrigation, with riparian species, willow, and poplar trees lining the banks of Çınar Creek. The flora and fauna species identified within the project scope are typically prevalent throughout the country and are not anticipated to face endangerment in the foreseeable future. Consequently, adverse effects on the flora and fauna within the area due to the project are not anticipated.

5.4. Social Impacts

5.4.1. Population Change

As a result of the project, with the increase in agricultural irrigation, a change in the population may

occur and/or a decrease in the population may be prevented. The spread of irrigated agriculture and the use of a technological and sustainable irrigation system in agriculture creates positive income-generating results for farmers. The project may enable people who have migrated or plan to migrate from the region to stay in the region. Even if the project does not affect the protection and/or increase of the population, there will be an increase in the number of farmers engaged in irrigated agriculture.

5.4.2. Occupational Health and Safety

Injuries may occur as a result of potential work accidents that may arise from the tasks to be performed.

Neglecting OHS considerations in planning can cause safety hazards and increase risks during construction, with incomplete risk assessments, insufficient safety measures, and inadequate resource allocation.

- Incomplete or flawed design plans can pose hazards to workers, leading to accidents and injuries if access routes, fall protection measures, or structural stability are overlooked.
- Insufficient site preparation poses risks to workers, including accidents, slips, trips, and falls due to unstable soil, improper waste management, lack of barriers, and inadequate signage.

Based on the scope of the Çorum Kızılhamza Irrigation Project, a brief assessment of potential Occupational Health and Safety (OHS) risks are as follows:

1. **Trenching/Excavations**: Opening trenches for laying pipes poses risks of cave-ins, falls, and engulfment.
2. **Manual Handling**: Handling and maneuvering of pipes can lead to musculoskeletal injuries if proper lifting techniques are not followed.
3. **Moving Equipment**: The operation of machinery for trenching, such as excavators, presents risks of collisions, entanglement, and crush injuries.
4. **Electrical Hazards**: If any electrical equipment or wiring is involved in the project, risks of electric shocks and fires need to be addressed.
5. **Welding/Hot Work (if any)**: If welding or hot work is required for any part of the project, fire hazards are present
6. **Vibration**: If heavy machinery or equipment is used, workers may be exposed to vibration, leading to conditions like hand-arm vibration syndrome.
7. **Noise**: Construction activities, especially those involving heavy machinery, can generate high levels of noise, leading to hearing damage.
8. **Confined Spaces**: While not explicitly present in the project scope, confined spaces may be encountered during construction or maintenance activities.

It is necessary to comply with national and international occupational health and safety legislation to manage these processes effectively throughout both construction and operation phases. A thorough risk assessment will be conducted prior to commencement of work, and appropriate control measures will be implemented to ensure the safety and health of workers. OHS plan and related procedures will be implemented at site. Mitigation measures to be taken for OHS are given in Chapter 6 in detail.

5.4.3. Economy and Employment

Increasing irrigable areas, producing high value-added products and increasing agricultural productivity are the outputs of the project. When it comes to project impacts, it is predicted that limited temporary employment will be provided for construction works of the sub-project. In the scope of this works, local workers will be recruited. Moreover, priority will be given to contributing to the local economy through the use of local materials during the construction and to paying attention to the procurement of various goods and services from local resources.

5.4.4. Community Health and Safety

Community health and safety issues are associated with risk factors that may arise from the construction phase of the Project. It is anticipated that the local people will be affected by the traffic activities that are expected to intensify during the construction phase. Impacts are expected in the access routes of the villages passing through the project site. These impacts may include possible risk of traffic accidents due to shared use of these roads by the community accessing their settlements and the heavy construction machinery such as trucks, excavators, mobile cranes etc. The construction may also cause to temporary short-term closure of the roads which may lead to negative impacts such as inaccessibility to health care services of the villagers using the roads in case of emergency.

A labor camp area will be established for the accommodation of the personnel involved in the project. The location of the camp area has not yet selected. The project area is already distant from environmentally sensitive and protected areas. The selection process will prioritize suitable treasury lands within the region. Recommendations from headmen will be taken into account, and regular monitoring will be conducted to ensure adherence to all environmental and social criteria. This area will include at least one dormitory, a dining hall, shower/toilet facilities and rest areas. In addition, a maintenance-repair station and a fuelling station will be established to be used as required during the construction process. While the general ground of the camp site will be gravel, the areas where the maintenance-repair station and the fuelling station are located will be covered with impermeable concrete floors. In addition, sealed secondary containment structures for fuel oil tanks and hazardous chemicals such as motor oil will be installed with three times the volume of the substances they contain.

The location of the camp area has not yet finalized. Providing accommodation for workers will reduce long distance travelling and increase work efficiency. However, the location of the campsite will be determined taking into account the following considerations:

Accessibility, safety and environmental impacts will be taken into consideration in campsite selection. The campsite should be chosen to provide easy access to the construction site and the materials needed. It should also be close to village or city centers so that local people can continue their daily life and work.

Possible damage to roads due to construction machinery and vehicles may include road damage, traffic accidents and road closures. Considering the activities to be carried out in the sub-project and the current condition of the roads, these potential impacts are anticipated to be minimal.

In road damage, heavy construction machinery and lorries may damage the surface of the roads, create potholes or crack the asphalt. Shared use of roads may increase the risk of traffic accidents for villagers and construction personnel. In particular, heavy construction traffic can trigger accidents caused by inattention. Temporary road closures during construction may affect the daily life of local people and restrict access to health services in emergencies.

During the operation phase of the Çorum Kızılhamza Irrigation Project, there may be some potential community health and safety risks or impacts to consider. If the irrigation system is not properly maintained or if there are leaks or breaches in the pipes, it could impact the health of the surrounding community. Regular inspection and maintenance of the irrigation infrastructure are essential to mitigate this risk. Increased traffic from maintenance vehicles or farmers accessing the irrigation system could pose risks to community members, particularly if roads are narrow or poorly maintained. Traffic management measures, such as signage and speed limits, can help reduce the risk of accidents. Improperly managed irrigation systems can contribute to soil erosion and sedimentation, which may have downstream impacts on water quality and aquatic ecosystems. Implementing erosion control measures, such as vegetative buffers or sediment traps, can help reduce these impacts.

5.4.5. Land Acquisition and Livelihoods

There are basically 4 types of ways to obtain lands for a project. For this sub-project, mainly permanent

easement rights are required. Permanent expropriation will also be made in small areas for above-ground structures such as valves (Table 5-15).

Table 5-15 Types of Land Right

Type	Explanation	Sub-project
Permanent Expropriation / Ownership right:	Ownership rights mean permanent land acquisition. The land expropriation is permanent, and the ownership right is registered under the name of the administration. Since a permanent facility will be built on the transferred land, the former owner cannot use the land.	Scope in
Permanent Easement Right:	The parcel is not divided; this right keeps the original owner as title deed holder but establishes right (as annotation) in favour of the administration. Since the permanent facility passes below the surface of the transferred land, the landowner will be able to continue using the land with certain restrictions (such as not being able to build houses).	Scope in
Temporary Easement Right	Temporary easement gives construction contractors the right to use the land during construction, but the ownership right remains registered in the name of the landowner. When construction is completed, the land is restored to its former state and returned to the landowner without any use restrictions.	Scope in
Land Rentals Through Lease Contracts:	In case of any temporary land need (e.g., for camp site, storage area) land can be rented for a certain period under the terms and rates mutually agreed between the Contractor and the landowner. After the contract expires, the land will be reinstated and returned to its owner in its original condition.	Scope in

Impacts of Land Acquisition

There are no residential buildings affected by the project. Therefore, the project has no physical resettlement impact. There is no need for relocation of any workplaces/commercial or industrial buildings. In order to minimize economic resettlement impact of the project, design studies are continuing to abandon the construction of service roads parallel to irrigation lines which fractionate the agricultural lands. Fractionating agricultural land causes impracticality and inefficiency during farming activities, eventually causes diminished rate of income from farming. DSİ has revisited its design activities to reduce land fractionation by building service roads along with the irrigation system. The new designs will limit roads to only the main water lines, with no service roads for secondary or tertiary irrigation lines. Instead, permanent easement rights will be acquired for these lines, to be used only if and when service or repair activities are needed. Additionally, land acquisitions will be made for the construction of these roads.. The existing Gürbüz Pond will be used as a water source, and the lands located in Kızılhamza and Sarısüleyman villages will be irrigated.

Land need of the project

The distribution of the parcels affected by the rehabilitation project of the project according to their settlement areas is given below. Accordingly, the number of parcels affected is 252 and 246 of which are private lands and 7 of which are public lands.

Table 5-16 Numbers of parcels affected by the project

DISTRICT	SETTLEMENT	PRIVATE	TREASURE	FOREST	COMMON PROPERTY	PUBLIC INSTITUTIONS	TOTAL
	KIZILHAMZA	67	2	0	0	1 (DSI)	70
	SARISÜLEYMAN	178	3	0	1 (Road)	0	182

DISTRICT	SETTLEMENT	PRIVATE	TREASURE	FOREST	COMMON PROPERTY	PUBLIC INSTITUTIONS	TOTAL
TOTAL		246	5	0	1	1	252

Source: Expropriation Plan, 2023

An expropriation plan has been created according to the project design, but the expropriation valuation process has not started yet. Within the scope of the RP, a detailed asset inventory has been prepared regarding the lands belonging to all public institutions and individuals.

Irrigation pipes and roads will be built on the side of the existing roads between agricultural lands. For this reason, lands are not divided in a way that will affect agricultural activities. Structures are avoided but there are trees affected. For the livelihood impacts of the Project's land acquisition and compensation strategy, see the Project's RP, which will contain all the details regarding assessments and compensation

There is a Resettlement Framework (RF) document for TULIP. Accordingly, DSİ will prepare a RP to address economic and physical displacement in line with ESS5.

5.4.6. Cultural Heritage

Delihasan (Sarısüleyman) Höyük (Mound), registered as a 1st Degree Archaeological Site, is located within the borders of the project area. There will be no project related activities to be conducted within the boundaries of the protected area and the project will maintain a safe distance to the mound, which will be surrounded by a protective barricade, and will be protected during construction works.

In case of encountering any cultural property or other possible chance finds that need to be preserved during the construction activities, the Chance Find Procedure (provided in Annex 2) will be implemented.

5.4.7. Labor Management and Labor Influx

During the sub-project construction, no major labor influx is expected. It is anticipated that 15 workers will be mobilized. Additionally, approximately 5 personnel will be responsible for the operation phase, which is a negligible number. These figures are assumed to prevent any excessive labor influx. The construction activities do not require additional or skilled labor from outside the locality, nor do they attract forced labor or child labor. There is no expectation of downsizing the current labor force.

There may be negative impacts and risks related to the workforce OHS during the implementation of the project. These are listed below:

- Workers involved in construction activities, such as installing irrigation structures or working on elevated platforms, face the risk of falls, leading to serious injuries or fatalities.
- Workers may be at risk of being struck by moving equipment, falling objects, or vehicles operating in the construction area, causing injuries or even fatalities.
- Workers involved in excavation or trenching activities face the risk of cave-ins, engulfment, or exposure to hazardous gases, which can result in injuries or fatalities.
- Construction activities may involve working near overhead power lines or with electrical equipment, posing risks of electrocution or electrical accidents if proper precautions are not taken.
- Handling and use of hazardous materials, such as chemicals, fuels, or pesticides, during construction can lead to exposure risks, including respiratory issues, skin conditions, and chemical toxicity.
- Labor-related risks include workplace accidents, health hazards from exposure to chemicals or dust, fatigue and stress due to long hours and demanding tasks, inadequate training, unsafe working conditions, payment and working condition issues, language and cultural barriers, and labor rights violations. Addressing these risks requires comprehensive safety measures, proper training, fair compensation, and enforcement of labor laws. LMP to be prepared by the

Contractor based on TULIP LMP will cover the risks/impacts mentioned here.

5.4.8. Vulnerability, Social Equity and Equality

Vulnerable population in Sarısüleyman and Kızılhamza is indicated in Table 5-17.

There exists a risk of road-accidents in the roads accessing to the villages passing through the project sites which are used by the community specifically considering disabled people and children. Additionally, temporary access blockage of the roads to the villages may cause disturbance to the elderly, people with disabilities and specifically people who are dependent on home due to chronic illness as and when in need for emergency and mandatory health service visits.

According to data obtained from the community level interview with the headmen of Kızılhamza and Sarısüleyman, there are vulnerable who live in the settlement affected by the Project.

Table 5-17 Vulnerability of Residents in Kızılhamza and Sarısüleyman

Vulnerable Groups	Kızılhamza	Sarısüleyman
Very old person living alone and need assistance	12	10
Foreign bride	-	-
Disabilities (Mental and Physical)	4	3
Woman head of household (person who has the authority to make decisions in the household in economic and social aspects)	7	6
Poor villager living on social aid (person who has no income other than social aid as his main and side source of income)	8	7
Home-bound due to chronic illness	15	10
Illiterate adult	10	5
Total	***56***	***41***

Source: Community level interview with the headmen of affected settlements, 2024

5.4.9. Prevention of Pesticide Use in Agricultural Activities

The project does not encourage or finance the use of chemical fertilizers. Any increase in agricultural production could likely lead to more frequent pest occurrences and increased use of pesticides or agricultural chemicals, hence pest control measures may be necessary for the project.

To protect and ensure food and feed safety, public health, plant and animal health, animal breeding and welfare, and consumer interests, as well as to preserve the environment, the Law No. 5996 on Veterinary Services, Plant Health, Food and Feed was published and put into effect on 11/06/2010. Within the scope of this law, the Ministry conducts monitoring by sampling, observing, measuring, and evaluating to control undesirable substances such as pesticides, pharmacologically active substances, heavy metals, mycotoxins, and microorganisms in plants, plant products, food, feed, and live animals.

Inspections are carried out in accordance with the Ministry of Agriculture and Forestry's directive dated 21/01/2023 on "Pesticide Inspection Program Before Harvest." Additionally, to ensure high-level consumer protection, the principles and procedures for maximum pesticide residue limits in plant and animal origin foods were determined by the Regulation on Maximum Residue Limits of Pesticides in the Turkish Food Codex published in the Official Gazette No. 31611 dated 27/09/2021.

A Control Officer appointed by the Ministry or Provincial Directorate inspects the use of banned, unauthorized, or incorrectly used plant protection products in agricultural production by taking samples from the product being harvested on-site based on risk.

The sample taken by the control officer in accordance with the procedures is sent to the laboratory. The landowner or authorized person must assist the inspector in taking the required amount of sample.

If unauthorized plant protection product use is detected through analysis conducted during inspections, the producer is initially subject to administrative fines according to Article 39 of the Law. Following

administrative sanctions, if the detected plant protection product is prohibited for use in our country, all the product is destroyed. If the detected plant protection product is authorized for use in other products in our country and the analysis result exceeds the maximum residue limit value, the harvested portion of the product is destroyed. The unharvested portion is delayed for harvesting according to the time specified between the last application and harvest on the closest authorized product.

If the detected plant protection product is authorized but exceeds the maximum residue limit value, the producer who had samples taken during plant production is subject to administrative fines according to Article 39 of the Law and the harvested products are collected from places where sales are made by producers and destroyed.

For unharvested plant products, delaying harvest is carried out to ensure that the determined maximum residue limit values for the active substance fall below. The start and end stages of harvest delay are recorded, and necessary checks are carried out.

The destruction process is supervised by the Provincial Directorate, with all expenses borne by the producer. Mature fruits and vegetables that can be consumed on the plant are destroyed during the destruction of unharvested products. Harvest delay and harvested product quantities during sampling are documented.

Administrative fines are imposed according to Article 41 of the Law on those who do not cooperate during inspections.

Therefore, strict inspections are implemented in Türkiye to prevent pesticide use, and the authority for inspections lies with the Ministry of Agriculture and Forestry.

Even the Project does not directly include the use of fertilizers and pesticides, any increase in the production of agricultural crops as an outcome of the Project may be likely to increase the pest incidence and use of pesticides or agrochemicals and thus, pest control measures may be necessary for the project. Annex 10 is an example of a sample Fertilizer and Pest Management Plan. DSİ will follow the guidelines in this Annex as applicable and provide training to farmers for proper use of fertilizers, pest and disease management in line with this Annex. DSİ will encourage the use of bio-pesticides and aim to minimize the use of chemical pesticides when possible.

6. MITIGATION MEASURES AND REQUIRED ACTIONS

The tables below provide a comprehensive strategy to address environmental and social concerns throughout the pre-construction, construction, and operation stages. The mitigation plan will adhere to the strictest regulations and standards set by national legislation, as well as those set by the World Bank. It will also incorporate the latest legislation to ensure compliance during the execution of the mitigation measures.

6.1. Pre-Construction Phase

Mitigation measures for the pre-construction phase are listed in Table 6-1. The pre-construction period encompasses the final project studies that need to be conducted before commencing fieldwork, the plans and procedures to be prepared specifically for the project, the permits to be obtained, contracts with waste and wastewater disposal companies, land acquisition procedures, communication with stakeholders, and the implementation of a complaint mechanism.

Table 6-1 Mitigation Measures in Pre-Construction Phase

Impact/Issue	Description of Risk/Expected Impact	Mitigation Measures	Cost of Mitigation	Responsibility
Environmental and Social Management	Inadequate management of environmental and social risks and impacts of the project	The Contractor will prepare and submit for approval (by PCU) and subsequently implement its Contractor ESMP (C-ESMP). The C ESMP should be submitted prior to the commencement of construction works and no construction activities will be carried out under the project until approval of the C-ESMP. The C ESMP will include at least the following site-specific management plans: • Occupational health and safety (OHS) management plan including risk assessment and emergency preparedness and response plan • Community health and safety (CHS) management plan including traffic management plan • Waste management plan (see Annex 6) • Chance find procedure (see Annex-2) • Chemicals and hazardous materials management plan • Water supply and wastewater management plan • Labor management plan including Code of Conduct (to be prepared in accordance with TULIP LMP) • Resettlement Plan (yo be implemented and compensation paid before physical works start.) • Grievance mechanism (GM)	Included in construction cost	Contractor *(implementation)* DSI 54th Branch Office at Corum
	Lack of E&S team for managing environmental and social risks and impacts	The Contractor will employ at least a full-time OHS specialist, an environmental specialist, and a social specialist prior to the commencement of construction works. The Contractor shall submit the CVs of specialists for approval. These specialists should be present at the site throughout the construction period.	Included in construction cost	Contractor *(implementation)* DSI 54th Branch Office at Corum
	Lack of trainings of workers on environmental and social risks	The Contractor will prepare a training program and provide training to all his workers, before they start working on site, on basic environmental, social, health and safety risks associated with the proposed construction works and the workers' responsibility. The training program shall be repeated on a monthly basis. The Contractor's monthly training program will also cover topics related to Code of Conduct such as sexual harassment particularly towards women and children, violence, including sexual and/or gender-based violence and respectful attitudes while interacting with the local community.	Included in construction cost	Contractor *(implementation)* DSI 54th Branch Office at Corum
Impacted Stakeholder Notification Process	The project's activities may result in adverse impacts that could cause nuisance and disturbance to the local communities.	• SEP will be developed and consulted with stakeholders ahead of project start, informing them about project and its potential environmental and social risks and impacts. • The public will be notified about the upcoming works through printed and electronic media, as well as notifications posted in public places of the villages located within the impact area. •The scheduling of physical works on the scheme will ensure that irrigation service delivery is not interrupted during the season. If unavoidable interruptions occur, water users will be informed about the timing and duration of the disruptions.	Included in construction cost	Contractor *(implementation)* DSI 54th Branch Office at Corum
Occupational Health and Safety (OHS)	•Neglecting OHS considerations in planning can cause safety hazards and increase risks during construction, with incomplete risk assessments, insufficient safety measures, and inadequate resource allocation. •Incomplete or flawed design plans can pose hazards to workers, leading to accidents and injuries if access routes, fall protection measures, or structural stability are overlooked. •Insufficient site preparation poses risks to workers, including accidents, slips, trips, and falls due to unstable soil, improper waste management, lack of barriers, and inadequate signage. •Contractors lacking appropriate qualifications and experience, or having workers lacking OHS trainings can lead to inadequate work practices and an elevated risk of accidents, while insufficient training and supervision of workers can increase the likelihood of injuries.	•Contractor employees will undergo a medical assessment to ensure they are medically fit to perform their role before commencing work and these controls will be repeated annually. •Risk Assessment will be carried out by contractor for all works to be done before the construction works begin. Relevant procedures and plans (including "Emergency Preparedness and Response Plan" also covering community health and safety issues) will be prepared. Both Risk assessment and Emergency Preparedness and Response Plans will include action plans against health risks and related communicable disease risks. •A full-time Occupational Health and Safety (OHS) expert will be employed by contractor, and OHS plan based on construction site OHS risk assessment, including work procedures (such as permit to works etc.), will be prepared. •Develop and implement Contractor's Labour Management Plan including working conditions, fair treatment, non-discrimination, equal opportunity, vulnerable/disadvantaged individuals/workers, GBV, SEA/SH, prevention of child labor and forced labor according to TULIP's Labour Management Procedure •Workers will receive written contracts including job description, working hours, wages, rights and duties, code of conduct, etc. will be arranged according to TULIP's LMP	Included in construction cost	Contractor *(implementation)* DSI 54th Branch Office at Corum

Impact/Issue	Description of Risk/Expected Impact	Mitigation Measures	Cost of Mitigation	Responsibility
Seismicity	•Insufficient geotechnical investigations result in limited understanding of soil and rock conditions, including seismic characteristics, hindering appropriate mitigation measures. •Inaccurate seismic hazard assessment can lead to inadequate structural design or unnecessary and costly construction measures. •Design deficiencies ignoring seismic considerations compromise structural integrity, raising the risk of collapse or damage during earthquakes. •Seismicity-related risks during pre-construction may cause delays and increased costs due to additional studies, design revisions, and mitigation implementation. • The materials to be used in the construction phase will be earthquake resistant and long-lasting to prevent leakage from the water pipelines due to any accident, to prevent the pipelines from deformation after the construction phase, to prevent the loss of clean water	•While designing the irrigation system (irrigation pipelines and operation and maintenance roads), additional durability and structural measures will be developed when necessary. (Cracks, breaks, slips, deformations etc. of engineering structures that could happen especially after natural disasters)	Included in construction cost	Contractor Municipal Authority MoAF PIU / WB
Air Quality, Noise	Negative public perception and community dissatisfaction arising from pre-construction activities.	A grievance mechanism will be established to ensure any complaints/comments regarding the Project will be received and responded in a timely manner, providing solutions and taking corrective measures as appropriate.	Included in construction cost	Contractor
Water Quality	• Discharging domestic wastewater to the receiving environment without an environmental permit for wastewater may cause pollution of surface and groundwater	A contract or protocol will be signed by the contractor before the starting of the construction works with the Çorum municipalities regarding wastewater acceptance. In case Çorum Municipality Wastewater Treatment Plant is not suitable for wastewater disposal, Sungurlu Municipality Wastewater Treatment Plant and Yozgat Municipality Wastewater Treatment Plant can be considered as alternatives. Wastewater to be generated within the scope of the project will not be given to facilities without an environmental permit for wastewater discharge, and will not be discharged to the soil, surface water, lake, or any other receiving bodies in any way without obtaining an environmental permit for wastewater discharge.	Included in construction cost	Contractor
Waste Management	• Lack of appropriate waste sorting, temporary storage, recycling or disposal facilities in the vicinity of the project area, or the inability of facilities to accept waste, can be lead to inappropriate disposal of these wastes.	Agreement will be signed with the 2nd Class Landfill Facility operated by Çorum Municipalities Environmental Union for the disposal of domestic wastes to be generated under the project.	Included in construction cost	Contractor
Chemicals and Hazardous Materials Management	•Lack of management plan for chemicals and hazardous materials results in increased risks and environmental contamination. •Insufficient Hazardous Materials Inventory overlooks risks and promotes improper practices. •Inadequate training and awareness leads to accidents and health hazards. •Absence of Emergency Preparedness and Response Plans hinders containment efforts, posing risks to health and the environment. • Improper handling or arrival of construction materials can lead to water pollution and risks to human health and aquatic life.	•Emergency plans and procedures to address potential emergencies related to chemicals and hazardous materials will be developed. This includes having spill response plans, emergency contacts, and proper containment equipment readily available. •Providing comprehensive training to workers involved in construction activities, specifically focusing on spill prevention and response. Ensuring that they are familiar with the proper handling and storage of chemicals and hazardous materials, as well as spill response procedures.	Included in construction cost	Contractor
Stakeholder Engagement	Inadequate Stakeholder Identification and Analysis can lead to conflicts and challenges later, resulting in delays or increased project costs.	• SEP defining separate GMs for surrounding communities and relevant project stakeholders and a dedicated GM for project staff. • Disclosure and consultation of all E&S documents to stakeholders •Notify public about the upcoming works using printed and electronic media and notifications posted in public places of the villages located within the impact area. • Schedule physical works on the scheme so that irrigation service delivery is not interrupted during the season. If some interruptions cannot be avoided, inform water users on the timing and duration of the disruptions.	Available budget of Regional Directorate of State of Hydraulic Works	Contractor

Impact/Issue	Description of Risk/Expected Impact	Mitigation Measures	Cost of Mitigation	Responsibility
Worker camp	The unsuitable arrangement of the workers' camp location poses a risk of causing severe damage to environmentally and socially sensitive receptors.	The Contractor, in coordination with DSI Regional PIU and municipality authorities, will identify worker camp locations in the areas that have least possible environmental and social impacts (e.g.: away from water sources, wetlands, settlements, etc.) and the selected location will be approved by DSI Regional PIU.	Available budget of Regional Directorate of State of Hydraulic Works	Contractor
Cultural Heritage	When a value that is part of the cultural heritage is found, if the issues related to the preservation of this value are not managed with a chance find procedure, there can be a risk of losing this value. Preservation of Delihasan (Sarısüleyman) Höyük (Mound)	Workers will receive training on the "Chance Find Procedure". The project will maintain a safe distance to Delihasan (Sarısüleyman) Höyük (Mound), which will be surrounded by a protective barricade before the commencement of construction works, and will be protected during construction works.	Included in construction cost	Contractor

6.2. Construction Phase

Mitigation measures for the construction phase are listed below.

Table 6-2 Mitigation Measures for Construction Phase

Impact/Issue	Description of Risk/Expected Impact	Mitigation Measures	Cost of Mitigation	Responsibility
Disclosure	Insufficient disclosure of project information can hinder effective communication and stakeholder engagement, leading to limited transparency and potential mistrust.	• Before start of project, draft ESMP, SEP etc will be subject to public disclosure and consultation, and information about the public GM. • Before the start of construction works, the local people and all relevant stakeholders will be informed of the works to be performed and the measures to be taken. • The information on the start and finish dates of construction and working periods and the permits obtained from the government agencies will be shown by the Kızılhamza, Sarısüleyman, and Soğucak in a signboard.	Included in construction cost	Contractor Municipal Authority
Water Use, Water Quality and Wastewater Generation	•The project activity may lead to water demand. Excessive extraction or inadequate management practices may deplete local water resources, affecting ecosystems and water availability for others. •Improper waste disposal or untreated wastewater discharge can lead to water pollution in nearby water resources.	• Surface runoff or wastewater generation due to dust suppression activities will be prevented by applying appropriate wetting procedures. • All water requirements needed during the construction phase will be supplied from groundwater as it is currently the main source of water used in the region. In terms of groundwater use, there are no prohibited areas for water use in the project site, and a well certificate for use will be issued to the responsible company during the construction phase by DSI. • The limited amount of domestic wastewater generated at site will be collected at a temporary isolated impermeable septic tank (to be established in accordance with "Regulation on Pit Opening Where Sewer System Construction is not Applicable" being published in Official Gazette No: 13783 dated 19.03.1971) at the camp site. Septic tank effluent will be removed periodically by licensed sewage trucks, and disposal will be provided within the scope of the protocol to be made with the Çorum municipality that has a licensed Çorum wastewater treatment plant (WWTP) which operates in line with relevant environmental legislation and has sufficient capacity. The Protocol will be submitted to the DSI Regional PIU. •There will not be wastewater discharge to any receiving environment. All surface water resources within the project area will be protected from project-sourced wastes and activities and pollutants such as excavation materials to be temporarily or permanently stored. No soiled materials, solid wastes, toxic or hazardous materials should be stored in, poured into or thrown into water bodies for dilution or disposal. •Bottled and authorized drinking water that will comply with the requirements of Regulation on Water for Human Consumption will be provided for the drinking water needs of the personnel. •Surface water resources will not be used for washing and cleaning of vehicles to be used for construction works. Construction vehicles and machinery will be washed only in designated areas where runoff will not pollute natural surface waters. The floors of these designated areas will be made from impermeable material such as concrete, etc., inclined to collect the washing wastewater and wastewater accumulated there will be disposed of at a licensed disposal facility. •In case the trenches excavated for pipes are filled with surface water, ground water or rainwater, the potential muddy water to be discharged from these trenches will not be discharged directly to receiving bodies. •Concrete works will be separated from waterways and concrete mixing will be kept separate from drainage leading to waterways. •The flow of natural waters will not be obstructed or diverted to in another direction.	Included in construction cost	Contractor Regional Directorate of State of Hydraulic Works, General Directorate of State of Hydraulic Works

Impact/Issue	Description of Risk/Expected Impact	Mitigation Measures	Cost of Mitigation	Responsibility
		•In case of spillage/leakages during the construction work, the procedures (including spill response plans) defined in emergency plans to address potential emergencies related to chemicals and hazardous materials will be followed.		
Solid and Hazardous Waste (Waste Management)	•The project may generate a significant amount of solid waste and limited amount of hazardous waste from construction materials, packaging, maintenance activities, and operational processes. •Inadequate waste management practices, such as lack of proper waste segregation, temporary storage, recycling facilities, or disposal systems, can lead to improper disposal of solid and hazardous waste. •Improperly managed solid and hazardous waste can result in pollution of soil, water bodies, and air, potentially causing harm to ecosystems, wildlife, and human health.	• Measures will be taken to minimize waste generation such as training personnel to raise awareness (i.e., all necessary waste management training and periodic repetition of these trainings will be provided to the personnel) and managing waste in accordance with waste management hierarchy (prevent, reduce, reuse, recycle, recover, dispose). Waste prevention strategies and putting recycling/reuse/ recovery plans into practice will considerably reduce the total amount of waste and the remaining waste will be disposed by avoiding potential risks and impacts on human health and environment with appropriate mitigation measures. •Waste will be segregated as recyclable, hazardous and non-hazardous waste. Mineral construction wastes will be separated from general refuse, organic, liquid, and chemical wastes by on-site sorting and stored in appropriate containers. Non-hazardous wastes, inert and biodegradables wastes and also recyclables will be collected separately, and special attention will be paid to prevent hazardous wastes from mixing with other types of wastes. •Temporary waste storage area (to be established at the construction area) will be on an impermeable ground, covered with a roof, and equipped with a suitable drainage system, proper spill kits and appropriate firefighting equipment. Wastes will be temporarily stored in this area in separate compartments (labelled with waste codes) according to their types in order not to react with each other. Except for medical wastes, hazardous wastes shall be stored in the temporary waste storage area for a maximum of six (6) months and non-hazardous wastes for a maximum of one year. If one thousand kilograms or more per month hazardous waste is produced, a temporary storage permit will be obtained from the Provincial Directorate of Environment, Urbanization and Climate Change. •On-site storage of wastes prior to final disposal will be at least 300 meters from surface water bodies. •Records will be kept about the waste generation, storage and disposal. A Waste Registry Information Form will be prepared in this respect that will contain information on the waste code, amount, and transfer and disposal method as presented in the Waste Management Regulation. Annual Waste Declaration (for all types of waste) will be submitted via the Integrated Environmental Information System to the MoEUCC. • Hazardous waste shall be transferred to a licensed disposal facility via licensed waste transportation companies, and recyclable wastes to a relevant licensed recycling/recovery facility. •Non-recyclable domestic waste will be collected and stored in sanitary waste bins with lids and disposed through the the 2nd Class Landfill Facility operated by Çorum Municipalities Environmental Union within the scope of the protocol to be made. The 2nd Class Landfill Facility has Environmental Permit and Licence Certificate on Municipal Wastes and Non-Hazardous Waste Landfill, Biodegradable Waste Processing valid until 02.01.2025 [28]. The waste containers will be kept closed and protected from rainwater. •All protocols to be made regarding waste management (recycling, disposal, etc.) will be submitted to the DSI Regional PIU. •Temporary storage of medical wastes will be carried out in accordance with Article 14 of the Regulation on Control of Medical Wastes and Article 15 of its transportation to processing facilities. •It will be ensured that wastes are not spilled out of areas other than those reserved for this purpose and no waste will be disposed of or burned at the construction site. •Accidental spills and leakages will be managed through implementation of the Emergency Preparedness and Response Plan.	Included in construction cost	Contractor Municipal Authority MoAF PIU
Excavation Works and Excavation Waste/Material	•Excavation generates waste material, including soil, rocks, and debris. •Improper disposal of excavation waste can harm the environment, contaminating soil, water, and nearby ecosystems. •Excavation can lead to the deterioration or loss of topsoil,	•Excavation material will be re-used for backfilling purposes as much as possible and recovery and other re-use options will be considered as appropriate. •The contractor shall ensure that sufficient area is left along the construction route and make an arrangement for temporary storage of excavated material and topsoil. •The area will be restored later, and the topsoil will be used for this purpose. •Excess excavation material (including rocks and stones extracted during the excavation) will not be left on site	Included in construction cost	Contractor Municipal Authority MoAF PIU

[28] https://eizin.cevre.gov.tr/Rapor/BelgeArama.aspx

Impact/Issue	Description of Risk/Expected Impact	Mitigation Measures	Cost of Mitigation	Responsibility
	essential for healthy plant growth and agriculture. •Excavation disturbs soil structure, exposing bare soil and increasing the risk of erosion and sedimentation in nearby water bodies. •Poorly stockpiled earth from excavation poses a safety threat, potentially endangering workers and nearby individuals. •Excavated trenches can be hazardous, as people and animals may fall into them if left unsecured or unmarked. •Excavation activities can cause aesthetic damage, altering the natural beauty of the landscape.	after completion of construction works. •The excess excavation waste/material will be transported and disposed of separately by licensed transport vehicles to existing licensed excavation waste storage area(s) having sufficient capacity and identified by the relevant governmental authorities (as provided in Chapter 5), in line with the Regulation on the Control of Excavation Material, Construction and Demolition Wastes. •The excavation works will be conducted according to the cut and fill program to minimize excavation wastes. •Excavation works will be carried out only within the related area, and any damage on neighboring areas by excavation works will be avoided. •All excavation works will be carried out in a controlled manner during rainy seasons. •The trenches involving underground pipes will be closed soon after the completion of works and approval of the related supervision engineer, and they will not be left open to environmental impacts for a long time. •The trenches will be protected against flooding due to surface waters. •Topsoil and subsoil will be managed separately, with specific storage locations to avoid mixing and pollution. •Erosion control measures will be taken for areas where excavation materials are stored. •Necessary measures will be taken to prevent silt flow and similar impacts on from the storage areas to surface waters. •Subsoil stockpile will be limited to height of 6 meters and topsoil stockpile height to 2 meters. Excavation wastes will be stored by the Contractor in areas determined by Alaca Municipality or Alaca District Governorate within the framework of the relevant legislation		
End-of-life tires	•There is a risk of improper disposal, such as dumping in unauthorized areas or burning of end-of-life tires. If end-of-life tires are not properly managed, it can release pollutants into the air, soil and water, potentially contaminating ecosystems and affecting human health. •Accumulation of end-of-life tires in improper storage or disposal sites can pose a fire hazard, as tires are highly flammable and difficult to extinguish.	•End-of-life tires will be delivered to companies that distribute and sell tires via authorized transportation companies in line with the Regulation on the Control of End-of-Life Tires in cases when vehicles' tires need to be changed during construction activities.	Included in construction cost	Contractor Municipal Authority MoAF PIU
Chemicals and Hazardous Materials Management	•Improper management practices or accidental releases of chemicals and hazardous materials can lead to spills, leaks, or accidental releases, resulting in not only pollution of soil, water and air but also ecosystems by harming biodiversity and disrupting ecological balance. •Exposure to hazardous chemicals can pose risks to workers' health and safety, potentially leading to injuries, illnesses, or long-term health effects.	•A safe, closed, leak-proof chemical and hazardous materials storage area with adequate ventilation will be maintained at the site. There will be appropriate warning signs at the area, and it will be equipped with appropriate fire extinguishers and spill kit response kits. •The temporarily storage on site of all chemical and hazardous (or toxic) substances will be in safe containers labelled with details of composition, properties, and handling information. The containers of hazardous substances will be placed in a leak-proof container to prevent spillage and leaching, as appropriate. •Safety Data Sheets of all chemical and hazardous materials will be kept at the storage area and at the camp site. •The storage area will be locked and a competent worker, particularly trained in chemicals and hazardous materials, will be appointed for the management of storage area. •Adequately sized secondary containment will be provided for hazardous substances that may leak. •A secured area will be used for refueling and transfer of toxic fluids distant from the settlement area (and at least 50 meters from drainage structures and 100 meters from water bodies); ideally on a hard/non-porous surface. •Workers will be trained on correct transfer and handling of fuels and other chemical and hazardous substances and require the use of gloves, boots, aprons, eyewear and other protective equipment for protection in handling highly hazardous materials. •Strict safety protocols for workers handling with chemicals and hazardous materials will be established. •In case of spillage/leakages during the construction work, the procedures (including spill response plans) defined in emergency plans to address potential emergencies related to chemicals and hazardous materials will be followed. •Unapproved toxic materials including lead-based paints, un-bonded asbestos, etc. will not be used. •Contaminated chemicals and hazardous substances will be treated as hazardous waste and will be disposed of	Included in construction cost	Contractor Municipal Authority MoAF PIU

Impact/Issue	Description of Risk/Expected Impact	Mitigation Measures	Cost of Mitigation	Responsibility
		accordingly. •All chemicals and hazardous materials from work areas will be collected at the end of the workday and transported to the chemical and hazardous materials storage area. •Chemicals and hazardous materials that may cause leakage will be kept in secondary containment when used in the work area.		
Waste Batteries and Accumulators	•If not managed correctly, waste batteries and accumulators can be improperly disposed of, leading to contamination of soil and water, affecting ecosystems and human health. •Failure to recycle or recover valuable materials from waste batteries and accumulators can contribute to resource depletion and the need for additional raw materials.	•Transportation of waste accumulators and batteries to respective disposal facilities will be conducted by licensed and authorized transportation companies in line with Regulation on Control of Waste Batteries and Accumulators. •Waste batteries and accumulators will be collected separately from other waste types.	Included in construction cost	Contractor Municipal Authority MoAF PIU
Waste Electrical and Electronic Goods	• When thrown into nature, they release toxic metals such as lead, cadmium, and mercury, which contribute to pollution. • These metals, when introduced into nature, can enter the food chain and pose a threat to human health. • Valuable metals contained within them are destroyed rather than reclaimed.	• Electronic wastes will be collected separately from other waste types. •The resulting electronic wastes will be sent to the licensed recycle facilities within the framework of the Regulation on Management of Waste Electrical and Electronic Goods published in the Official Gazette No. 32055 (26.12.2022).	Included in construction cost	Contractor Municipal Authority MoAF PIU
Waste Oils	•The project may generate waste oils from maintenance activities, equipment lubrication, or oil changes. If waste oils are not properly managed, there is a risk of improper disposal, such as illegal dumping or improper storage, leading to environmental pollution and potential health hazards. •Accidental spills or improper disposal of waste oils can have adverse effects on soil and water bodies, harming ecosystems, and posing risks to human health.	•Maintenance materials such as oily rags, oil filters, waste oil, etc. will be collected and properly dispose of. Waste oils will never be disposed of on the ground and/or in water courses. •In case different types of waste oils (in different categories) generated at the construction site, these waste oils will be stored separately. •Containers which are used for storage of waste oils will be kept closed to prevent rainwater from mixing with waste oils. •The disposal of waste oils will be done by licensed recycling or disposal facilities and will be transported to these facilities with licensed vehicles, in line with Waste Oil Management Regulation.	Included in construction cost	Contractor Municipal Authority MoAF PIU
Noise	•The project activities, such as machinery operation, construction, or equipment maintenance, can generate high levels of noise, causing disturbance and annoyance to nearby residents, workers, and wildlife. •Prolonged exposure to excessive noise levels can lead to various health issues.	•Machinery, equipment and vehicles with lower sound power levels and sound reduced models will be preferred. •All equipment will be maintained to keep it in good working order by manufacturing maintenance procedures and installing acoustic enclosures around generators to reduce noise levels. •Construction equipment will not be operated simultaneously as much as possible. Machines that are intermittently used will be shut down or used minimally during operational breaks. •Construction sites will be planned to avoid several noisy activities or equipment operations at the same location as much as possible. •During operations, the engine covers of generators, air compressors, and other powered mechanical equipment shall be closed, and equipment placed as far away from residential/ community areas as possible. •Noise-generated construction operations will be limited to restricted time periods specified in the national legislation. The construction site activities will not be carried out in the evening and nighttime periods. •Site personnel will be trained on noise caused by the project activities. •Construction activities will be planned in consultation with nearby communities so that the noisiest activities are undertaken during periods that will result in the least disturbance. •The communities (such as Sarısüleyman, Soğucak, and Kızılhamza villages) will be informed one week before the start of noisy activities that may cause discomfort temporarily. •When needed and feasible noise-control methods such as fences, barriers or deflectors will be used. •Unnecessary use of alarms, horns and sirens will be avoided. • Noise measurements will be conducted by an authorized laboratory if any grievance regarding noise generation is received from the nearest receptors (such as Sarısüleyman, Soğucak, and Kızılhamza villages). If measured levels are above limit values and reveal any indication for possible noise impact due to the project, mitigation measures will be enhanced in this respect, i.e., installing acoustic barriers for mechanical equipment, limiting the hours of operation for specific pieces of equipment or operations, etc. •Driving construction vehicles through settlements will be avoided where possible.	Included in construction cost	Contractor Municipal Authority MoAF PIU

Impact/Issue	Description of Risk/Expected Impact	Mitigation Measures	Cost of Mitigation	Responsibility
		•Where possible, a buffer zone (such as open spaces, rows of trees or vegetated areas) between the project sites and residential areas to lessen the impact of noise to the living quarters will be maintained. •In order to protect the employees from the noise caused by machinery and equipment; work will be carried out in accordance with the provisions of relevant OHS legislation and necessary measures (such as provision of appropriate ear protection equipment to the workers) will be taken to protect workers from health and safety risks, especially hearing risk, as a result of exposure to noise. •In order to keep the noise level to a minimum, the provisions of the Environmental Noise Control Regulation will be complied with. •Compliance with the noise limit values provided in national legislation and WBG General EHS Guidelines will be ensured.		
Air Quality (dust and exhaust emissions)	•Project activities, such as earthmoving, construction, or vehicle movement, can generate dust particles that become airborne, leading to elevated dust levels in the surrounding areas. •Elevated dust levels can reduce visibility, potentially affecting road safety and creating hazards for workers and motorists. •The use of machinery, vehicles, and equipment can emit exhaust gases. Exhaust emissions contribute to air pollution, impacting air quality, and potentially leading to environmental and health issues for nearby communities and ecosystems.	•Truck loading and unloading operations will be carried out with due care and materials will be prevented from scattering around. • Dust from exposed work sites will be minimized by applying water on the ground regularly during the dry season. •Dust from outdoor sources will be minimized by employing control measures such as covering the piles and increasing the moisture content. •Dust suppression techniques such as the application of water or non-toxic chemicals should be used to minimize dust from vehicle movements. •Modern equipment and vehicles that can meet the applicable emission standards will be selected for construction works. •All vehicles and equipment will be regularly maintained to prevent emissions from vehicles and maintenance records will be kept. •There will be no excessive idling of construction vehicles at sites. •Operation hours of generators/machines /equipment /vehicles will be reduced, if needed. •Speed limit will be established for trucks (30-40 km/h) within the settlements. •Trunk of each truck will be covered during transportation of waste and construction material. •Dust measurements will be conducted by an authorized laboratory accordingly if any grievance regarding dust generation is received from the nearest receptors (such as Sarısüleyman, Soğucak, and Kızılhamza villages). If measured levels are above limit values and reveal any indication for possible pollution due to the Project, mitigation measures will be enhanced in this respect, i.e., increasing wet suppression/ watering activities, applying non-toxic chemicals, further reducing speed/traffic, use of wind shield and barriers, protective covers or curtains for the areas where most of the dust is formed, etc. •Construction or waste materials will not be burned outdoors. •In order to minimize the dust and impacts that may occur in soil stripping and cut and fill works; measures such as water spraying at emission source, filling and unloading operations without tossing, covering vehicles with tarpaulin during material transportation and keeping the upper part of the material at 10% humidity will be taken. •In accordance with the Exhaust Gas Emission Control Regulation; vehicles with traffic inspections, exhaust gas emission measurements will be used, and vehicles that need maintenance will be taken into maintenance after routine checks and other vehicles will be used until their maintenance is completed. •Compliance with the ambient air quality limit values stipulated in Regulation on Assessment and Management of Air Quality and WBG General EHS Guidelines will be ensured.	Included in construction cost	Contractor Municipal Authority MoAF PIU
Soil Quality (Erosion and Contamination)	•Project activities, such as land clearing and construction works can increase soil erosion by removing vegetation cover, altering natural drainage patterns, and exposing bare soil to erosion agents like wind and water. •Soil erosion can lead to the loss of topsoil, which is rich in organic matter and nutrients, affecting soil fertility and the ability to support plant growth. •Improper disposal of waste materials, including construction	•In order to eliminate the risk of erosion in periods of excessive rainfall, the waters from the project surroundings and slopes will be separated from surface run-off by directing through temporary channels and soil embankments. •Erosion control measures will be implemented following the completion of excavation works. •Around the topsoil and excavated material stored at designated temporary storage areas, dikes will be established to prevent loss of soil, as needed. •All of the disturbed sites will be restored to the most possible extent in a timely manner following the completion of stripping and excavation works.	Included in construction cost	Contractor Municipal Authority MoAF PIU

Impact/Issue	Description of Risk/Expected Impact	Mitigation Measures	Cost of Mitigation	Responsibility
	debris, chemicals, or other pollutants, can contaminate the soil. •Accidental spillages or leakages of chemicals, fuels, or other hazardous substances used in the project can contaminate the soil. •Contaminants in the soil can leach into groundwater, potentially polluting water sources and posing risks to drinking water supplies.	•The topsoil layer on the pipeline route and operational and maintenance road route will be stripped and conserved in appropriate temporary storage areas for use in restoration activities, particularly for the pipeline. The slope to be maintained in these areas will not be more than 5% to prevent wind and water erosion losses that may occur during storage and to preserve the quality of the soil. •The excess topsoil (e.g., stripped for operation and maintenance road) may be sent to areas needing it in coordination with the related Agriculture Directorates. Operation and Maintenance Roads will not be covered with concrete or asphalt, but will be established as dirt roads with an average width of 6 m to be used when needed. •Topsoil and subsoil will not be mixed in any case. •Mitigation measures specified in "*Chemicals and Hazardous Materials Management*" and "*Waste Management*" sections will be applied for proper waste and chemicals and hazardous materials management. •Proper spill response kits will be available at appropriate locations at the work areas for possible spillages/ leakages. •Containers containing hazardous chemical materials will be placed in sealed vessels to prevent spills and leaks. •All chemicals storage containers, including diesel fuel, and hazardous liquid waste drum/containers will be placed in secondary containment to minimize the risk of soil contamination.		
Stakeholder Engagement	•Insufficient communication and engagement with stakeholders, including local communities, landowners, and relevant organizations, can result in misunderstandings, mistrust, and dissatisfaction. •Inadequate consideration of stakeholder concerns, needs, and social dynamics can result in social disruptions, inequities, or negative impacts on the affected communities.	•SEP will be implemented, and GM will be operated. •Before the start of construction works, the local people and all relevant stakeholders will be informed of the works to be performed, start and finish dates, and the measures to be taken in accordance with SEP. •Contractor is responsible to: -Assign local liaison person to lead communication with and receiving requests / complaints from local population. -Consult local communities to identify and proactively manage potential conflicts between an external workforce and local people. -Install banners with the name and contact information of contractor in visible locations around/along the work sites to ensure local communities can raise concerns and ask questions to contractor -Raise awareness of local communities about any inconveniences they may experience and risks them may face due to presence of an external workforce in proximity to their settlements and works to be undertaken. -Raise awareness of workers on overall relationship management with local population, establish the code of conduct in line with international practice and strictly enforce them, including the dismissal of workers and financial penalties of adequate scale.	Included in construction cost	Contractor Municipal Authority MoAF PIU
Occupational Health and Safety (OHS)	•Workers involved in construction activities, such as installing irrigation structures or working on elevated platforms, face the risk of falls, leading to serious injuries or fatalities. •Workers may be at risk of being struck by moving equipment, falling objects, or vehicles operating in the construction area, causing injuries or even fatalities. •Workers involved in excavation or trenching activities face the risk of cave-ins, engulfment, or exposure to hazardous gases, which can result in injuries or fatalities. •Construction activities may involve working near overhead power lines or with electrical equipment, posing risks of electrocution or electrical accidents if proper precautions are not taken. •Handling and use of hazardous materials, such as chemicals, fuels, or pesticides, during construction can lead to exposure risks, including respiratory issues, skin conditions, and chemical toxicity.	•When planning activities, discuss steps to avoid people getting hurt. It is useful to consider: - Construction place: Are there any hazards that could be removed or should warn people about? - The people who will be taking part in construction: Do the participants have adequate skill and physical fitness to perform their works safely? - The equipment: Are there checks you could do to make sure that the equipment is in good working order? Do people need any particular skills or knowledge to enable them to use it safely? - Electricity Safety: Do any electricity good practices such as the use of safe extension cords, voltage regulators and circuit breakers, labels on electrical wiring for safety measures, awareness on identifying burning smells from wires, etc. apply at the site? Is the worksite stocked with voltage detectors, clamp meters and receptacle testers? •OHS Plan and related procedures will be implemented at site. •Employees will be given technical and periodic OHS trainings, and toolbox talks will be conducted with workers before starting work every day. •A safe and healthy work environment for the workers will be provided and all employees will be informed about working conditions and the required safety rules, risks, and related regulations to be followed at the construction site throughout the construction period. •Employees will have a good command of emergency plans, and the grievance will be reported to the authorized teams and resolved, if they require urgent action. •Employees will be provided with all necessary personal protective equipment (PPE) (hard hat, seat belt, work	Included in construction cost	Contractor Municipal Authority MoAF PIU

Impact/Issue	Description of Risk/Expected Impact	Mitigation Measures	Cost of Mitigation	Responsibility
		safety suit, glasses, gloves, armored shoes, etc.). •Equipment that meets international standards in terms of performance and safety will be provided. •All training, accidents and incidents (fatalities, lost time incidents, any significant events including spills, fire, pandemic outbreak or infectious diseases, social unrest, etc.) as well as near misses will be recorded throughout the construction. •The daily activity reports to be kept throughout the construction process will be transferred to DSI Regional PIU through 54th Branch Office of DSI on a weekly basis. •In case of any incident or accident related to the project which has, or is likely to have, a significant adverse effect on the environment, the affected communities, the public and workers such as OHS accidents or incidents that result in threatening community health and safety, the Contractor shall promptly notify DSI Regional PIU (through 54th Branch Office of DSI) and DSI Regional PIU will immediately inform PCU. The PCU will inform the World Bank about the incident within 48 hours after the occurrence of the incident or accident. In such cases, sufficient details regarding the incident or accident will be provided, indicating immediate measures taken or that are planned to be taken to address it, and any information provided by the Contractor and 54th Branch Office of DSI, as appropriate. Subsequently, as per the Bank's request, a report on the incident or accident will be prepared and any measures to prevent its recurrence will be proposed. The report (incident report including root cause analysis, precautions and compensation measures taken) will be provided within 30 business days to the Bank, as requested. •Contractor must ensure that health assessments are carried out in respect of all personnel who engage in specific tasks with the potential for occupational exposure. •Access restriction at construction areas and access routes will be implemented, by specifying restricted zones, (i.e., dangerous routes), fencing, barriers, etc. •Signs, signals, markings and other appropriate traffic regulation devices will be installed, including reflective and flashing signage for nighttime traffic safety, at all required sites. •Task specific hazard identification will be done for each activity. •DSI Regional PIU will ensure that all OHS measures are taken by the Contractor and enforce necessary actions/sanctions in case lack of these measures on sites. •Daily inspection of the project site will be carried out by the Contractor and 54th Branch Office of DSI. •Only drivers/operators with valid licenses will be allowed to drive/operate respective vehicles. •Speed limits at all construction sites will be implemented. •Periodic vehicle and machinery maintenance will be conducted. •Working hours specified in the Labor Law No 4857 will be followed. •Only personnel holding the height work permit will work at height, and safeguarding measures (guardrails, fall arrest) will be in place. •Only personnel holding the related permits will work under noise, vibration, thermal discomfort situations, around electrical vehicles, chemicals, and pressurized cylinders. •If trenches deeper than 1.5 m have to be excavated when laying the pipes, confined space working procedures will be applied. •Appropriate protection measures (e.g., shoring with aluminum, steel or wood panels, application of trench box) will be taken against collapse or sliding of soil. No workers will be allowed to enter the excavated area without appropriate protection measures in place. The Contractor will take required measures pursuant to the applicable regulations to protect and enhance occupational health and regulate working standards in particular. •Safety guidelines will be followed for the storage, transport, and distribution of hazardous materials aiming to minimize the potential for misuse, spills, and accidental human exposure. •Corrosive fluids and other toxic materials will be kept in properly sealed containers for collection and disposal in properly secured areas. •It will be ensured that the structural openings are covered/protected adequately. •Hoses, power cords, welding leads, etc. will be kept from laying in heavily travelled walkways or areas. •All work will be suspended during heavy rains or emergencies of any kind. •Moving equipment with restricted rear visibility will be outfitted with audible back-up alarms. A flagman will be provided to each moving equipment operator to guide the movement of equipment.		

Impact/Issue	Description of Risk/Expected Impact	Mitigation Measures	Cost of Mitigation	Responsibility
		•The contractor will mark all energized electrical devices and lines with warning signs. The contractor will check all electrical cords, cables, and hand power tools for frayed or exposed cords and follow manufacturer recommendations for the maximum permitted operating voltage of the portable hand tools. •The areas to be excavated will not be accessible except by authorized personnel. •Loading and unloading activities will be carried out together with the people who will supervise the personnel who will carry out the activity. •The construction areas will be surrounded, and necessary security measures will be taken, no one will be allowed to enter except for the staff. •The contractor will assign a full-time staff responsible for Occupational Health and Safety with relevant certification and experience and monitor field practices. •Emergency Preparedness and Response Plans will be implemented for a potential accident and emergency. Emergency teams will be formed, and drills and training programs will be carried out in line with emergency scenarios. •In case of any potential accident involving injury during the construction phase, the equipment for the first aid to be provided will be kept available at the construction site, taking into account that first aid response may be required before the casualty is referred to the nearest healthcare provider. •The access of people to the construction site will be blocked with plastic tapes, barriers, phosphorescent or illuminated warning signs so that the work does not cause harm to people living in the area (especially children, the elderly, and the disabled). • All activities will be implemented in line with the Labor Law, the Law on Occupational Health and Safety and its relevant regulations as well as the World Bank Group EHS Guidelines. •Develop and implement Contractor's Labour Management Plan including working conditions, fair treatment, non-discrimination, equal opportunity, vulnerable/disadvantaged individuals/workers, GBV, SEA/SH, prevention of child labor and forced labor issues according to TULIP's framework document• Workers will be issued written contracts with job description, working hours, wages, rights and duties, Code of conduct, etc. are provided to project employees. Issuance of a written contract regarding work/operation procedures that include.		
Land Use	•Improperly planned construction activities can result in land disturbance, including excavation, grading, and temporary storage of materials, which may cause damage to the adjacent land and its structures. •Construction operations may limit or restrict landowners' access to their properties, potentially impacting their ability to carry out farming or other activities on the land.	•Training will be provided to the construction personnel so that they maintain the pre-established construction boundaries. •Implement Project Grievance Mechanism. If any complaints related with arable lands are received through the Grievance Mechanism, evaluate the complaint and where necessary plan and implement corrective actions. •Contractor will ensure that necessary corrective measures are taken from its own budget, in case of direct or indirect damage caused by project activities to adjacent properties that are state-owned or private property	Included in construction cost	Contractor Municipal Authority MoAF PIU
Security	•, Acts of vandalism or sabotage may occur, leading to damage and delays in construction. •The project may experience theft, vandalism, trespassing, or other security incidents during the construction phase, both inside and outside the project area. •Use of unsuitable security personnel may compromise the safety and reputation of the project.	• In case the project will utilize security personnel, the project will comply with the requirements of ESS4. •Conduct an inquiry during the hiring process of security personnel (or the company the security service is procured from) to check competency and existence of any former abuse incidents. •Provide trainings on code of conduct, gender sensitivities and local cultural sensitivities to security personnel or ensure that the company the security service is procured from provides its personnel with similar trainings. The trainings will ensure force is used only for preventive and defensive purposes and in proportion to the threat.	Included in construction cost	Contractor Municipal Authority MoAF PIU
Emergency Preparedness and Response	•Incidents or emergencies that arise during the construction phase may experience delayed response times. •Incidents such as fires, structural failures, or hazardous material spills can escalate quickly, causing extensive damages to the construction site, equipment, and nearby properties. The resulting repair and recovery costs can significantly impact the project budget and schedule.	•A project-specific Emergency Preparedness and Response Plan for the construction phase covering the risks on local communities will be developed and implemented. •Measures/systems for collaboration with the local communities and other external parties including local governmental agencies, media, etc. will be developed, where necessary. •Local communities will be notified by using appropriate tools (e.g., telephone call lists, vehicle mounted speakers) in case of emergencies arising from the project work/construction sites may pose risk on them. •Where necessary, the details of the nature of the emergency, protection options, etc. will be communicated through trained community liaison officer(s). •The media will be communicated through qualified, trained persons and/or by using appropriate tools (i.e.,	Included in construction cost	Contractor MoAF PIU

Impact/Issue	Description of Risk/Expected Impact	Mitigation Measures	Cost of Mitigation	Responsibility
		press releases), where necessary.		
Traffic and pedestrian safety due to construction traffic	•Construction vehicles entering and exiting the project site can contribute to traffic congestion, especially in areas with limited road capacity. •Construction activities may create hazards such as uneven surfaces or debris, increasing the risk of accidents. •Altered walking routes and proximity to construction areas can pose risks to pedestrians, including slip and trip hazards.	•All construction areas and construction access routes will be screened for potential community interaction (with a particular attention to schools, children parks, etc.) with project construction phase traffic. Based on results, a site specific measures will be developed and implemented (i.e., improve signage, visibility) and trainings to driver/operator will be provided prior to initiation of any construction work. • Access restriction at construction areas and access routes will be implemented by specifying restricted zones. •Signs, signals, markings and other appropriate traffic regulation devices will be installed, including reflective and flashing signage for nighttime traffic safety, at all required sites. •Passage of construction traffic through the settlements will be avoided, whenever alternative roads are present. •Where passage through existing settlements is unavoidable, all necessary measures (i.e., speed limits, traffic signs, and driver trainings) will be taken to prevent safety risks on local communities. •Only drivers/operators with valid licenses will be allowed to drive/operate vehicles. •Driving skills improvement trainings will be provided in consideration of the requirements of specific vehicles, machinery, etc. •Speed limits at all construction sites will be implemented. •Periodic medical checks for drivers/operators will be conducted. •Periodic vehicle maintenance will be conducted. •Information and awareness raising activities with stakeholders and communities including women, children as well as disabled will be provided.	Included in construction cost	Contractor MoAF PIU Municipal Authority
Impacts on Labor and Working Conditions	•If workers are not provided with proper employment contracts or are engaged in informal labor arrangements, they may face limited or no access to social security benefits such as healthcare, retirement plans, and disability coverage. •Inadequate compliance with labor laws and regulations may result in employers failing to make necessary contributions to social security systems on behalf of their workers, leading to poor working conditions and inadequate wages.	•All workers should be issued with official contracts with Social Security implications and a written contract containing job description, work hours, salary, rights and duties, code of conduct, and information for reaching out to GM for workers. •All employees should be provided with formal contracts that include Social Security applications and a written contract that includes job descriptions, working hours, salary, rights and duties, code of conduct, and access to the manager for employees; this reflects an approach in line with the World Bank's standards on Employee Social and Health Services (ESS). •Based on TULIP's Labour Management Procedure, the contractor will develop its own Labour Management Plan. •The grievance mechanism should be actively and efficiently operated. Workers will be allowed to have access to the Grievance Redress Mechanism and will be required to be aware about this Mechanism. •Minimum legal labor standards will be met (no child/forced labor, anti-discrimination, working hours, minimum wages) as per International Labor Organization (ILO) regulations. •Ensure drinking and utility water to be supplied meet the requirements of the Turkish Regulation on Water Intended for Human Consumption and WHO Guidelines for Drinking Water Quality •Provide all accommodation sites with sufficient emergency response equipment such as first aid kits and fire-fighting equipment and conduct periodic checks to ensure they are in working condition. • Within the scope of the project, a camping area will be established for 15 personnel during the construction phase, but the location of the camping area has not yet been determined and will be determined and constructed by the Contractor before the start of the works in the field; In addition, 5 personnel will be employed by DSİ 5th Regional Directorate during the operation phase. •Provide trainings to personnel on general waste management, housekeeping, first aid practices and communicable diseases. •Conduct visual checks on site to ensure proper housekeeping. •Ensure proper first aid equipment is kept on site, at various related locations. •Conduct periodic medical checks for personnel and provide vaccination and/or other mitigating measures when required •Ensure construction phase personnel’s retrenchment is conducted in compliance with all applicable legal requirements and WB ESS2. •Ensure contractual requirements are fulfilled during the process.	Included in construction cost	Contractor MoAF PIU Municipal Authority

Impact/Issue	Description of Risk/Expected Impact	Mitigation Measures	Cost of Mitigation	Responsibility
		•Develop and implement Labour Management Plan (by contractor) according to Labour Management Procedure of TULIP including working conditions, fair treatment, non-discrimination, equal opportunity, vulnerable/disadvantaged individuals/workers, GBV, SEA/SH, prevention of child labor and forced labor issues, adhering to TULIP's framework document.		
Vulnerable Groups	•Construction zones can pose safety hazards to road users, including the presence of heavy machinery, loose debris, or uneven road surfaces, increasing the risk of accidents or damage to vehicles. •Construction activities may result in temporary road closures or disruptions, limiting or restricting access for local communities, businesses, and transportation.	•The use of access roads should be planned in a way that does not pose risks the travel safety of shuttle vehicles in villages with bussed training, and traffic measures (warning signs, speed limits, and information about settlements and schools for the periods when large and dangerous goods will be transported) should be taken. •The grievance mechanism should be actively and efficiently operated. •The blockages in the access roads shall be at minimum during the construction period and any blockage shall be planned prior to execution. An advance notice shall be given to the Headman including timing and point of blockage and an alternate route which to be used in case of emergency. •Schedule works beyond irrigation season to the extent possible to avoid/minimize service disruption. Inform local population about construction and work schedules. •Restricted vehicle movement to defined access routes and demarcated working areas to prevent excessive damage to vegetation and soil. Use noise-generating technologies between 08.00a.m-19.00 p.m.	Included in construction cost	Contractor MoAF PIU Municipal Authority
Cultural Heritage	•Construction activities may accidentally damage or destroy archaeological sites, artifacts, or cultural heritage features that are discovered during excavation or earthworks.	•Contractor will take all physical activity on hold upon encountering of a chance find and immediately inform 54th Branch Office of DSI and DSI Regional PIU. (Please see Annex-2 Change Find Procedure for the details) • Chance Finds Procedure will be implemented to manage potential tangible cultural heritage and documenting any discovered tangible cultural heritage by recording its forms and collecting relevant documents. •Details of Chance Finds Procedure to manage potential tangible cultural heritage can be found in Annex 2.	Included in construction cost	Contractor MoAF PIU Municipal Authority
Resettlement and Land Acquisition	•Construction activities may require the resettlement of communities living in the project area, leading to the displacement of families and disruption of their social structures. •Improper rehabilitation measures can leave affected communities without adequate means to rebuild their lives or access comparable livelihood opportunities.	•Resettlement Plan will be prepared based on TULIP's ESMF. •Land acquisition and implementation of RP is supposed to be completed before construction starts.	Included in construction cost	Contractor MoAF PIU Municipal Authority
Documentation	•Missing Documentation	•All activities, information meetings, opinions/suggestions, grievances, etc. provided during the construction period will be documented continuously	Included in construction cost	Contractor MoAF PIU Municipal Authority
Dam Safety of Kızılhamza Dam and related structures	Potential debris in reservoir Bedrock and body fill properties Spillway design flood capacity Operation and maintenance instruction Earthquake risk analysis Upstream riprap degradation Settlements and heaves Downstream slope protection	Reduced storage capacity due to debris accumulation over time. Inaccurate data on structural integrity could compromise dam safety. Insufficient capacity could lead to overtopping and structural failure. Lack of clear guidelines could lead to improper maintenance and operational issues. Unassessed earthquake risks could compromise dam safety. Erosion and structural weakening on the upstream side Potential structural instability on both sides of the pond. Potential erosion and structural instability on the downstream slope.	Included in construction cost	Implementing: Contractor Supervising: DSI 54th Branch Office at Corum of DSI 5th Regional Directorate

6.3. Operation and Maintenance Phase

Mitigation measures for the operation and maintenance phase is given in Table 6-3 and Table 6-4.

Table 6-3 Mitigation Measures for Operation Phase

Impact/Issue	Description of Risk/Expected Impact	Mitigation Measures	Cost of Mitigation	Responsibility
Delivery of irrigation services to water users	•Excessive/improper irrigation of fields leads to soil erosion and salinization. •Poor operation of pipes and hydraulic structures causing water loss, flooding, and waterlogging of areas along the right	•Regular site observations will be made by the maintenance and operation team of DSİ. In case of any malfunction or damage that will cause any water loss, immediate intervention will be made. •An awareness-raising campaign will be undertaken to target irrigation water users and promote adequate and rational irrigation practices.	Included in Operation service	Regional Directorate of State of Hydraulic Works

Impact/Issue	Description of Risk/Expected Impact	Mitigation Measures	Cost of Mitigation	Responsibility
	of way.	• In cases where irrigation needs are not met, immediate feedback can be received from local people through the complaint mechanism.		(DSI Regional PIU)
Usage of Fertilizer and Pesticides by the water users	Pesticides used in agriculture lead to the formation of reactive oxygen species such as hydrogen peroxide (H2O2), superoxide (O2 --) and hydroxyl (-OH) radicals. These radicals can react with biological macromolecules, causing enzyme inactivation and DNA damage. Pesticides accumulate in fatty tissues, causing peroxidation of polyunsaturated fatty acids (PUFA). If these oxidants cannot be removed by the antioxidant defense system, they cause oxidative stress. As a result of oxidative stress, pathological conditions such as DNA damage and cancer formation are observed.	•A Control Officer appointed by the Ministry or Provincial Directorate inspects the use of banned, unauthorized, or incorrectly used plant protection products in agricultural production by taking samples from the product being harvested on-site based on risk. •The sample taken by the control officer in accordance with the procedures is sent to the laboratory. •If unauthorized plant protection product use is detected through analysis conducted during inspections, the producer is initially subject to administrative fines according to Article 39 of the Law. Following administrative sanctions, if the detected plant protection product is prohibited for use in our country, the entire product is destroyed. •For unharvested plant products, delaying harvest is carried out to ensure that the determined maximum residue limit values for the active substance fall below. The start and end stages of harvest delay are recorded, and necessary checks are carried out. •The destruction process is supervised by the Provincial Directorate, with all expenses borne by the producer. Mature fruits and vegetables that can be consumed on the plant are destroyed during the destruction of unharvested products. Harvest delay and harvested product quantities during sampling are documented. The sample Pesticide Management Plan given in Annex 10 will be used as a template.	Water users using pesticides	Ministry of Agriculture and Forestry
Biodiversity	Changes in habitat and species can disrupt ecological processes, impacting ecosystem function and resilience.	The operation has no impact on flora and fauna during the operational phase. Therefore, there is no need to take mitigation measures for operation phase.	N.A	N.A
Water Supply	The project activity may lead to water demand. Excessive extraction or inadequate management practices may deplete local water resources, affecting ecosystems and water availability for others.	Water requirements will also be supplied from groundwater resources. Groundwater usage permit will be obtained during the pre-construction period.	Included in Operation service	Regional Directorate of State of Hydraulic Works
Wastewater	Untreated wastewater discharge can lead to water pollution in nearby water resources.	Wastewater will be collected with a sealed septic tank and conveyed to the Çorum Municipality's WWTP by sewage truck.	Included in Operation service	Regional Directorate of State of Hydraulic Works
Grievance Mechanism	Inadequate grievance mechanisms can lead to unresolved community concerns and grievances and escalate social tensions and conflicts within the community.	•Grievance mechanism will be established for OHS and Community Health and Safety issues in operation period. •Updated information about the grievance mechanism will be provided permanently.	Included in Operation service	Regional Directorate of State of Hydraulic Works

Table 6-4 Mitigation Measures for Maintenance Phase

Impact/Issue	Description of Risk/Expected Impact	Mitigation Measures	Cost of Mitigation	Responsibility
Wastes from maintenance and repair work (Waste Management)	• Improper management of maintenance and repair wastes, such as hazardous waste, oils, chemicals, or construction debris, can lead to environmental pollution, soil contamination, or water pollution. •Improper handling and disposal of maintenance and repair wastes can pose health and safety risks to workers and nearby communities, including the risk of exposure to harmful substances or accidents.	•Wastes generated during maintenance and repair works will be disposed of without causing additional pollution, as determined by the related national waste legislations. •All possible waste generated during maintenance and repair work will be disposed according to Annex 4 of the Regulation on Waste Management. •Wastes from maintenance and repair works will be characterized based on their composition, source, types, generation rates or national legal requirements and waste will be collected separately as per their type and temporarily stored in appropriate containers. •In addition to the adoption of waste prevention strategies, putting recycling plans into practice will considerably reduce the total amount of waste. •If waste materials are still generated after appropriate waste prevention, reduction, reuse, and recycling measures are put into action, waste will be disposed of at licensed facilities. •Municipal solid waste will be collected by the relevant municipality, hazardous waste will be transferred to a licensed disposal facility via licensed waste transportation companies, and recyclable wastes to a relevant licensed recycling/recovery facility. •Waste batteries and accumulators will be separately collected and delivered to respective disposal facilities	Included in Maintenance service	Regional Directorate of State of Hydraulic Works (DSI Regional PIU)

Impact/Issue	Description of Risk/Expected Impact	Mitigation Measures	Cost of Mitigation	Responsibility
		with authorized transportation companies. •If medical waste is generated, it will be temporary stored in accordance with Article 14 of the Regulation on Control of Medical Wastes and transported to processing facilities as per Article 15 therein.		
Delivery of irrigation services to water users	Poor maintenance of pipes and hydraulic structures causing water loss, flooding, and waterlogging of areas along the right of way.	Routine maintenance and emergency repair works should be duly performed on the irrigation scheme to prevent malfunctioning.	Included in Maintenance service	Regional Directorate of State of Hydraulic Works
Seismicity	Seismic events can cause damage to infrastructure such as water intake structure, irrigation pipes and art structures compromising their functionality.	All replaced structures of irrigation system within the maintenance and repair works of project must be selected as per high earthquake resistance parameters since Kızılhamza Irrigation System is located in 3rd degree earthquake risk zone.	Included in Maintenance service	Regional Directorate of State of Hydraulic Works
Stakeholder Engagement	Failure to ensure effective, adequate and transparent stakeholder participation may result in PAPs and workers not being able to learn their rights from international standards. Failure to provide information and to use the complaint mechanism effectively may cause PAPs to be unprepared and cautious regarding public health and safety, and may prevent cases of violence and harassment from being detected. Stakeholder participation is important in reducing the negative effects and increasing the positive effects of the project. Otherwise, impact management may be disrupted.	Before the start of maintenance works, the local people and all relevant stakeholders will be informed of the works to be performed, start and finish dates, and the measures to be taken in accordance with SEP.	Included in Maintenance service	Regional Directorate of State of Hydraulic Works
Grievance Mechanism	Unresolved community concerns and grievances escalating social tensions and conflicts within the community.	•Grievance mechanism will be established for OHS and Community Health and Safety issues while maintenance and/or repair works will be conducted. •Updated information about the grievance mechanism will be provided permanently.	Included in Maintenance service	Regional Directorate of State of Hydraulic Works
Community Health and Safety (CHS)	Accidents, injuries, and potential health risks for community members, workers, and project personnel. •Poor water quality or improper sanitation practices can lead to the spread of waterborne diseases within the community.	•Grievance mechanism established for operation period; will track OHS and Community Health and Safety issues especially if maintenance and/or repair works are conducted. • Other than repair works, irrigation purposed reservoirs may contain and produce water born diseases. Although the system is closed circuit system, still warning signs shall be utilized to assure population using the irrigation system not to drink nor use the irrigation water as potable water. Such as “SULAMA SUYUDUR KESİNLİKLE İÇİLMEZ” • The environmental and social team can work together to offer preventive measures for poor water quality or inappropriate sanitation practices. • A record of symptoms/diagnoses of waterborne diseases within the community can be kept at certain periods (such as every 6 months).	Included in Maintenance service	Regional Directorate of State of Hydraulic Works
Air Quality and Energy Saving	•The maintenance and repair activities can contribute to air pollution through the release of pollutants from machinery and vehicles, and dust generation from relevant activities.	•Truck loading and unloading operations will be carried out with due care, and materials will be prevented from scattering around. •Dust from outdoor sources will be minimized by employing control measures such as covering the piles and increasing the moisture content. •Dust suppression techniques such as the application of water or non-toxic chemicals should be used to minimize dust from vehicle movements. •Modern equipment and vehicles that can meet the applicable emission standards will be selected for operation works. •All vehicles and equipment will be regularly maintained to prevent emissions from vehicles and maintenance records will be kept. •There will be no excessive idling of construction vehicles at sites. •Operation hours of generators/machines /equipment /vehicles will be reduced, if needed. •Speed limit will be established for trucks (30-40 km/h) within the settlements. •Trunk of each truck will be covered during transportation of waste and construction material. •Dust measurements will be conducted by an authorized laboratory accordingly if any grievance regarding dust	Included in Maintenance service	General Directorate of State of Hydraulic Works

Impact/Issue	Description of Risk/Expected Impact	Mitigation Measures	Cost of Mitigation	Responsibility
		generation is received from the nearest receptors (such as Sarısüleyman, Soğucak, and Kızılhamza villages). If measured levels are above limit values and reveal any indication for possible pollution due to the Project, mitigation measures will be enhanced in this respect, i.e., increasing wet suppression/ watering activities, applying non-toxic chemicals, further reducing speed/traffic, use of wind shield and barriers, protective covers or curtains for the areas where most of the dust is formed, etc. •Waste materials will not be burned outdoors. •In order to minimize the dust and impacts that may occur in soil stripping and cut and fill works; measures such as water spraying at emission source, filling and unloading operations without tossing, covering vehicles with tarpaulin during material transportation and keeping the upper part of the material at 10% humidity will be taken. •In accordance with the Exhaust Gas Emission Control Regulation; vehicles with traffic inspections, exhaust gas emission measurements will be used, and vehicles that need maintenance will be taken into maintenance after routine checks and other vehicles will be used until their maintenance is completed. •Compliance with the ambient air quality limit values stipulated in Regulation on Assessment and Management of Air Quality and WBG General EHS Guidelines will be ensured. •Where possible, electric powered vehicles and equipment will be used instead of fossil fuel ones.		
Chemicals and Hazardous Materials Management	•Improper management practices or accidental releases of chemicals and hazardous materials can lead to spills, leaks, or accidental releases, resulting in pollution of soil and water resources. •Exposure to chemicals and hazardous materials can pose risks to community and occupational health and safety.	•Mitigation measures provided on chemicals and hazardous materials management in Table 6-2 for construction phase will be implemented during maintenance and repair activities, as appropriate.	Included in Maintenance service	General Directorate of State of Hydraulic Works

7. IMPLEMENTATION OF ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

The contractor will develop its Contractor ESMP (C-ESMP) that will include relevant site-specific sub-management plans in line with this ESMP and Labour Management Plan based on the LMP of TULIP before construction works commence (as stipulated in Table 6-1 as well). The contractor will, but not limited to:

- Have sufficient E&S capacity with sufficient qualifications and skills assigned on site (at least one Social Expert, one Environmental Expert and one full-time OHS Expert),
- Develop C-ESMP that will include relevant site-specific sub-management plans before construction works commence, as part of their method statement and submit to DSI Regional PIU (5th Regional Directorate of DSİ) through Supervision Consultant for reviewing and approval by PCU,
- Duly implement the mitigation measures set out in the site-specific ESA documents and respective sub-management plans for construction work,
- Control and minimize environmental and social risks and impacts,
- Ensure that all staff and workers understand the procedures and tasks in the environmental and social management program,
- Ensure environmental hygiene and a safe and healthy work environment for the workers,
- Submit monthly environmental and social monitoring reports throughout the construction period to DSI Regional PIU through 54th Branch Office of DSI,
- Promptly notify DSI Regional PIU (through 54th Branch Office of DSI) of any incident or accident related to the project which has, or is likely to have, a significant adverse effect on the environment, the affected communities, the public and workers in incidents including OHS accidents or that result in threatening community health and safety, and keep an incident register at construction site throughout the project life,
- Be responsible for the training of staff and workers regarding environmental, social and OHS issues.

7.1. Principles of Consultation

In accordance with the principle of access to information and consultations, project stakeholders will be informed and consulted during the preparation and implementation of the project.

The basic principles that emerged in the transition from management to governance in public administration and the basic principles of all practices that adopt a participatory approach will be adopted:

- Participation Principle,
- Transparency Principle,
- Consistency Principle,
- Accountability,
- Effectiveness Principle,
- Right to Information.

Stakeholder Engagement takes into account the demographic characteristics of Çorum Ortaköy, Kızılhamza and Sarısüleyman Village and other villages affected by the project and includes: transparent consultation, sensitive consultation, inclusive/non-discriminatory consultation, use of multi-participation channels, user-friendly engagement tools, extent of engagement tools, gender sensitive language.

7.2. Stakeholder Engagement, Disclosure, and Consultation

To sustain ownership of the project stakeholders' during project implementation, and to increase positive social impact of the Sub-Project, some stakeholder engagement methods to be used in the implementation phase are explained in the SEF of the main Project. These engagement methods will be

used throughout the life cycle of the Project and coordination between sub-projects will be ensured.

According to ESS 10, the project stakeholders are categorized under three groups including project-affected parties (PAPs), other interested parties (OIPs) and vulnerable/disadvantaged individuals/groups. The PIUs will consult with each group of stakeholders on different issues according to their roles, responsibilities, interests, and level of influence. The stakeholder engagement methods to be used during project implementation, which aim to sustain ownership of the project stakeholders' and to increase the awareness on social impact of the project are explained in SEP.

7.3. Disclosure and Consultation of the ESMP

This ESMP along with the SEP and RP prepared for this subproject will be disclosed for at least 15 days on TULIP and DSI's (and other relevant institutions') webpage (https://bolge05.DSI.gov.tr/Sayfa/Detay/992 - https://www.ogm.gov.tr/tulip/iletisim) and will be consulted upon. In line with the outcomes of the consultations the E&S documents will be updated to address the comments received from the stakeholders. The updated final versions will be redisclosed on the webpage of the respective institutions and will also be made publicly available at the construction site during the life of the Project.

In case of grievancess regarding Gender Based Violence/SH/SEA

Women and men can express their opinions, grievances, and recommendations on gender-based violence through grievance tools. The mechanism will provide a high level of accessibility, confidentiality and responsiveness, as well as assigning and training certain staff to handle such sensitive and serious grievances.

The grievance mechanism will be accessible, and the confidentiality of personal information will be ensured.

- Information activities will be carried out to inform women about the mechanism. Information activities will include the following types of information:
    - Women's rights
    - Self-protection in cases of violence and sexual abuse
    - Emergency phone numbers
    - Contact information of institutions and organizations to which they can apply
    - Complaint mechanism and privacy policy

The confidentiality principle of the grievance mechanism will be repeated in all information materials.

- The World Bank's "Good Practice Note – Addressing SEA/SH in IPF Involving Major Civil Works" document is taken as reference.
- The person receiving the complaint will distinguish this complaint (see Figure 8-1) from others.
- After the complaint is identified and separated from others, the following steps are followed:
    1. Accepting anonymous grievances and keeping the complainant's information confidential and submitting the complaint anonymously. The steps for sending the complaint are the same (Figure 8-1).
    2. Determining whether the person complained about is related to the project.
    3. Documenting and closing cases brought through GM if the complaint is moved to litigation.

7.4. Grievance Mechanism

In accordance with the international requirements, a grievance mechanism will be established by DSI in order to receive, resolve and follow the concerns and complaints of the stakeholders including project affected people (PAPs). The grievance mechanism (GM) will be accessible for the stakeholders and respond to all feedbacks (including grievances, complaints, requests, opinions, and suggestions) at the earliest convenience. The responses to the grievances would be satisfactory for both parties and activities would be followed and the complainant would be informed about the outcomes of the corrective activities. It can be accessed to the details of GM from SEP.

Any grievances that may occur during the project will be addressed at four levels. The first level of GM will be at the project level. Secondly, DSI 5th Regional Directorate will be responsible for overall management and supervision of the Sub-Project including compliance with SEP requirements as well as managing grievances. As the third level, the Presidential Communication Center (CİMER) will constitute the GM of this project. Lastly, communities and individuals who believe they have been adversely affected by the World Bank (WB) or a WB project may submit their complaints to existing grievance mechanisms at the project level or to the World Bank.

Table 7-1 Grievance Mechanism Contact Information

DSI 5th Regional Directorate	Address	DSI 5. Bölge Müdürlüğü Mustafa Kemal Mah. 2151/1.Cadde A Blok No24 Çankaya/ANKARA
	Phone	0 312 219 77 00
	E-mail	DSI5@DSI.gov.tr
	Web	https://bolge05.DSI.gov.tr/Sayfa/Detay/992
DSI 54th Branch Çorum	Address	Mimar Sinan, İnönü Cd. No:165, 19100 Çorum Merkez/Çorum
	Phone	0 364 213 84 60
	E-mail	DSI5@DSI.gov.tr
	Web	https://bolge05.DSI.gov.tr/Sayfa/Detay/992
General Directorate of Forestry Department of Soil Conservation and Catchment Reclamation	Address	Beştepe Mahallesi Söğütözü Caddesi No:8/1 06560 Yenimahalle / ANKARA
	Phone	0312 296 40 00 / 3485
	E-mail	tulip@ogm.gov.tr
	Web	https://www.ogm.gov.tr/tulip/iletisim
CIMER	Phone	150
	Web	https://www.cimer.gov.tr/

8. MONITORING

Environmental and social monitoring system starts from the pre-construction phase of the project thorough the operation phase, verifying the implementation of the mitigation measures in the E&S instruments and assessing their effectiveness, thus enabling the WB and the Borrower to take action when needed. The monitoring system provides:

- Technical assistance and supervision when needed.
- Early detection of conditions related to particular mitigation measures.
- Follow up on mitigation results.
- Provide information of the project progress.

E&S issues and implementation of the ESMP will be monitored closely and continuously throughout Environmental and Social Monitoring Reports (ESMRs) to be prepared weekly by the Contractor operating in the project site. Reports prepared by Monitoring Experts Assigned by PMU (Monitoring) shall be validated and E&S implementation shall be independently monitored and reported to Regional and Central Office for supervision and validation. Regional Branch Office shall send weekly ESMRs to DSI Regional PIU (5th Regional Directorate of DSI). The reporting cycle will be concluded by the submission of the weekly ESMRs which are cleared by TULIP PCU in a level of details satisfactory to WB.

If DSI Regional PIU notices any problems in ESMP, LMP, or SEP implementation, it will inform DSI Regional Branch Office and agree with them on steps to rectify these problems. Specifically, for any incident or accident related to the project which has, or is likely to have, a significant adverse effect on the environment, the affected communities, the public and workers including OHS accidents or incidents that result in threatening community health and safety, the Contractor will promptly notify DSI Regional Branch Office and DSI Regional PIU will immediately inform PCU. The PCU will inform the World Bank about the incident within 48 hours after the occurrence of the incident or accident. In such cases, sufficient details regarding the incident or accident will be provided, indicating immediate measures taken or that are planned to be taken to address it, and any information provided by the Contractor and Supervision Consultant, as appropriate. Subsequently, as per the Bank's request, a report on the incident or accident will be prepared and any measures to prevent its recurrence will be proposed. The report (incident report including root cause analysis, precautions and compensation measures taken) will be provided within 30 business days to the Bank, as requested.

Monthly ESMRs will be prepared by Monitoring Experts Assigned by PMU and submitted to DSI Regional and Central PIU. The reporting cycle will be concluded by the submission of the quarterly ESMRs which are cleared by DSI Central PIU to TULIP PCU in OGM.

Quarterly ESMRs will be prepared by environmental, Monitoring Experts Assigned by PMU and submitted to DSI Regional and Central PIU. The reporting cycle will be concluded by the submission of the quarterly ESMRs which are cleared by TULIP PCU in OGM to WB.

8.1. Monitoring Frequency

Personnel of DSI Regional Branch Office shall be on site as a supervisor. Monitoring Experts Assigned by PMU on a monthly to monitor for validating weekly ESMRs and preparing monthly and quarterly ESMRs. OHS expert assigned by PMU would be on site on a monthly basis to closely monitor and inspect project site and verify compliance with all applicable mitigation measures defined in the site-specific OHS requirements defined in the ESA documents. More frequent monitoring may be conducted if needed to ensure compliance with the mitigation measures and resolution of any issues that are noted. Depending on the activity, weekly, monthly, quarterly and semi-annual monitoring activities carried out by DSI Regional PIU (5th Regional Directorate of DSI)for E&S compliance will be reported regularly to PCU. PCU will carry out its supervision monitoring as required for each project and report to World Bank quarterly on the progress and updates.

8.2. Reporting to the World Bank

In its quarterly project progress reports, DSI Central PIU will include a section titled "Environmental and

Social Standards" which will summarize the status of ESCP and compliance with ESF instruments and all sub-project specific plans such as ESMP, RP, and SEP implementation based on its monitoring activities. The reports will also provide details of all grievances received (if any) during the relevant reporting period, including the nature and number of grievances, dates received, and actions taken and pending/open complaints. Such reports will highlight any issues arising from non-compliance with environmental and social requirements and how it has been/is being addressed from the environmental and social safeguards point of view.

8.3. Types of Environmental and Social Monitoring Reports (ESMRs)

8.3.1. Weekly and Monthly ESMRs

The Contractor shall carry out implementation for monitoring. E&S issues and implementation of the ESMP will be monitored throughout weekly Environmental and Social Monitoring Reports (ESMRs) reports to be prepared Monitoring Experts Assigned by PMU.

Figure 8-1 Weekly ESMR flow chart

The Maintenance-Repair Contractor/ Irrigation Association shall submit monthly ESMRs to TULIP PIU detailing the construction and compliance activities prepared by the Maintenance-Repair Contractor/ Irrigation Association, monitored by experts assigned by the PIU and supervised by DSI Central PIU, DSI Regional PIU (DSI 5th Regional Directorate) and following the resolution of any problems that may have occurred, the reports shall be approved by TULIP PCU. The reports shall include the following information for the period:

- Summary of completed construction activities,
- Estimate of remaining construction and schedule,
- Summary of compliance activities (result of monitoring),
- Public and workers grievances:
  - ✓ Number and nature of cases submitted,
  - ✓ Number and nature of cases pending,
  - ✓ Number and nature of the cases resolved,
  - ✓ Time it took to resolve for each case,
- Updated list of all EHS incidents and accidents that occurred during the project,
- Follow up information from any past issues that are still being resolved,
- Photographs of project activities related to implementation of ESMP mitigation measures,
- Weekly compliance checklist each day that work occurs in the field.

Figure 8-2 Monthly ESMR flow chart

8.3.2. Quarterly ESMRs

Quarterly ESMRs will be prepared by the Monitoring Experts Assigned by the PIU and submitted to the Regional and Central PIU of DSI. After review by the DSI Regional and Central PIU, the reports will be approved by the TULIP PCU, which will submit quarterly EIRs to the World Bank to document construction and compliance activities completed during the period and to monitor the resolution of any issues that may arise for all sub-projects under implementation.

The quarterly report should include the following information for the period:

- ✓ Key recommended follow up issues, actions, time frame and responsibility center,
- ✓ An introduction, reporting period and monitoring locations,
- ✓ Summary of completed construction activities,
- ✓ Estimate of remaining construction and schedule,
- ✓ Summary of compliance activities,
- ✓ Progress to date in implementing the ESMF, including key aspects monitored: such as waste management, health and safety practices, procurement/storage/and use of pesticides including their disposal, dust management, water quality, other environmental incidents and accidents, environmental awareness and training undertaken, etc.,
- ✓ DSI Regional PIU's oversight activities (i.e., site visits).
- ✓ Updated list of all EHS incidents and accidents that occurred during the project, including attached, notices of non-compliance that were issued,
- ✓ Follow up information from any past issues that are still being resolved.

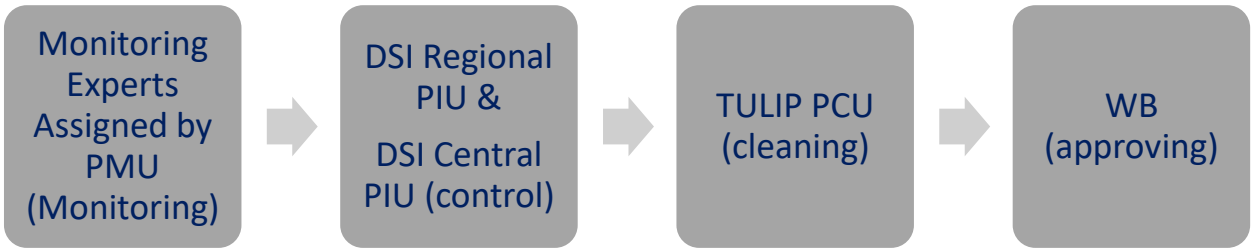

Figure 8-3 Quarterly ESMR flow chart

8.4. Monitoring Plan

Monitoring plan covering pre-construction, construction and operation phases is represented in Table 8-1.

Table 8-1 Monitoring Plan

Phase	Parameter to be monitored	Indicators to be monitored	How? Is the parameter to be monitored/ type of monitoring equipment	Frequency of measurement or continuous?	Monitoring Cost What is the cost of equipment or contractor charges to perform monitoring?	Responsibility
Pre-construction/ Construction	C-ESMP and site-specific management plans and procedures (preparation and periodic reviews/updates)	Number of reports prepared and revisions made. Making regular revisions in line with management plans of the Project.	Review and approval of documents	Preparation and approval of documents prior to commencement of construction works and weekly, monthly and quarterly after approval of documents during construction phase	Included in construction cost	*Implementation* Contractor *Monitoring/Supervision :* DSI Regional PIU Experts assigned by the PMU
Pre-construction/ Construction	E&S team of the Contractor and related employment records	Number of experts employed. Suitability of experts for the task.	Review and control of employment records	Weekly, monthly and quarterly during construction phase	Included in construction cost	*Implementation* Contractor *Monitoring/Supervision :* DSI Regional PIU Experts assigned by the PMU
Pre-construction/ Construction	E&S (including OHS) training of workers/personnel and related training records	Number of training and employers to be trained.	Review and control of training records and training program	Weekly, monthly and quarterly during construction phase	Included in construction cost	*Implementation* Contractor *Monitoring/Supervision :*

Phase	Parameter to be monitored	Indicators to be monitored	How? Is the parameter to be monitored/ type of monitoring equipment	Frequency of measurement or continuous?	Monitoring Cost What is the cost of equipment or contractor charges to perform monitoring?	Responsibility
						DSI Regional PIU Experts assigned by the PMU
Pre-construction	Stakeholder Notification Process	Number of notification activities. Topics of notifications.	Monthly compliance reports	Only once before the construction start	Available budget of DSI 5th Regional Directorate	*Implementation* Contractor *Monitoring/Supervision :* DSI Regional PIU Experts assigned by the PMU
Pre-construction	Ground Safety	-	Internal and external audits Grievance records	Weekly, monthly and quarterly during construction phase	Included in construction cost	*Implementation* Contractor *Monitoring/Supervision :* DSI Regional PIU Experts assigned by the PMU
Pre-construction	Grievance mechanism	Number of complaints received. Number of complaints resolved within 30 days (target 70%). Suitability of complaint opening and closing forms.	Existence of grievance records	Weekly, monthly and quarterly during pre-construction and construction phase	Included in construction cost	*Implementation* Contractor *Monitoring/Supervision :* DSI Regional PIU Experts assigned by the PMU

Phase	Parameter to be monitored	Indicators to be monitored	How? Is the parameter to be monitored/ type of monitoring equipment	Frequency of measurement or continuous?	Monitoring Cost What is the cost of equipment or contractor charges to perform monitoring?	Responsibility
		Satisfaction rate (target 70%).				
Pre-construction/ Construction	OHS expert of the Contractor and related employment records Medical assessment records	Number of experts. Suitability of experts for the task and in terms of medical records.	Review and control of employment records Review and control of medical assessment reports for workers	Employment in pre-construction phase and monitoring weekly, monthly and quarterly during construction phase	Included in construction cost	*Implementation* Contractor *Monitoring/Supervision :* DSI Regional PIU Experts assigned by the PMU
Pre-construction/ Construction	Risk assessment, OHS Plan and Emergency Preparedness and Response Plans (preparation and periodic reviews/updates)	Approval status of the documents	Review and approval of documents	Prior to commencement of construction works and quarterly after approval of documents during construction phase	Included in construction cost	*Implementation* Contractor *Monitoring/Supervision :* DSI Regional PIU Experts assigned by the PMU
Pre-construction	Develop Contractor's Labor Management Plan for workers	Number of plans and revisions.	Workers' Grievance mechanism	Prior to commencement of construction works and monitoring	Included in construction cost	*Implementation* Contractor *Monitoring/Supervision :*

Phase	Parameter to be monitored	Indicators to be monitored	How? Is the parameter to be monitored/ type of monitoring equipment	Frequency of measurement or continuous?	Monitoring Cost What is the cost of equipment or contractor charges to perform monitoring?	Responsibility
				monthly, quarterly after approval of documents during construction phase		DSI Regional PIU Experts assigned by the PMU
Pre-construction/ Construction	Safety distance maintained for Delihasan (Sarısüleyman) Höyük (Mound)	Construction site. Delihasan (Sarısüleyman) Höyük (Mound) Approval of the Regional Board for the Protection of Cultural Assets or Museum Directorate	Visual inspection of protective barricade maintained for safety distance	Prior to commencement of construction works and weekly, monthly, quarterly during pre-construction phase	Included in construction cost	*Implementation* Contractor *Monitoring/Supervision :* DSI Regional PIU Experts assigned by the PMU
Pre-construction	Negotiation with Çorum, Sungurlu or Yozgat Municipality for the acceptance of wastewater to be generated under the project	Institutional meeting records, official correspondence and permissions	Signing a Protocol with the relevant Municipality	Before the construction of the camp site	Included in construction cost	*Implementation* Contractor *Monitoring/Supervision :* DSI Regional PIU Experts assigned by the PMU
Pre-construction	Negotiation with Çorum Municipalities Environmental Union for the acceptance of	Institutional meeting records, official correspondence and permissions	Signing a Protocol with the Çorum Special Provincial Administration	Before the construction of the camp site	Included in construction cost	*Implementation* Contractor *Monitoring/Supervision :* DSI Regional PIU Experts assigned by the

Phase	Parameter to be monitored	Indicators to be monitored	How? Is the parameter to be monitored/ type of monitoring equipment	Frequency of measurement or continuous?	Monitoring Cost What is the cost of equipment or contractor charges to perform monitoring?	Responsibility
	wastes disposed to the 2nd Class Landfill Facility operated by Çorum Municipalities Environmental Union		and Çorum Municipalities Environmental Union			PMU)
Construction	Seismicity	Selecting the design criteria of the activities planned in all infrastructure construction areas in accordance with the seismic risk of the region, taking into account the issues specified in the geological survey report of the project.	- Building supervision and equipment control Visual observation Checking for compliance with seismic code of Türkiye	After possible earthquake	Included in construction cost	*Implementation* Contractor *Monitoring/Supervision :* DSI Regional PIU Experts assigned by the PMU
Construction	Soil quality (number and suitability of topsoil and excavation material storage areas, status of reinstated areas)	Layout plans showing topsoil and subsoil storage locations, Spill and accident records, Visual and written	Visual observation Soil sampling and analysis (by accredited and competent firms)	Weekly, monthly and quarterly during construction phase In case of complaints and/or damages occurred	Included in construction cost	*Implementation* Contractor *Monitoring/Supervision :* DSI Regional PIU Experts assigned by the PMU

Phase	Parameter to be monitored	Indicators to be monitored	How? Is the parameter to be monitored/ type of monitoring equipment	Frequency of measurement or continuous?	Monitoring Cost What is the cost of equipment or contractor charges to perform monitoring?	Responsibility
	Soil contamination (number of contaminated sites due to leaks/spills and significance of the case) Soil erosion (number of sites where soil erosion is observed and significance of the erosion) Land use (number of complaints related arable lands received and resolved in time, number of damages to adjacent properties and respective corrective actions taken in time)	records taken during the field audit				
Construction	Waste management practices on site	Construction of the temporary waste storage area	Visual observation Waste records	Weekly, monthly and quarterly during construction phase	Included in construction cost	*Implementation* Contractor *Monitoring/Supervision*

Phase	Parameter to be monitored	Indicators to be monitored	How? Is the parameter to be monitored/ type of monitoring equipment	Frequency of measurement or continuous?	Monitoring Cost What is the cost of equipment or contractor charges to perform monitoring?	Responsibility
	(number of waste bins/containers, number of trainings on waste management, waste records (including protocols) and amounts, number and suitability of temporary waste storage area(s), number of secondary containments)	Waste records (including protocols) Training records (on waste management)	(including protocols)			*:* DSI Regional PIU Experts assigned by the PMU
Construction	Chemicals and hazardous materials management practices on site (number and suitability of chemicals and hazardous materials storage area(s), number of	Establishment of hazardous and chemical material storage areas,	Visual observation Safety data sheets Training records (on chemicals and hazardous materials management)	Weekly, monthly and quarterly during construction phase	Included in construction cost	*Implementation* Contractor *Monitoring/Supervision :* DSI Regional PIU Experts assigned by the PMU

Phase	Parameter to be monitored	Indicators to be monitored	How? Is the parameter to be monitored/ type of monitoring equipment	Frequency of measurement or continuous?	Monitoring Cost What is the cost of equipment or contractor charges to perform monitoring?	Responsibility
	secondary containments, availability of safety data sheets, number of trainings on chemicals and hazardous materials management)					
Construction	Noise (number of vehicles and machinery and their maintenance records, number of noise complaints received and resolved in time, number of trainings on noise)	Environmental Noise Measurement Results (if complaints) Complaint Records	Noise level measurements (by accredited and competent firms) Visual observation Maintenance records of vehicles/machinery and training records (on noise)	Weekly, monthly and quarterly during construction phase In case of a complaint	Included in construction cost	*Implementation* Contractor *Monitoring/Supervision:* DSI Regional PIU Experts assigned by the PMU
Construction	Dust emission (PM 10) Dust suppression implementations	Closest settlement in case of complaint	PM_{10} measurements (by accredited and competent	Weekly, monthly and quarterly during construction phase	Included in construction cost	*Implementation* Contractor *Monitoring/Supervision:*

Phase	Parameter to be monitored	Indicators to be monitored	How? Is the parameter to be monitored/ type of monitoring equipment	Frequency of measurement or continuous?	Monitoring Cost What is the cost of equipment or contractor charges to perform monitoring?	Responsibility
	Exhaust emissions (number of vehicles, machinery and equipment and their maintenance records, exhaust emission inspection results of vehicles, number of air quality complaints received and resolved in time, number of trainings on air quality, number of wet dust suppression vehicles and amount water used for dust suppression)		firms) Visual observation Training records (on air quality management) Maintenance and exhaust emission records of vehicles	In case of a complaint		DSI Regional PIU Experts assigned by the PMU
Construction	Wastewater disposal (wastewater disposal records and respective protocol)	Sewage Truck Records	Visual observation Wastewater disposal records and respective protocol	Weekly, monthly and quarterly during construction phaseIn case of leaks/spills	Included in construction cost	*Implementation* Contractor *Monitoring/Supervision :* DSI Regional PIU Experts assigned by the

Phase	Parameter to be monitored	Indicators to be monitored	How? Is the parameter to be monitored/ type of monitoring equipment	Frequency of measurement or continuous?	Monitoring Cost What is the cost of equipment or contractor charges to perform monitoring?	Responsibility
	Pollution of water resources (number of contaminated water resources due to leaks/spills and significance of the case) Water use (amount of water used for drinking water and dust suppression purposes)		Sampling and analysis (heavy metal, VOC etc.) for wastewater characterization if water resource contamination is observed Sampling and analysis of water quality (BOD, COD, NO_3, heavy metals) Water supply and consumption records			PMU
Construction	Excavation material/waste management practices (number and suitability of excavation material	Excavation material storage area permits	Visual observation Excavation material amounts and disposal records	Daily during excavation works Weekly, monthly and quarterly during construction phase	Included in construction cost	*Implementation* Contractor *Monitoring/Supervision :* DSI Regional PIU Experts assigned by the PMU

Phase	Parameter to be monitored	Indicators to be monitored	How? Is the parameter to be monitored/ type of monitoring equipment	Frequency of measurement or continuous?	Monitoring Cost What is the cost of equipment or contractor charges to perform monitoring?	Responsibility
	storage areas, excavation material amount used for backfilling and amount send to respective storage areas, excavation material disposal records)					
Construction	Labor and Working Conditions	Employment records, personnel rights files, satisfaction surveys, worker complaint mechanism, camp site observations and interviews	-Training records -Internal and external audits -Grievance records -Accident records -Labor contracts	Weekly, monthly and quarterly during construction phase	Included in construction cost	*Implementation* Contractor *Monitoring/Supervision :* DSI Regional PIU Experts assigned by the PMU
Construction	Occupational Health and Safety i Fall risks and Working at Heights Moving Equipment and Vehicle Safety Excavation,	official permits Number of fall incidents, adherence to safety protocols Number of incidents involving equipment/vehicles Number of cave-ins,	Regular safety inspections, incident reports Visual inspections, safety drills, incident report reviews	Weekly for incidents, daily for compliance with checks of compliance, monthly for records	Included in construction cost	*Implementation* Contractor *Monitoring/Supervision :* DSI Regional PIU Experts assigned by the PMU

Phase	Parameter to be monitored	Indicators to be monitored	How? Is the parameter to be monitored/ type of monitoring equipment	Frequency of measurement or continuous?	Monitoring Cost What is the cost of equipment or contractor charges to perform monitoring?	Responsibility
	Trenching, and Confined Spaces Electrical Safety Hazardous Material Handling and Storage Training, Toolbox Talks, and Employee Safety Emergency Preparedness and Response Site Security and Access Control Equipment and Machinery Safety Community Safety and Communication	hazardous gas exposures Number of electrical incidents Number of exposure incidents, compliance with guidelines Number of trainings/toolbox talks held, compliance with PPE requirements Number of drills conducted, response times, incident reporting Number of access violations, compliance with security measures Compliance with maintenance schedules, moving equipment incidents Number of community	Inspections of trenching sites, gas monitoring devices Inspections of electrical equipment, power lines Monitoring use/storage of hazardous materials, PPE checks Training attendance records, visual checks, PPE inventory audits Emergency drill records, incident response reviews Access logs, security checks Maintenance logs, visual			

Phase	Parameter to be monitored	Indicators to be monitored	How? Is the parameter to be monitored/ type of monitoring equipment	Frequency of measurement or continuous?	Monitoring Cost What is the cost of equipment or contractor charges to perform monitoring?	Responsibility
		incidents, compliance with community safety measures	inspections Community feedback, incident reports			
Construction	Community Health and Safety	CHS informing records, near miss and accident records, site observations and interviews in AoI,	Grievance records, (number and nature) and analysis ofsettled grievances Internal and external audits	Weekly, monthly and quarterly during construction phase	Included in construction cost	*Implementation* Contractor *Monitoring/Supervision :* DSI Regional PIU Experts assigned by the PMU
Construction	Grievance Mechanism	Number of complaints received. Number of complaints resolved within 30 days (target 70%). Suitability of complaint opening and closing forms. Satisfaction rate (target 70%).	Grievance records (number and nature), and analysis of settled grievances Internal and external audits	Weekly, monthly and quarterly during construction phase	Included in construction cost	*Implementation* Contractor *Monitoring/Supervision :* DSI Regional PIU Experts assigned by the PMU
Construction	Transport	Transportation	OHS audits	Weekly, monthly and	Included in	*Implementation* Contractor

Phase	Parameter to be monitored	Indicators to be monitored	How? Is the parameter to be monitored/ type of monitoring equipment	Frequency of measurement or continuous?	Monitoring Cost What is the cost of equipment or contractor charges to perform monitoring?	Responsibility
	Management	waybills	Grievance records (number and nature) Accident records Training records Internal and external audits	quarterly during construction phase	construction cost	*Monitoring/Supervision :* DSI Regional PIU Experts assigned by the PMU
Construction	Chance Find	Number of chance finds encountered	Visual observation Chance find records	Weekly, monthly and quarterly during construction phase	Included in construction cost	*Implementation* Contractor *Monitoring/Supervision :* DSI Regional PIU Experts assigned by the PMU
Construction	Resettlement and Land Acquisition	Number of complaints/ engagement activities. Number of complaints. Expropriation process update. Number of cases continuing and	RP procedure will be prepared.	Times specified in RP Weekly, monthly and quarterly during construction phase	Included in construction cost	*Implementation* Contractor *Monitoring/Supervision :* DSI Regional PIU Experts assigned by the PMU

Phase	Parameter to be monitored	Indicators to be monitored	How? Is the parameter to be monitored/ type of monitoring equipment	Frequency of measurement or continuous?	Monitoring Cost What is the cost of equipment or contractor charges to perform monitoring?	Responsibility
		completed. Number of lands taken with by consent. Compensation paid. RP payments (including LRP). Records inadvertant damage to adjacent land and structures and compensation/repair issued. Please add.				
Operation & Maintenance	Community Health and Safety	Number of complaints. Number of incidents. Near miss records. Informing activities for local communities. Suitability and adequacy of warning signs.	Grievance records, (number and nature) and analysis ofsettled grievances Internal and external audits	Weekly, monthly and quarterly during construction phase	Included in maintenance expenses	*Implementation:* Maintenance-Repair Contractor/ Irrigation Union *Monitoring/Supervision :* DSI PIU DSI Regional PIU Experts assigned by the PMU
Operation & Maintenance	Seismicity	-	Visual observation	After possible earthquake	Included in maintenance expenses	*Implementation:* Maintenance-Repair Contractor/ Irrigation Union

Phase	Parameter to be monitored	Indicators to be monitored	How? Is the parameter to be monitored/ type of monitoring equipment	Frequency of measurement or continuous?	Monitoring Cost What is the cost of equipment or contractor charges to perform monitoring?	Responsibility
						Monitoring/Supervision : DSI PIU DSI Regional PIU Experts assigned by the PMU
Operation & Maintenance	Wastes from maintenance and repair work	Waste records	Visual observation	Weekly, monthly and quarterly during maintenance and repair work	Included in maintenance expenses	*Implementation:* Maintenance-Repair Contractor/ Irrigation Union *Monitoring/Supervision :* DSI PIU DSI Regional PIU Experts assigned by the PMU
Operation & Maintenance	Labor and Working conditions	Number of employees (gender disaggregated). Recorded complaints. Employment records on working rights. Accommodation conditions and vehicle maintenance.	Training records Internal and external audits Grievance records Accident records Labor contracts	Weekly, monthly and quarterly during construction phase	Included in maintenance expenses	*Implementation:* Maintenance-Repair Contractor/ Irrigation Union *Monitoring/Supervision :* DSI PIU DSI Regional PIU Experts assigned by the PMU)
Operation &	Noise Complaints	Complaint records	Noise level	In case of a	Included in	*Implementation:*

Phase	Parameter to be monitored	Indicators to be monitored	How? Is the parameter to be monitored/ type of monitoring equipment	Frequency of measurement or continuous?	Monitoring Cost What is the cost of equipment or contractor charges to perform monitoring?	Responsibility
Maintenance			measurements (by accredited and competent firms)	complaint	maintenance expenses	Maintenance-Repair Contractor/ Irrigation Union *Monitoring/Supervision :* DSI PIU DSI Regional PIU Experts assigned by the PMU
Operation & Maintenance	Dust emission (PM10)	Complaint records	PM10 measurements (by accredited and competent firms) Visual observation Training records (on air quality management) Maintenance and exhaust emission records of vehicles	In case of a complaint Weekly, monthly and quarterly during maintenance and repair work	Included in maintenance expenses	*Implementation:* Maintenance-Repair Contractor/ Irrigation Union *Monitoring/Supervision :* DSI PIU DSI Regional PIU Experts assigned by the PMU
Operation & Maintenance	Incidents and accidents	Incident reports	Incident reports Grievance	In case of a complaint	Included in maintenance	*Implementation:* Maintenance-Repair Contractor/ Irrigation

Phase	Parameter to be monitored	Indicators to be monitored	How? Is the parameter to be monitored/ type of monitoring equipment	Frequency of measurement or continuous?	Monitoring Cost What is the cost of equipment or contractor charges to perform monitoring?	Responsibility
			records	Weekly, monthly and quarterly during construction phase	expenses	Union *Monitoring/Supervision :* DSI PIU DSI Regional PIU Experts assigned by the PMU
Operation & Maintenance	Power Cut	Complaint records	Grievance records (number and nature)	In case of a complaint Weekly, monthly and quarterly during construction phase	Included in maintenance expenses	*Implementation:* Maintenance-Repair Contractor/ Irrigation Union *Monitoring/Supervision :* DSI PIU DSI Regional PIU Experts assigned by the PMU
Operation & Maintenance	Use of Chemicals and Hazardous Material	Observations records	Safety Data Sheets of the hazardous materials	Weekly, monthly and quarterly during maintenance and repair work	Included in maintenance expenses	*Implementation:* Maintenance-Repair Contractor/ Irrigation Union *Monitoring/Supervision :* DSI PIU DSI Regional PIU Experts assigned by the

Phase	Parameter to be monitored	Indicators to be monitored	How? Is the parameter to be monitored/ type of monitoring equipment	Frequency of measurement or continuous?	Monitoring Cost What is the cost of equipment or contractor charges to perform monitoring?	Responsibility
						PMU
Operation & Maintenance	ESS4 Dam Safety of the Kızılhamza Dam and related structures: Reservoir debris levels Bedrock and fill material properties Spillway design flood capacity Operation and maintenance adherence Earthquake risk factors Upstream riprap condition Settlements and heaves Downstream slope stability	Sediment accumulation and storage capacity Physical, strength, and permeability properties Compliance with design standards Compliance with operation and maintenance plan Seismic activity and structural response Structural integrity and coverage patterns of settlement and heaves Erosion and structural integrit	Bathymetric surveys Geotechnical testing equipment Hydraulic modeling and flow measurements Inspections and audits Seismic monitoring equipment Visual inspections Survey equipment (GPS, total stations) Visual inspections and geotechnical surveys	Monthly for visual inspections Quarterly for settlements and heaves Annual for others	Included in the project cost	*Implementation:* Maintenance-Repair Contractor/ Irrigation Union *Monitoring/Supervision :* DSI PIU DSI Regional PIU Experts assigned by the PMU)

9. CAPACITY DEVELOPMENT AND TRAINING

The ESMP addresses a range of subjects, including but not limited to:

- To support timely and effective implementation of environmental and social project components and mitigation measures, the ESMP draws on the environmental and social assessment of the existence, role, and capability of responsible parties on site or at the agency and ministry level. In this project, all environmental impacts and mitigation measures to reduce those impacts such as water use, wastewater production, dust emissions, soil quality, biodiversity, seismicity, and solid waste were evaluated. For the social impacts, population change, economy and employment, community health and safety, land acquisition, livelihoods, and vulnerability, social equity and labor influx were assessed in detail. This detailed assessment will support the timely and effective implementation of the ESMP.
- To provide a specific description of institutional arrangements, identifying which party is responsible for carrying out the mitigation and monitoring measures (e.g., for operation, supervision, enforcement, monitoring of implementation, remedial action, financing, reporting, and staff training). Tables in Section 6 support responsible stakeholders to identify institutional arrangements, instruments and frequencies of mitigation measures.
- To strengthen environmental and social management capability in the agencies responsible for implementation, the ESMP recommends the establishment or expansion of the parties responsible, the training of staff and any additional measures that may be necessary to support implementation of mitigation measures and any other recommendations of the environmental and social assessment. Since there was no capacity in the construction staff and the contractor officers for WB's E&S implementation, the following training will be planned by the regional PIU in the following processes. Defined training activities will contribute to enhancing the capacity of the contractor..
- DSİ has experienced staff in technical and procurement related procedures of Türkiye, with limited experience in WB's ESF requirements. In TULIP ESMF, an ESF training program is suggested for PCU and PIU core E&S specialist's .Relevant capacity building activities and trainings for PIU will be in line with TULIP EMSF.

Adequate staff and budget are needed for trainings related to effective implementation of ESMP. For this reason, the following trainings are planned to be given within the scope of this ESMP.

Table 9-1 Planned Trainings

Training	Content	Target groups	Responsible party	Budget
International Environmental and Social Standards Training	ESSs of WB, grievance mechanism, stakeholder engagement principles, change find procedures, labour rights, OHS, CHS, traffic rules, waste management, flora and fauna etc. Environmental and social sensitivity of the project area E&S screening Mitigation measures	Construction staff, officers of the Contractor	EHS team of regional PIU	1 expert* every month*500$
Environmental and socioeconomic awareness	Providing training on a wide range of topics (terms, good practices, etc.) to ensure environmental and social awareness regarding the sub-project. Social and cultural values	Construction staff, officers of the Contractor	EHS team of regional PIU	1 expert* every month*500$

Training	Content	Target groups	Responsible party	Budget
	Conflict management Community issues Grievance Mechanism			
Gender equality trainings	According to Strategic Environmental and Social Assessment[29] data, there are social development needs regarding gender equality in the Çekerek Basin. For this reason, gender equality training, one of the recommended trainings, has been added to the scope of this project. Basic level training will be provided on topics such as the concept of gender equality, good examples, collecting and managing complaints on this issue. Awareness of transmittable diseases, risk of Sexual Exploitation and Abuse (SEA), Sexual Harassment (SH)	Construction staff, officers of the Contractor	EHS team of regional PIU	To be given once during the project implementation phase 1 gender expert*1 day*500$
Management Plans	ESMP Associated Management Plans (i.e. Waste Management Plan, Labor Management Plan, Traffic Management Plan, etc. as relevant). OHS Management Plan SEP LMP Grievance Mechanism Cultural values and social sensitivity Chance find procedure Gender equality trainings Conflict management	Construction staff, officers of the Contractor	EHS team of regional PIU	1 expert* every month*500$

[29] https://documents.worldbank.org/en/publication/documents-reports/documentdetail/547921620247222748/strategic-environmental-and-social-assessment-sesa-turkey-resilient-landscape-integration-project-tulip-p172562

10. STAKEHOLDER ENGAGEMENT AND PUBLIC INFORMATION MEETING FOR ESMP AND SEP

Stakeholder engagement is critical in development projects implemented by the World Bank. A Stakeholder Engagement Plan (SEP) is an important tool used by the World Bank to communicate and manage relationships with the various stakeholders involved in a project. The importance of a SEP for World Bank operations can be summarized as follows:

- Ensure effective communication: A SEP helps to ensure that all stakeholders know the project's aims, objectives and potential impacts. It establishes open lines of communication between the project team and stakeholders so that all stakeholders have the opportunity to provide views and feedback,
- Grievance mechanism: Any grievance that may arise in the Project will be handled at four levels. The first level of CC will be conducted by the branch directorates. Secondarily, contractors will establish their own CC to handle grievances for subcontractors and workers. At the third level, the Ministry's CC will be effectively adapted to the Project. Finally, the Presidential Communication Center (CIMER) will constitute the fourth level of the grievance mechanism of this project,
- Building trust: Stakeholder engagement is critical for building trust between the project and the various stakeholders involved in the project. The SEP sets out the steps the project will take to communicate with stakeholders and address their concerns, thus helping to build trust and foster collaboration.
- Mitigating risks: Effective stakeholder engagement helps to identify potential risks and issues early in the project cycle. By sharing all relevant information and consulting with stakeholders about the risks and negative impacts of the project, the project team can address issues and mitigate risks before they become major problems.
- Promoting accountability: A SEP helps to promote accountability by clearly defining the roles and responsibilities of all organizations and parties involved in the project and disclosure requirements. It also establishes mechanisms for monitoring and evaluating stakeholder engagement so that the project team remains accountable throughout the project cycle.
- Ensuring sustainability: Effective stakeholder engagement is vital for the sustainability of development projects. By involving stakeholders in project design and implementation, the project team can ensure that the project meets the needs of the local community and is sustainable in the long term.

All relevant information on affected parties and stakeholders, how to lodge complaints and the feedback method are detailed in the SEP.

ESMP implementation will be subject to close and continuous monitoring and reported through ESMMRs prepared by the Contractor at the project site on a weekly basis. These reports will be approved by the environmental, social and OHS experts assigned to the project. The reports will then be independently monitored and reported for audit and verification to the DSİ 54th Regional Branch Directorate, which will in turn send the reports to the DSİ Regional Project Implementation Unit (PIU) on a weekly basis.

If any issues related to the implementation of the Environmental and Social Management Plan (ESMP), Labor Management Plan or Stakeholder Engagement Plan (SEP) are noticed by the DSİ Regional PIU, they will inform the DSİ Regional Branch Office and agree on the steps to be taken to address these issues. In the event of any incident or accident with significant adverse impacts, the Contractor shall immediately notify the DSI Regional Branch Office and inform the DSI Regional PIU and then the Project Coordination Unit (PCU) within 48 hours. The PIU will then inform the World Bank within the same

timeframe and provide details of the incident or accident and measures taken or planned to address it. A detailed report, including root cause analysis, precautions and remedial measures, will be provided to the Bank within 30 working days upon request. Monthly ESMRs will be prepared and submitted to the Central PIU of DSI, ending with quarterly ESMRs submitted by the Central PIU of DSI to the World Bank.

ESMP and SEP prepared for Çekerek River Basin Rehabilitation Project Çorum Province Irrigation Projects (İbrahimköy, Kızılhamza, Seyitnizam) were published on TULIP's website on 24.07.2024 and opened to stakeholders' feedback. Announcements for the information meeting to be held on Wednesday, 07.08.2024 was posted as a posters in the mukhtar's buildings, village coffee houses and/or mosque of each affected settlement and also published on TULIP's website (https://www.ogm.gov.tr/tulip/duyurular/dsi-corum-ili-sulama-projeleri-ibrahimkoy-kizilhamza-seyitnizam-bilgilendirme-toplantisi). For photos see Annex 11 and for attendee list see Annex 12.

Both ESMP and SEP were presented to stakeholders and feedback was received at the information meeting held on 07.08.2024 in the meeting room of Alaca District Governorship. Both SEP and ESMP were updated according to the feedback received during the information meeting. For the presentation see Annex 13.

Positive feedback was received at the meeting. The questions asked and answers given at the meeting are as follows:

Question 1: Project area was requested to be shown. When will we see the boundaries of the line?

Answer 1: Before the work starts, teams from DSI will come and consult with everyone and all will be discussed with you before the work is done.

Question 2: There will be an area of 2500 acres and we do not think that our vehicles will be able to reach it.

Answer 2: Your vehicles have been calculated accordingly in case your vehicles are not enough here. You can continue to use the same machines.

Question 3: The dam empties in one year and fills up in 5 years, will there be a solution for this and we cannot see where the canal passes through?

Answer 3: The open channel will not be used again. Whatever the elevation of the pond is, you can raise the water up to that elevation, there will be plenty of water, and you can even put a motor in between and carry the water higher. You can do all of these as long as there is water.

Question 4: Will it be done through the existing channel?

Answer 4: No, it will not be an open canal, it will be from below, from above, from the side and when you switch to a closed canal, the acreage you irrigate will increase.

Question 5: Will there be roads where the line passes through?

Answer 5: We have planned the project according to the existing roads, and we plan the new roads to pass along the roadsides as much as possible.

Question 6: Will the dam be moved, can we use the current irrigation when the work starts?

Answer 6: We will discuss it with the administration, but you can plant your crops as if the old irrigation will not be used.

11. ANNEXES

Annex 1: Ministry of Culture and Tourism General Directorate of Cultural Heritage and Museums Opinion letter of Ankara Cultural Heritage Preservation Regional Board Directorate

T.C.
KÜLTÜR VE TURİZM BAKANLIĞI
Kültür Varlıkları ve Müzeler Genel Müdürlüğü
Ankara Kültür Varlıklarını Koruma Bölge Kurulu Müdürlüğü

Sayı : E-53970621-165.02.02-2582500

Konu : Çorum İli, Ortaköy İlçesi, Kızılhamza Göleti Sulama Projesi Kurum Görüşü Hk. (19.06.67)

DEVLET SU İŞLERİ GENEL MÜDÜRLÜĞÜNE
(5. Bölge Müdürlüğü Planlama Şube Müdülüğü)

İlgi : 30.05.2022 tarih ve E-79828097-115.99-2343995 sayılı yazınız.

Çorum ili, Ortaköy İlçesi, Kızılhamza Köyü ve Sarısüleyman Köyü sınırları içerisinde kalan "Kızılhamza Göleti Sulaması" projesi kapsamında ekinde haritası ve kml çıktısı verilen alanlarda sulama yapılmasını amaçlandığından kurum görüşümüzün iletilmesinin talep edildiği ilgi yazı ve ekleri incelenmiştir.

Çorum ili, Ortaköy İlçesi, Kızılhamza Köyü ve Sarısüleyman Köyü sınırları içerisinde kalan "Kızılhamza Göleti Sulaması" projesi kapsamında sulanacak olan alan içerisinde ekte koordinatları gönderilen ve yeri gösterilen 1. Derece Arkeolojik Sit Alanı olarak tescilli Delihasan (Sarısüleyman) Höyük bulunmakta olup söz sit sınırları içerisinde herhangi bir müdahalede bulunulmaması, bunun dışında alana yönelik Müdürlüğümüz arşiv kayıtlarında ve iletilen bilgi-belgelerden 2863 sayılı Kanun kapsamında korunması gerekli kültür varlığına rastlanılmamış olup projenin sit alanı sınırları dışında uygulanmasında sakınca bulunmamaktadır.

Ancak alanda ileride yapılacak tarımsal faaliyetler ile inşai ve fiziki uygulamalar sırasında korunması gerekli herhangi bir kültür varlığına rastlanılması durumunda çalışmaların derhal durdurularak 2863 Sayılı Yasanın 4. Maddesi gereğince ilgili makamlara bildirilmesi gerekmektedir.

Bilgilerinizi ve gereğini arz/rica ederiz

Mustafa KAYMAK
Koruma Bölge Kurulu Müdürü

Ek:
1 - Ekler (2 Sayfa)
2 - Delihasan (Sarı Süleyman) Höyük

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Doğrulama Kodu: 62A959F0-824F-48AC-B7EE-4DDB106F038D Doğrulama Adresi: https://www.turkiye.gov.tr/ktb-ebys

Necatibey Mahallesi Konya Sokak No:46 Altındağ/Ankara
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Bilgi için:Mutlu KARAMAN
Kültür ve Turizm Uzmanı
Telefon No:(312) 508 63 35

Annex 2: Chance Find Procedure

Purposes of chance find procedure

The chance find procedure is a project-specific procedure that outlines actions required if previously unknown heritage resources, particularly archaeological resources, are encountered during project construction. A Chance Find Procedure is a process that prevents chance finds from being disturbed until an assessment by a competent specialist is made and actions consistent with the requirements are implemented. This procedure is written in accordance to and will strictly be implemented under the scope of the Ministry of Culture and Tourism, Law No:2863, Preservation of Cultural and Natural Assets and Ministry of Culture and Tourism, Principle Decision No: 658, Archaeological Sites, Conditions of Protection and Usage.

Scope of the chance find procedure

This procedure is applicable to all activities conducted by the personnel, including contractors, that have the potential to uncover a heritage item/site. The procedure details the actions to be taken when a previously unidentified and potential heritage item/site is found during construction activities. Procedure outlines the roles and responsibilities and the response times required from both project staff, and any relevant heritage authority.

Induction/Training

All personnel, especially those working on earth movements and excavations, are to be inducted on the identification of potential heritage items/sites and the relevant actions for them with regards to this procedure during the project induction and regular toolbox talks.

Chance find procedure

If any person discovers a physical cultural resource, such as (but not limited to) archaeological sites, historical sites, remains and objects, or a cemetery and/or individual graves during excavation or construction, the following steps shall be taken:

1. Stop all works in the vicinity of the find, until a solution is found for the preservation of these artefacts, or advice from the relevant authorities is obtained;

2. Immediately notify a foreman. The foreman will then notify the Construction Manager and the Project Owner who is the 5th Regional Directorate of State Hydraulic Works (DSİ Regional PIU);

3. Record details in Incident Report and take photos of the find;

4. Delineate the discovered site or area; secure the site to prevent any damage or loss of removable objects. In cases of removable antiquities or sensitive remains, a night guard shall be arranged until the responsible local authorities take over. At this time, “Part A” of the “Change Find Procedure Form” attached to the procedure is filled in by the Contractor’s archeologist;

5. Preliminary evaluation of the findings shall be made by an archaeologist to be appointed by the Çorum Cultural Heritage Preservation Regional Board Directorate. The archaeologist must make a rapid assessment of the site or find to determine its importance. Based on this assessment the appropriate strategy can be implemented. The significance and importance of the findings should be assessed according to the various criteria relevant to cultural heritage such as aesthetic, historic, scientific or research, social and economic values of the find. The archaeologist's findings are recorded in “Part B” of the “Change Find Procedure Form” attached to this procedure;

6. Sites of minor significance (such as isolated or unclear features, and isolated finds) should be recorded immediately by the archaeologist appointed by the Çorum Cultural Heritage Preservation Regional Board Directorate, thus causing a minimum disruption to the work schedule of the Contractor. A copy of the report prepared by the Çorum Cultural Heritage Preservation Regional Board Directorate shall be sent to the project related parties respectively as follows:

- 5th Regional Directorate of State Hydraulic Works (DSİ Regional PIU)
- Directorate of State Hydraulic Works (DSİ Central PIU)
- 54th Regional Branch Office of DSI

7. In case of significant find the Çorum Cultural Heritage Preservation Regional Board Directorate should be informed immediately and the procedure to be followed will be determined by them. The 5th Regional Directorate of State Hydraulic Works (DSİ Regional PIU) will facilitate all kind of support to ease the steps to be followed.

8. As a result of the determined procedure by Çorum Cultural Heritage Preservation Regional Board Directorate, the 5th Regional Directorate of State Hydraulic Works (DSİ Regional PIU) should inform immediately the Directorate of State Hydraulic Works (PIU-DSİ) regarding the details of the procedure to be followed.

9. The Directorate of State Hydraulic Works (PIU-DSİ) must review the procedure, particularly impacts to the project and within 2 weeks from the date of notification and provide response in writing.

10. Decisions on how to handle the finding shall be taken by the responsible authorities. This could include changes in the layout (such as when finding an irremovable remain of cultural or archaeological importance) conservation, preservation, restoration and salvage. Decisions on how to handle the finding should be recorded in Part C of the Change Find Procedure Form.

11. Construction works could resume only after permission is granted from the responsible authorities.

One of the main requirements of the procedure is record keeping. All finds must be registered. Photolog, copies of communication with decision making authorities, conclusions and recommendations/guidance, implementation reports should be kept.

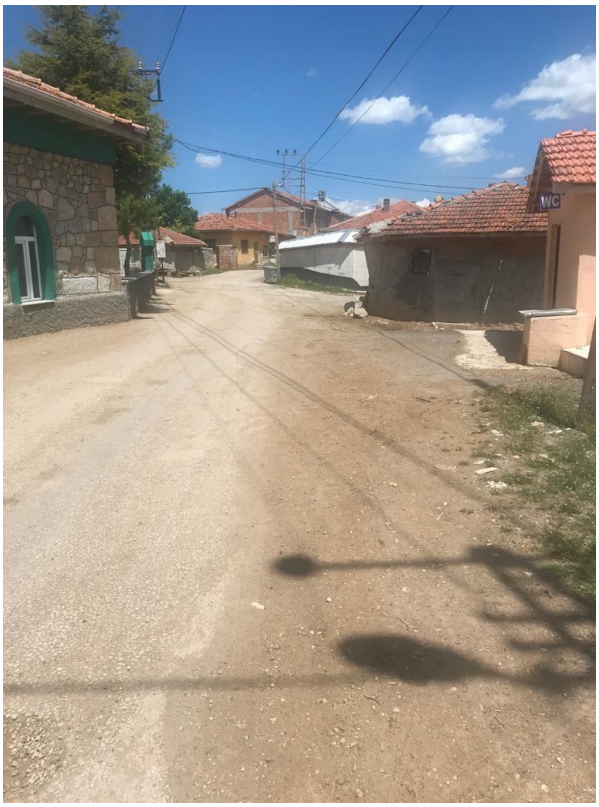
Chance Find Procedure Form

PART A **BÖLÜM A**			
Project Location: *Proje Sahası*	District (İlçe): Village (Köy):	Date: *Tarih*	Form No:
Name of person reporting chance find: *Rastlantısal buluntuyu rapor eden kişinin ismi*			
Was work stopped in the immediate vicinity of the chance find? ☐ Yes ☐ No *Rastlantısal buluntunun tam çevresinde iş durduruldu mu? Evet Hayır*			
Was a buffer zone created to protect the chance find? ☐ Yes ☐ No *Rastlantısal buluntuyu korumak için tampon bölge oluşturuldu mu? Evet Hayır*			
NOTIFICATION ***BİLDİRİM***			
Site manager and E&S manager contacted ☐ Yes ☐ No *Saha Müdürü ve Çevre müdürü ile irtibata geçildi Evet Hayır*			
CHANCE FIND DETAILS ***RASLANTISAL BULUNTU AYRINTILARI***			
GPS coordinates *GPS koordinatları*		Photo record ☐ Yes ☐ No (HD quality – no cell phone photos) *Fotoğraf kaydı Evet Hayır* *(HD kalitesinde – cep telefonu fotoğrafı değil)* If not, explain why: *Yok ise nedenini açıklayınız* Other records ☐ Yes ☐ No Specify (drawings, HD quality videos, etc.): *Diğer kayıtlar Evet Hayır* *Belirtin (çizimler, HD kalite videolar, vb.)*	
Description of chance find: *Rastlantısal buluntunun tanımı*			
Description of site and vegetation: (e.g., surface sediment type, ground surface visibility, distance to closest watercourse, etc.) *Sahanın ve bitki örtüsünün tanımı: (örn. Yüzey sediman türü, yüzey zemin görünürlüğü, en yakın suyoluna olan mesafe, vb.)*			
PART B ***BÖLÜM B***			
NOTIFICATION OF MUSEUM DIRECTORATE ARCHAEOLOGIST ***MÜZE MÜDÜRLÜĞÜ ARKEOLOĞUNA BİLDİRİ***			
Monitoring archaeologist contacted museum directorate archaeologist ☐ Yes ☐ No *Arkeolog müze müdürlüğü arkeoloğu ile irtibata geçti. Evet Hayır* Date of notification: *Bildirim tarihi* Name of museum directorate and Name of museum archaeologist: *Müze müdürlüğü ve Müze müdürlüğü arkeoloğunun ismi* Contact number of museum directorate archaeologist: *Müze müdürlüğü arkeoloğunun iletişim numarası*			
DECISION OF MUSEUM DIRECTORATE ARCHAEOLOGIST ***MÜZE MÜDÜRLÜĞÜ KARARI***			
Date of site visit: *İlk saha ziyaret tarihi:*			
☐ Site of no significance - Construction to proceed with no further		☐ Site of significance - Further actions required	

action – End of chance find procedure *Önemsiz saha – İnşaat daha fazla araştırma yapılmadan devam edilebilir – rastlantısal buluntu prosedürün sonu.* Date of notice to resume work: *İşe başlama tarihi bildirisi*	*Önemli saha – Ek araştırma gerekmektedir* Please Fill out Part C *Lütfen Bölüm C'yi doldurun.*
Name of museum directorate archaeologist: *Müze müdürlüğü arkeoloğunun ismi* Contact information: *İletişim numarası*	
Site manager and E&S manager contacted ☐ Yes ☐ No Saha Müdürü ve Çevre müdürü ile irtibata geçildi Evet Hayır	
PART C ***BÖLÜM C***	
FURTHER FIELD INVESTIGATION *EK SAHA ARAŞTIRMASI*	
☐ Site of minor significance *Önemsiz saha*	☐ Site of moderate significance *Az önemli saha*	☐ Site of major significance *Çok önemli saha*
Describe additional work to be conducted: *Yapılması gereken ek işlerin tanımları*		
Date started: *Başlangıç tarihi*	Date completed: *Bitiriş tarihi*	
Date of notice to resume work: *İşe başlama tarihi bildirisi*		
Name of museum directorate archaeologist: *Müze müdürlüğü arkeoloğunun ismi:* Contact information: *İletişim numarası*		
Construction manager contacted ☐ Yes ☐ No *İnşaat müdürü ile irtibata geçildi Evet Hayır*		

Annex 3: Photolog

Mosque in Sarısüleyman Village



Sarısüleyman Village

Agricultural Field which will be irrigated

Agricultural Field which will be irrigated

Kızılhamza (Gürbüz Pond)

Kızılhamza (Gürbüz Pond)

Annex 4: Official letter of the 11th Regional Directorate of the Ministry of Agriculture and Forestry (About Nature Conservation and National Parks)

T.C.
TARIM VE ORMAN BAKANLIĞI
11. Bölge Müdürlüğü
Çorum Şube Müdürlüğü

Sayı : E-21657587-622.02-6888804 07.09.2022

Konu : Kurum Görüşü (Ortaköy - Kızılhamza)

DAĞITIM YERLERİNE

İlgi : 02.09.2022 tarihli ve E-79828097-115.99-2625049 sayılı yazımız.

İlgi yazınızda; Çorum ili Ortaköy İlçesi, Kızılhamza ve Sarısüleyman köyü mevkiinde bulunan mevcut Kızılhamza Göletinden sulama yapılmasını amaçlayan "Kızılhamza Göleti Sulama" projesinde yapılacak olan çalışmalar için kurumumuzun görüşü istenmektedir.

Şube Müdürlüğümüzce yapılan incelemeler sonucunda; bahse konu alanın 2873 Sayılı Milli Parklar Kanunu, 4915 Sayılı Kara Avcılığı Kanunu ve Sulak Alanlar Yönetmeliği kapsamında korunan alan olmadığı tespit edilmiş olup, yapılacak olan çalışmalarda her yıl yayımlanan Merkez Av Komisyonu Kararlarına, 2872 sayılı Çevre Kanunu ve ilgili Yönetmelikleri ile meri mevzuata uyulması şartıyla Kızılhamza Göleti Sulama Projesi çalışmalarının yapılmasında **Şube Müdürlüğümüz acısından bir sakınca bulunmamaktadır.**

Gereğini ve Bilgilerinize arz ederim.

Hayri KÖMÜR
Şube Müdürü V.

Ek: Arazi İnceleme Raporu (3 Sayfa)

Dağıtım:
Gereği:
Dsi 5. Bölge Müdürlüğüne
Bilgi:
Tarım ve Orman Bakanlığı 11. Bölge Müdürlüğüne

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Çepni Mah. İnönü Cad. No: 72/A ÇORUM
Tel: (364) 224 34 31 Faks: (364) 224 34 31
KEP: tarimveormanbakanligi@hs01.kep.tr
KEP Adresi : tarimveormanbakanligi@hs01.kep.tr

Bilgi için:Hayati GÖKGÖZ
Mühendis

Annex 5: EIA Exemption Letter

T.C.
ÇORUM VALİLİĞİ
Çevre, Şehircilik ve İklim Değişikliği İl Müdürlüğü

Sayı : E-63173305-220.03-8514584
Konu : ÇED Görüşü Hk. (Kızılhamza Sulaması)

DSİ 5. BÖLGE MÜDÜRLÜĞÜNE

İlgi : Planlama Şube Müdürlüğünün 11.01.2024 tarihli ve E-79828097-611.02-4232880 sayılı yazısı.

İlgi yazıda, İlimiz Ortaköy İlçesi Kızılhamza Köyü sınırları içerisinde, "Çorum Ortaköy Kızılhamza Köyü Göleti Sulama Projesi" kapsamında mevcut göletten çekilen su ile 252 ha'lık alanın salma ve yağmurlama sulama sistemiyle sulanması projesinin, ÇED Yönetmeliği kapsamında değerlendirilmesi talep edilmektedir.

Söz konusu sulama projeniz, 29/07/2022 tarih ve 31907 sayılı Resmi Gazete'de yayımlanarak yürürlüğe giren ÇED Yönetmeliği Listelerinde yer almadığından kapsam dışı olarak değerlendirilmiştir.

Bilgilerinizi ve gereğini rica ederim.

Cemal İbrahim YALÇIN
Vali a.
İl Müdürü

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KEP Adresi : corumcevrevesehircilik@hs01.kep.tr Bilgi için:Erol EKER
Kimyager

Annex 6: Waste Management Plan

Purpose and Scope

Waste Management Plan (WMP) includes the identification of waste streams and management actions including minimization, recycling, collection, storage, treatment and disposal of wastes which will be generated during site preparation and construction phases of the Project.

WMP is developed to identify the measures for minimizing impacts of the wastes generated by the Project.

The requirements defined in this plan are for the construction phase of the project but they can be used as a guideline for plans and procedures which will be implemented in operation phase of the project.

All Contractors will fulfill the requirements defined in this WMP by adapting them to their own operations. Each contractor must develop its own WMP with identified disposal methods, identification of permit requirement and management actions before the start of the construction phase, and then develop the project-specific plans and Procedures.

- Contractors will ensure that the waste disposal strategy developed for the project through their plan and procedures will follow the following waste management hierarchy:
    1. Waste avoidance is the most preferable option
    2. Minimization of quantities and hazards of waste generated is the second preferred option
    3. Reuse, recovery and recycling will be preferred over treatment of waste
    4. Disposal will be considered as a last resort
- Contractors will follow the Basic Principles for Waste Management;
    - Follow-up of wastes with cradle to grave approach
    - Segregation of wastes at source and waste categorization
    - Reuse, recovery and recycling have the priority
    - All wastes should be handled throughout the route and will not be left at site
    - Dumping and burning of wastes are strictly forbidden
    - Waste transportation and disposal should be done via licensed companies and facilities
    - Mixing different waste types is strictly forbidden
    - Waste transportation to the nearest licensed facility to a possible extent

Roles and Responsibilities

Contractor will ensure that all its personnel participate in all training programs including regular site-specific training sessions on environmental and social issues including waste management throughout the course of their contract.

Specific roles and responsibilities in WMP are given below:

- Contractor will be responsible for developing, implementing and maintaining a detailed, project-specific WMP which will fulfill the minimum requirements and precautions defined in this WMP;
- Contractor will be responsible for informing its employees on the requirements of the WMP and respective health and safety procedures (i.e. training);
- The Environmental Specialist is responsible for the management of waste generated under the Project in accordance with the Waste Management Plan.
- Contractors will maintain regular updates to their WMP in accordance with evolving project needs or upon the identification of specific requirements.
- DSI will monitor the implementation of the WMP by Contractors (e.g. through audits and similar means);
- Contractors are expected to comply with National Laws and will also comply with

International Standards and practices generally applicable to irrigation systems, including the relevant Performance Standards of the International Finance Corporation (WBG-EHS Guidelines). Contractors are required to ensure that their activities comply with all relevant Turkish legislation and international requirements according to the Project documentation referred to in this WMP.

Requirements of Waste Management Plan

Contractors will make sure that;

- All wastes are segregated and recycling procedures are in place.
- Licensed domestic solid waste disposal areas are identified through communication with the local authorities.
- Licensed hazardous waste disposal area or facility is identified through communication with the local authorities.
- Temporary waste storage area(s) is/are identified and arranged in compliance with local regulations.
- There will be dedicated containers at site for segregated and recycled wastes.
- Contractors will identify the waste generation streams specific to their activities and define the disposal methods for these wastes in compliance with the national legislation and project standards.
- Contractors will establish recording and reporting process for the wastes generated at sites.
- Contractors will define training requirements for the personnel on waste minimization, recycling and disposal in the Waste Management Plan and include in the training program.
- Good housekeeping procedures will be in place for minimizing the generation of wastes.

Waste Streams and Disposal Requirements

The possible waste streams and disposal requirements in the below sections are given for the land preparation and construction phase and will provide the guidance for the operation phase. Contractor is expected to define the all waste streams and disposal processes for the wastes to be generated at site.

Excavation Waste

During the excavation works, for the laying of the pipes the necessary amount of bottom cover soil would be excavated and would be stored at the construction site. The topsoil will be stored separately from the excavation materials with a maximum height of 2 m and a maximum slope of 45 degrees and after the construction work is completed, it will be used in the land clearance and rehabilitation works again. In the section stripped for the Operation and Maintenance Road, the topsoil will not be laid back, and the topsoil obtained from here will be used primarily to meet the demands of the local people or for landscaping the areas that will be needed.

The subsoil material from the excavation material will be temporarily stored in a way that it will not mixed with the topsoil, after the pipes are placed in the trenches, they will first be backfilled with subsoil and finally the topsoil of the pipeline side will be laid back. The excess subsoil will be stored in excavation storage areas to be approved by Alaca Municipality or Alaca District Governorship within the scope of the relevant regulation.

During these operations, the following provisions indicated in the Regulation on Control of Excavation Soil and Construction Debris published in Official Gazette No: 25406 on 18.03.2004 regarding the storage of the topsoil would be respected;

- The top soil will be stored in an appropriate area to prevent from being scattered by wind or water streams or other factors, from being mixed with foreign materials and from being deteriorating with respect to original characteristics and necessary protection measures will be taken.

- The area where the topsoil would be stored will not have more than 5% inclination.
- During the storage of the topsoil, possible losses will be prevented and the quality of the soil will be maintained.
- If the topsoil will be kept exposed for a long time, it will be ensured that surface is covered with fast growing plants.

The excavation soil that will be taken out during the construction will at first be accumulated throughout the route in order to be used for backfilling. In cases where excavation soil is not appropriate for backfilling, material will be supplied from off-site after obtaining the necessary permissions and licenses. Imported material used for backfilling will be sand and will be clean and salt-free; and will not contain clay, roots, stones or other material which is likely to cause damage. The excavation material remaining after backfilling process will be used for reinstatement of roads. Remaining excavation material/soil will be stored on permitted sites.

During all excavation works under the scope of the project, provisions of Regulation on Control of Excavation Soil and Construction Debris and also provisions of the Regulation on Control of Soil Pollution and Contaminated Lands by Point Sources will be complied with.

Domestic Solid Wastes

During the construction phase that will begin with the land preparation works, one of the first construction activities will be installation of the camps where the project workers will live. The camp that will provide accommodation, messing, and other basic needs for the workers throughout the construction, will be installed at the most appropriate locations along the route in terms of logistics and local conditions.

Domestic solid waste from the personnel would be collected in closed containers located at various points of the camp areas. This solid waste would be collected in containers and at certain intervals would be transported to the 2nd Class Landfill Facility operated by Çorum Municipalities Environmental Union as part of an agreement to be signed with the Çorum Special Provincial Administration and Çorum Municipalities Environmental Union by the contractor.

Domestic solid waste produced under the Project would be disposed of according to the "Waste Management Regulation" published on 02.04.2015 with number 29314.

Packaging Wastes

There would be packaging waste from the packaging materials used in the transport of equipment, from the packaging of the materials used and from the personnel in land preparation and construction phase of the project.

The packing paper, plastic and glass bottles i.e. packaging wastes will be collected separate from other wastes without considering material used and the source of the material and should be sent to licensed recycling facilities according to Article 23 of the Regulation on Control of Packaging Waste.

The collection of these packaging materials within the camp site and their disposal would be done in compliance with the provisions of the "Regulation on Control of Packaging Waste" which was published in Official Gazette No: 28035 on 24.08.2011.

Waste Batteries and Accumulators

The maintenance process of the vehicles to be used in land preparation and construction period of the project would be done in authorized services. However, when it is not possible, the maintenance procedure will be carried within the facility. In cases where the maintenance process of the vehicles used in the project are carried out within the facility, possible waste batteries that come out would be stored in a closed containers with a leak-proof floor according to the Regulation on Control of Waste Batteries and Accumulators published in Official Gazette No: 25569 on 31.08.2004 and batteries will be delivered to the collection points established by the municipalities or by the companies distributing or

selling batteries and waste accumulators (vehicle batteries) will be delivered to the temporary storage areas established by the companies distributing or selling accumulator products and maintenance companies.

Within the scope of the project, provisions of the Regulation on Control of Waste Batteries and Accumulators and amendments of this regulation will be complied with.

Medical Wastes

Medical wastes collected in the camp sites according to the points indicated in the regulations, would be disposed of by delivering to the nearest health institution or municipal medical waste collection system. Medical waste that are produced under the project will be regularly recorded according to the Regulation on Control of Medical Waste, will be sent to the Çorum Provincial Directorate of Environment, Urbanization and Climate Change, this information will be kept for at least three years and be kept open to examination of the Ministry upon request.

Within the scope of the project, provisions of the Regulation for Medical Waste Control and amendments that were published in Official Gazette No: 27537 on 30.03.2010, in Official Gazette No: 28131 on 03.12.2011, in Official Gazette No: 28812 on 05.11.2013 and in Official Gazette No: 28948 on 21.03.2014 will be complied with.

Waste Oils

The maintenance process of the vehicles to be used in land preparation and construction period of the Project would be done in authorized services. However, when it is not possible, the maintenance procedure will be carried within the facility. If any waste oil is produced, the waste oil will be stored in a closed temporary waste storage area with leak-proof floor and covered with a shelter. The oil collected would be given to a licensed waste oil recovery company according to the Regulation on Control of Waste Oil published in Official Gazette No: 26952 on 30.07.2008.

After the delivering of the waste oils to the licensed companies, Waste Oil Declaration Form in Appendix-2 of the Regulation should be filled and sent to the Çorum Provincial Directorate of Environment, Urbanization and Climate Change until the end of February of the following year. Besides, provisions of the following would be complied with;

• " Waste Oil Management Regulation " published in Official Gazette No: 30985 on 31.12.2019

• "Regulation on Soil Pollution Control and Point Sourced Polluted Areas" published in Official Gazette No: 27605 on 08.06.2010 and the amendments made in the regulation and published in Official Gazette No: 28323 on 14.06.2012 and in Official Gazette No: 28704 on 11.07.2013.

End of Life Tires

During the land preparation and construction phase of the project, the maintenance activities of the vehicles and construction machines will be done in the closest authorized services. If there is a need to change the tires of those vehicles and machines at site, end of life tires would be sent to tire distribution companies or to the licensed transporters according to the Regulation on the Control of End-of-Life Tires (Official Gazette 25.11.2006-26357) will be respected.

Hazardous Wastes

These wastes are occurred as a result of machine and equipment usage and hazardous waste produced by domestic usage and other wastes contaminated with these kinds of wastes. The waste codes for the Hazardous Wastes are given below in accordance with Annex-4 of Waste Management Regulation (Official Gazette: 02.04.2015-29314).

Waste Code	Waste Type	Description*
07 02 16	Wastes containing harmful silicon	M
07 04 13	Wastes containing hazardous material	M

Waste Code	Waste Type	Description*
08 01 11	Waste dyes and varnish containing organic solvent or other hazardous materials	M
08 01 13	Sludge with dye and varnish, containing organic solvents and other hazardous materials	M
08 01 21	Wastes of dye and varnish remover	A
08 03 17	Waste printing toners containing hazardous materials	M
08 04 09	Adhesive and filling compound waste containing organic solvents or other hazardous materials	M
13 01 10	Mineral based hydraulic fluid	A
13 01 11	Synthetic hydraulic fluid	A
13 01 12	Biodegradable hydraulic fluid	A
13 02 06	Synthetic oils related to engine, transmission and lubrication	A
13 02 07	Easily biodegradable engine, transmission and lubrication oils	A
13 05 02	Sludge generated from oil/water separator	A
13 05 06	Oil generated from oil/water separator	A
13 07 01	Fuel oil and diesel fuel	A
13 07 02	Gasoline	A
15 01 10	Packages including residuals of hazardous materials or contaminated with of hazardous materials	M
15 02 02	Absorbers contaminated with hazardous materials, filter materials(oil filter provided that not defined differently),swabs, protective suits	M
16 01 07	Oil filters	A
16 01 14	Antifreeze liquid containing hazardous materials	M
16 06 01	Lead batteries	A
16 06 02	Ni-Cd batteries	A
16 06 03	Mercury cell	A
16 06 06	Electrolytes collected separately from batteries and accumulators	A
17 04 09	Scrap metal contaminated with hazardous materials	M
17 04 10	Cables containing oil, tar and other hazardous materials	M
17 05 03	Soil and rocks containing hazardous materials	M
17 09 03	Other construction and demolition wastes containing hazardous wastes (including mixed waste)	M

A: Certainly hazardous waste regardless of properties
M: Whether waste is hazardous or not is determined by looking threshold concentration that is given in Waste Management Regulation

Waste Vegetable Oils

Within the scope of the project, waste vegetable oil will be generated from the dining hall located in the camp area. Waste vegetable oils will be stored in a closed temporary waste storage area with leak-proof floor and covered with a shelter. The waste vegetable oil collected would be given to a licensed waste oil recovery company according to the Regulation on Control of Waste Vegetative Oil Published in Official Gazette No: 29378 on 06.06.2015

Temporary Waste Storage Area

In compliance with the Waste Management Regulation's stipulations, all waste generated during both the construction and operational phases of the project must undergo temporary storage at the point of origin, adhering strictly to predefined criteria based on waste types. Each temporarily stored waste must be meticulously classified based on its inherent characteristics and appropriately labeled to denote its hazardous or non-hazardous nature, along with pertinent details including waste code, quantity, and date of storage. It is imperative to establish designated temporary waste storage areas to facilitate compliance with these requirements.

According to regulatory guidelines, waste producers generating less than one thousand kilograms of hazardous waste monthly are exempt from acquiring a temporary storage permit for the designated areas or containers utilized for temporary storage of hazardous waste. However, for waste producers

generating one thousand kilograms or more of hazardous waste per month, obtaining a temporary storage permit from the provincial directorate is mandatory for the areas or containers designated for the temporary storage of hazardous waste.

Based on the project's anticipated scope, it is not foreseen that the monthly generation of hazardous waste will exceed one thousand kilograms. Consequently, the project is expected to qualify for exemption from the temporary storage permit requirement for hazardous waste.

Reporting and Monitoring

Contractor will be responsible for producing reports with performance indicators for the successful implantation of WMP and communicate to DSI.

In addition, the declaration of the waste generated until the end of March of the following year must be submitted to the Ministry of Environment, Urbanization and Climate Change via MoTAT system.The WB Environmental, Health, and Safety (EHS) Guidelines are technical reference documents with general and industry-specific examples of Good International Industry Practice (GIIP) and are referred to in the World Bank's Environmental and Social Framework and in IFC's Performance Standards. According to these guidelines, activities will prevent, or minimize, the quantities of wastes generated and hazards associated with the wastes generated. This will be achieved by minimizing hazardous waste generation by implementing stringent waste segregation to prevent the commingling of non-hazardous and hazardous waste to be managed, and also by instituting good housekeeping and operating practices, Moreover, during the implementation of the project, the total amount of waste will be reduced through the implementation of recycling factors such as evaluation of waste production processes and identification of potentially recyclable materials

Monitoring activities associated with the management of hazardous and non-hazardous waste will include regular visual inspection of all waste storage collection and storage areas for evidence of accidental releases and to verify that wastes are properly labeled and stored, Tracking of waste generation trends by type and amount of waste generated, keeping records that document the amount of waste generated and its destination, and such. The monitoring activities will follow the Monitoring Plan given in Section 8 of the Project ESMP.

Annex 7: Grievance/Complaint Record Form and Complaint Close Out Form

Annex 7-1: Grievance/Complaint Record Form

Reference No	
Full Name	
Please mark how you wish to be contacted (mail, telephone, e-mail).	
Province/District/ Location	
Date	
Category of the Grievance	
1. On abandonment (public)	
2. On assets/properties impacted by the project	
3. On infrastructure	
4. On decrease or complete loss of sources of income	
5. On environmental issues (ex. pollution)	
6. On employment	
7. On traffic, transportation and other risks	
9-Other (Please specify):	
Description of the Grievance What did happen? When did it happen? Where did it happen? What is the result of the problem?	
What would you like to see happen to resolve the problem?	
Although giving name and address is not compulsory, it should be kept in mind that during the feedback process regarding the grievance some problems may occur due to lack of information.	

Signature: **Date:**

Annex 7-2: Complaint Close Out Form

Grievance closeout number:		
Define immediate action required:		
Define long term action required (if necessary):		
Compensation Required?	[ ] YES	[ ] NO
CONTROL OF THE REMEDIATE ACTION AND THE DECISION		
Stages of the Remediate Action		Deadline and Responsible Institutions
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		

COMPENSATION AND FINAL STAGES

This part will be filled and signed by the complainant after s/he receives the compensation fees and/or his/her complaint has been remediated.

Notes:

[Name-Surname and Signature]

Date: ___ / ___ / _____

Of the Complainant:

Representative of the Responsible Institution/Company
[Title-Name-Surname and Signature]

Annex 8: Opinion of the General Directorate for the Protection of Natural Assets

T.C.
ÇEVRE, ŞEHİRCİLİK VE İKLİM DEĞİŞİKLİĞİ BAKANLIĞI
TABİAT VARLIKLARINI KORUMA GENEL MÜDÜRLÜĞÜ

Sayı : E-20054479-250-4540966

Konu : Kızılhamza Göleti Sulaması Hk Görüş

DEVLET SU İŞLERİ GENEL MÜDÜRLÜĞÜNE
(Dsi 5. Bölge Müdürlüğü)

İlgi : 02.09.2022 tarihli ve E-79828097-115.99-2625049 sayılı yazınız.

İlgi yazı ile, Çorum İli, Ortaköy İlçesi, Kızılhamza ve Sarısüleyman Köyleri sınırları içerisinde yer alan, mevcut Kızılhamza Göletinden sulama yapılmasını amaçlayan "Kızılhamza Göleti Sulaması" projesi için görüş talep edilmektedir.

Bu kapsamda, ilgi yazı Genel Müdürlüğümüz görev, yetki ve sorumluluğu çerçevesinde incelenmiş olup, bahse konu proje alanında doğal sit alanı, potansiyel doğal sit alanı ve tescilli tabiat varlığı bulunmamaktadır.

Bilgilerinizi ve gereğini rica ederim.

Ümit TURAN
Bakan a.
Genel Müdür Yardımcısı V.

Bu belge, güvenli elektronik imza ile imzalanmıştır.
Doğrulama Kodu: 17F46A31-4AB0-4F4B-9DC5-F5B268A5AEDD Doğrulama Adresi: https://www.turkiye.gov.tr
Bilgi için:Sinem TATAR
Biyolog

Annex 9: Waste and wastewater acceptance letter

T.C.
ÇORUM BELEDİYE BAŞKANLIĞI
Su ve Kanalizasyon Müdürlüğü

Sayı : E-96099734-804.01-118075 03.04.2024
Konu : Sulama Projesi Atıkları

DSİ 5. BÖLGE MÜDÜRLÜĞÜNE

İlgi : 01.04.2024 tarihli ve E-79828097-622.02-4505870 sayılı yazınız

İlgi yazıda Çorum İli sınırları Alaca İlçesi İbrahimköy Köy sınırları içerisinde, "Çorum Alaca İbrahimköy Köyü Göleti Sulama Projesi"; OrtaköyİlçesiKızılhamza Köyü sınırları içerisinde, "Çorum Ortaköy Kızılhamza Köyü Göleti Sulama Projesi" ve Alaca İlçesi Seyitnizam Köyü sınırları içerisinde, "Çorum Alaca Seyitnizam Köyü Göleti Sulama Projesi" projelerinin yapılmasıplanlandığı belirtilmektedir.

Projelerin, inşaat ve işletme dönemlerinde oluşacak atıkların bertarafı konusunda Belediyemize ait katı atık depolama sahası ve atık su arıtma tesisi öngörüldüğü konusu ile ilgili olarak ise ; sadece evsel nitelikli atık suların verilmesi, atık suyun Arıtma Tesisine kendi imkanlarınızla getirilmesi ve sadece Atıksu Arıtma Tesisinden deşarj yapılması kaydıyla herhangi bir sıkıntı bulunmamaktadır.

Bilgilerinize arz ederim.

Alper ZAHİR
Başkan a.
Belediye Başkan Yardımcısı

Bu belge, güvenli elektronik imza ile imzalanmıştır.
Doğrulama Kodu: jhpqzk-wlvLLn-285uu4-8au+g5-dj65loFf Doğrulama Linki: https://www.turkiye.gov.tr/icisleri-belediye-ebys

Kunduzhan Mah. Farabi Cad. No:22
Telefon No: (364)319 19 19 Dahili: 1710 - 1711 Faks No: (364)224 46 07
e-Posta: su@corum.bel.tr İnternet Adresi: https://corum.bel.tr
Kep Adresi: corumbelediyesi@hs01.kep.tr

Bilgi için: Semra KIRTEKE
Memur
Telefon No:

Annex 10: Sample Pesticide Management Plan

Stage	Mitigation Measures[1]
Before using pesticides	1. Minimize the need for pesticides by practicing integrated management by control strategies such as cultural control, mechanical control, physical control, biological control and chemical control. 2. Receive recommendations from [relevant national agencies] for proper management method for specific crop.
General precautions	1. Only choose the pesticides labelled in the national language and do not use the pesticides without any label or with foreign language labels. 2. Select the pesticide which is suitable for specific pests and target plants as described on the label. 3. Do not mix any two or more pesticides at the same time. 4. Follow the instructions for use and the pre-harvest interval (PHI) as prescribed on the label. 5. Use appropriate and correct application techniques to ensure safety for the health of humans, animals and the environment.
Label Reading	1. Check the pesticide registration number on your product. 2. Review the date of manufacture and date of expiry. 3. Read the active ingredient and pesticide group on your product. 4. Read the target pests, dosage of product. 5. Read the pre-harvest interval (PHI). 6. Read the storage and disposal procedure for the product. 7. Read the first aid procedure. 8.Follow the instructions and safety precautions precisely written on the label.
Storage and Transport	1. Store pesticides in a certain place that can be locked and not accessible to unauthorized people or children. 2. Never be kept in a place where they might be mistaken for food or drink. 3. Keep them dry but away from fires and out of direct sunlight. 4. Store away from water sources. 5. Should be transported in well-sealed and labelled containers. 6. Do not carry them in a vehicle that is also used to transport food.
Handling / Application	**From Environmental Safety Aspect –** 1. Application rates must not exceed the manufacturer's recommendations. 2. Avoid application of pesticides in wet and windy conditions. 3. Pesticides must not be directly applied to streams, ponds, lakes, or other surface bodies. 4. Maintain a buffer zone (area where pesticides will not be applied) around water bodies, residential areas, livestock housing areas and food storage areas. **From Health and Safety of User Aspect –** 1. Use suitable equipment for measuring out, mixing and transferring pesticides. 2. Do not stir liquids or scoop pesticides with bare hands. 3. Do not spray pesticides at the down-stream direction and during the strong wind. 4. Do not spray pesticides at the high temperature of the day (noon). 5. Do not suck or blow the blocked nozzle. 6. Do not assign pregnant women, lactating mother and children under 18 for handling and use of pesticides. 7. Protective gloves, shoes, long-sleeved shirt and full trousers shall always be worn

Stage	Mitigation Measures[1]
	when mixing or applying pesticides. 8. Respiratory devices (nose mask) shall be used to avoid accidental inhaling. 9. In case if any exposure/body contact with the pesticide, wash-off and seek medical aid.
Disposal	**From Environmental Safety Aspect –** 1. Dispose any left-over pesticide by pouring it into a pit latrine. 2. It should not be disposed of where it may enter water used for dinking or washing, fish ponds, creeks or rivers. 3. Do not dispose any empty containers into river, creek, fish ponds and water way. 4. Do not burn any empty containers. 5. Decontaminate the pesticide containers by triple rinsing and use for next application. i.e. part-filling the empty container with water three times and emptying into a bucket or sprayer for next application. 6. All empty package and containers should be returned to the designated organization / individual for safe disposal. 7. If safe disposal is not available, bury the empty package and containers at least 50cm (20 inches) from ground level as much as possible. 8. The hole / disposal site must be at least 100 meters (~300 ft) away from the streams, wells and houses. 9. Do not reuse empty pesticide containers for any purposes.
Personal Hygiene	1. Never eat, drink or smoke while handling pesticides. 2. Change clothes immediately after spraying pesticides. 3. Wash hands, face, body and clothes with plenty of water using soap after pesticides handling.
Emergency Measures	**Indications of Pesticide Poisoning** **General:** extreme weakness and fatigue. **Skin:** irritation, burning sensation, excessive sweating, staining. **Eyes:** itching, burning sensation, watering, difficult or blurred vision, narrowed or widened pupils. **Digestive system:** burning sensation in mouth and throat, excessive salivation, nausea, vomiting, abdominal pain, diarrhea. **Nervous system:** headaches, dizziness, confusion, restlessness, muscle twitching, staggering gait, slurred speech, fits, unconsciousness. **Respiratory system:** cough, chest pain and tightness, difficulty with breathing, wheezing. **Responsiveness** **General:** If pesticide poisoning is suspected, first aid must be given immediately and medical advice and help must be sought at the earliest opportunity. If possible, the patient should be taken to the nearest medical facility. **First Aid Treatment** **If breathing has stopped:** Give artificial respiration (i.e. mouth to mouth resuscitation if no pesticide has been swallowed.) **If there is pesticide on the skin:** Remove contaminated clothing from the patient and remove the patient from the contaminated area. Wash the body completely for at least 10 minutes, using soap if possible. If no water is available, wipe the skin gently with

Stage	Mitigation Measures[1]
	cloths or paper to soak up the pesticide. Avoid harsh rubbing or scrubbing. **If there is pesticide in the eyes:** Rinse the eyes with large quantities of clean water for at least five minutes. **If there is ingestion:** Rinse mouth, give water to drink. Never induce vomiting in unconscious or confused persons, seek medical advice immediately.

Trainings

Trainings on pesticide management, on the topics given below, will be provided to the farmers:

Training on Policy, Laws and Regulations Regarding to Pesticides Use: To provide basic knowledge about the national laws, rules and regulations.

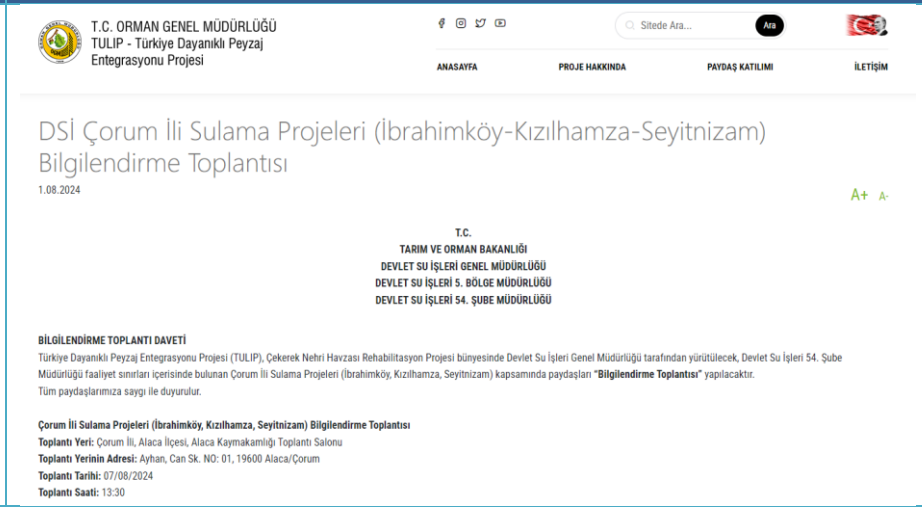
Trainings for Pest Management: To provide trainings to clearly understand the technical aspect of pesticide and skill in using them such as what are the eligible and prohibited items of pesticide under national regulations, the level of negative impact of each eligible item, how to use them, how to protect and minimize the negative impact on the environment and human while using them, how to keep them before and after used etc.

Storage, handling, usage and disposal of pesticide: To provide trainings about the procedures of storage, handling, and usage of pesticide and disposal of pesticides residues or empty containers without affecting the health and safety of user, nearby community and the environment.

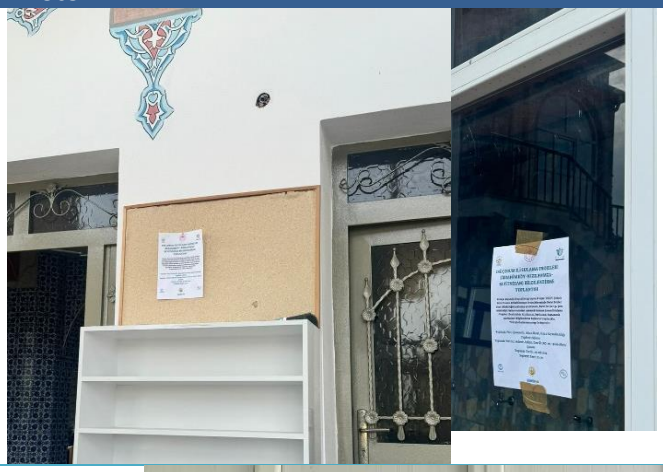
[1] Instructions from Safe Use of Pesticides by WHO.

Annex 11: Disclosure Photolog

Table 11-1 Invitations to Information Meetings

No	Photo.	Description
1		An invitation for an information meeting was published on the TULIP Project page.

No	Photo.	Description
2		Tutas village information meeting invitation.
3		Gazipasa village information meeting invitation.

No	Photo.	Description
4		Killik village information meeting invitation.
5		Seyitnizam village information meeting invitation.

No	Photo.	Description
6		Invitation to Sarısüleyman village information meeting.
7		Ibrahimköy village information meeting invitation.

No	Photo.	Description
8		Kizilhamza village information meeting invitation.

Table 11-2 Photos from the Information Meeting

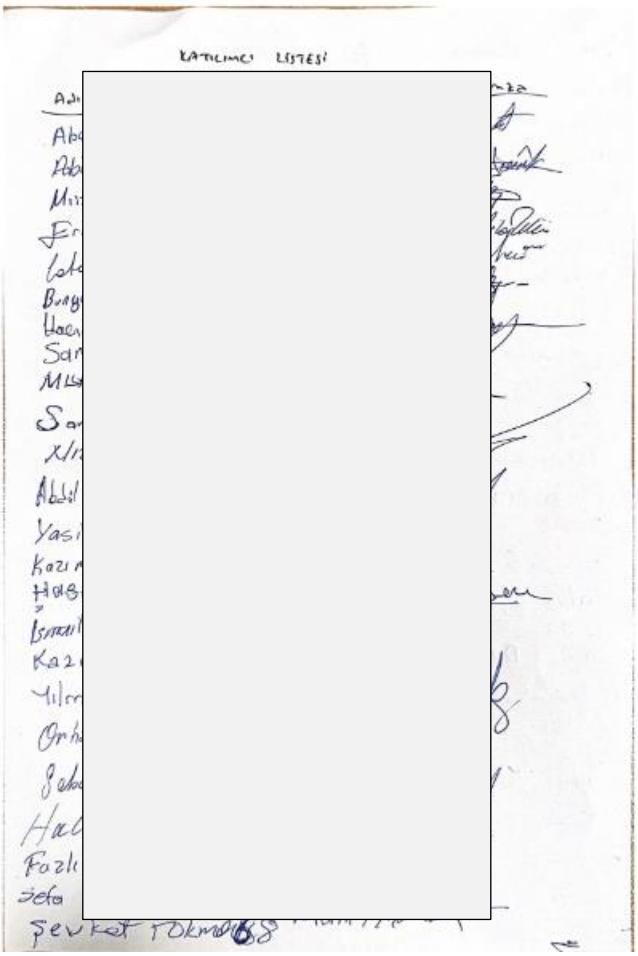
No	Photo.	Description
1		The objectives of the ESMP are explained.

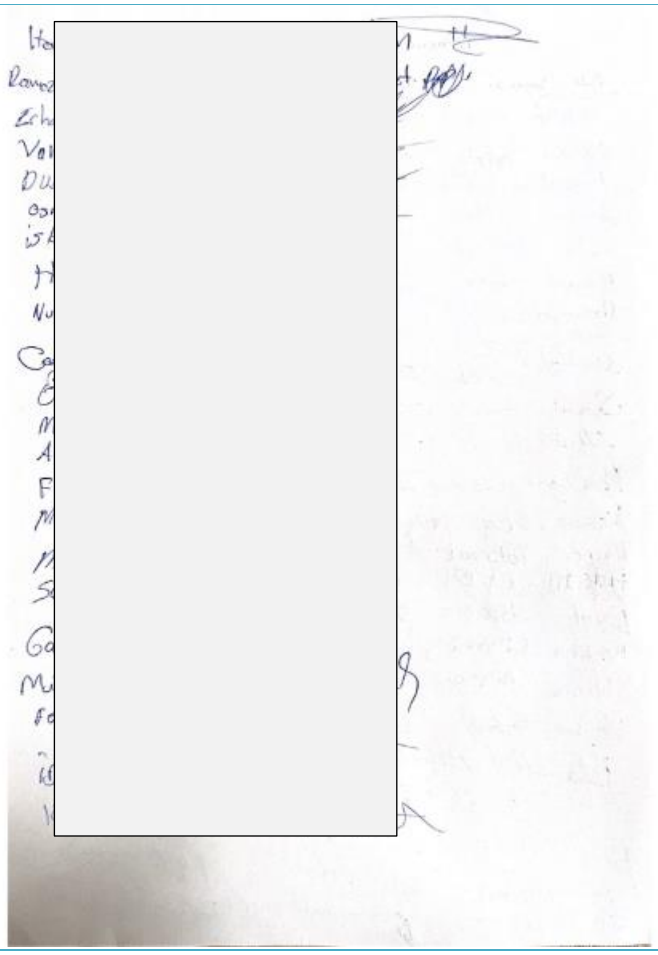
No	Photo.	Description
2		The environmental and social parameters examined in determining the risk level of irrigation projects are mentioned.
3		Environmental risks and recommended measures, if any, are described.
4		Social risks and recommended measures, if any, are explained.

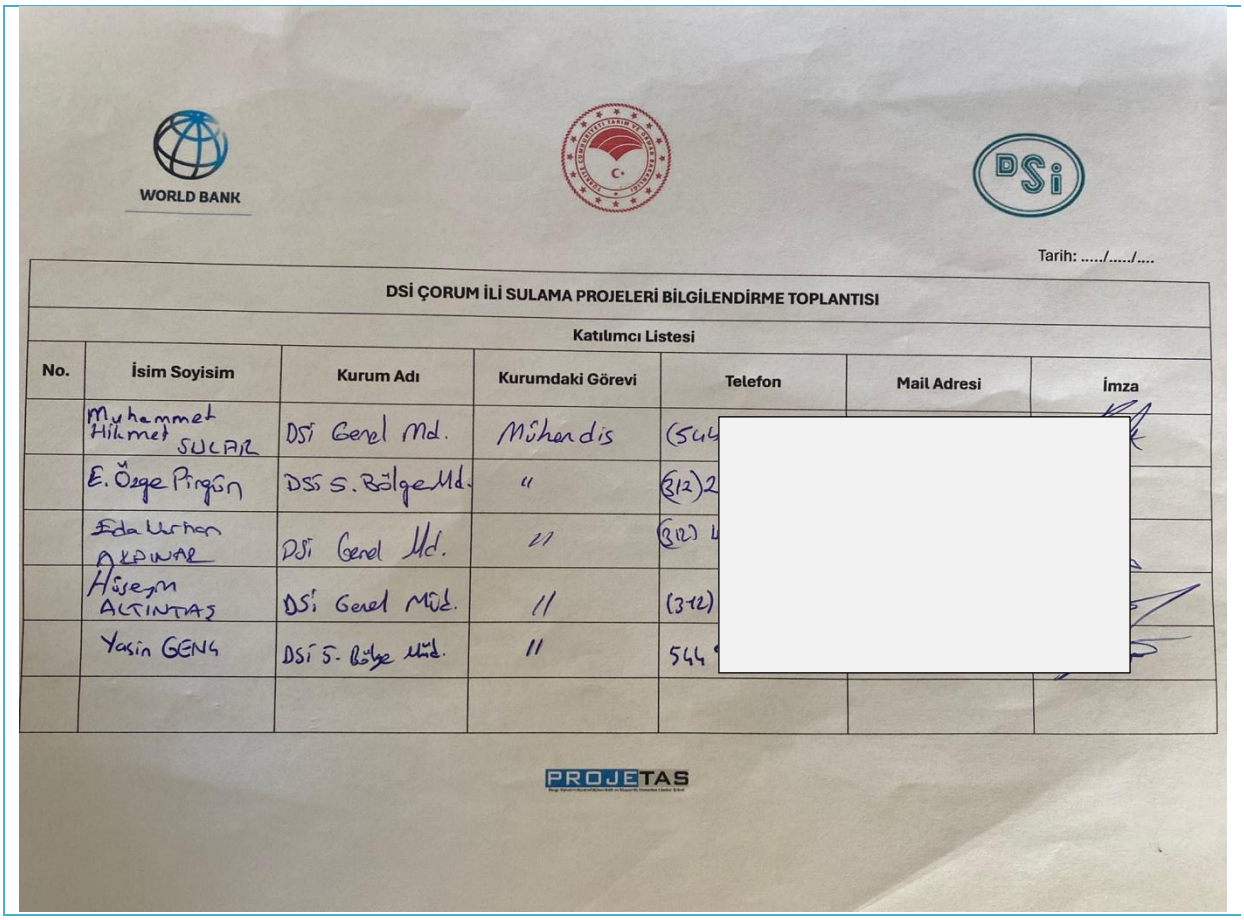
No	Photo.	Description
5		Project experts from DSİ General Directorate, project experts from DSİ 5th Region, project experts from DSİ Çorum 54th Branch Directorate, relevant personnel from TULIP project experts, mukhtars of the settlements affected by the project and relevant local people participated.
6		Information was provided on the functioning of the grievance mechanism and grievance channels.

Annex 12: Attendee List of Meeting Participants

Table 11-3 Participant Lists







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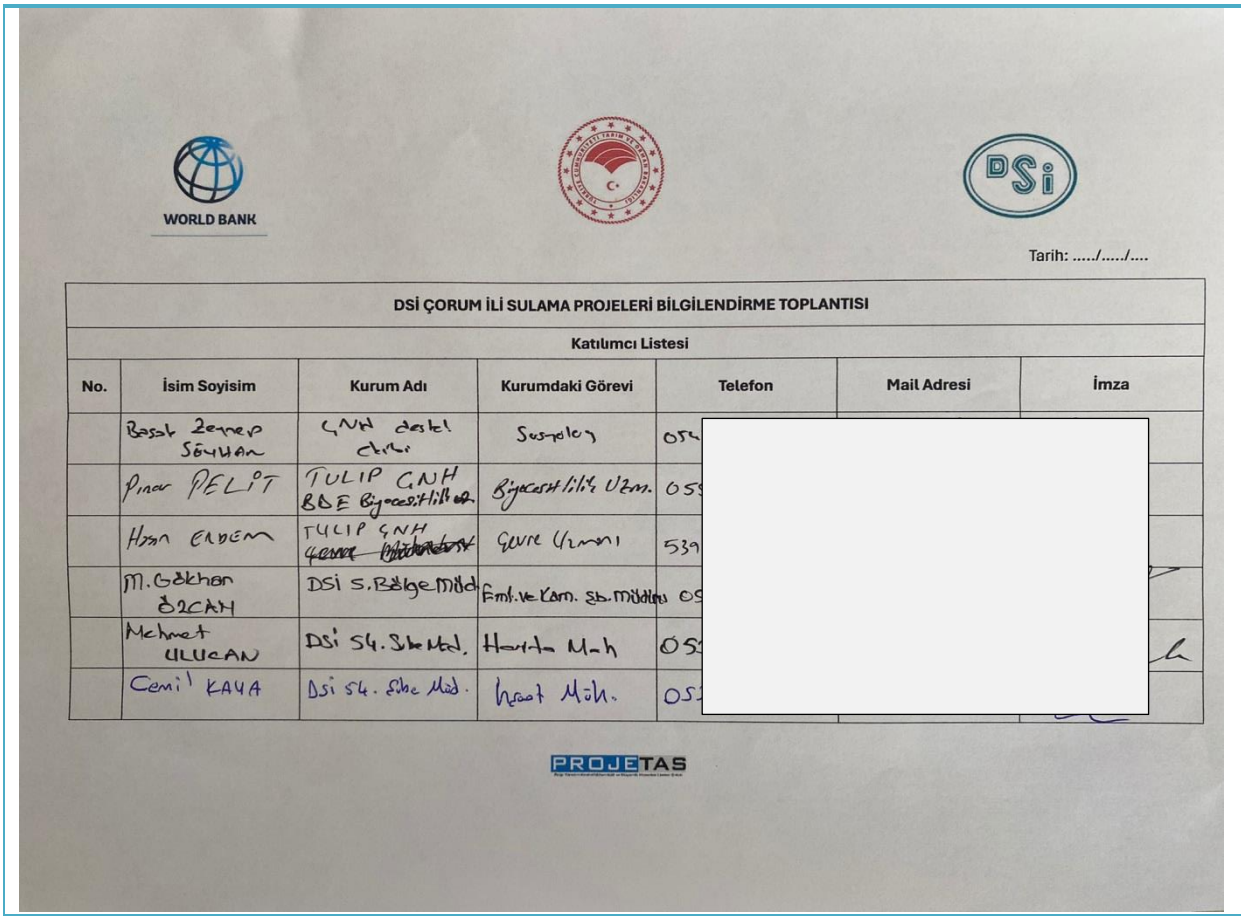
DSİ ÇORUM İLİ SULAMA PROJELERİ BİLGİLENDİRME TOPLANTISI

Katılımcı Listesi

No.	İsim Soyisim	Kurum Adı	Kurumdaki Görevi	Telefon	Mail Adresi	İmza
	Muhammet Hilmet SUCAR	DSİ Genel Md.	Mühendis	(544		
	E. Özge Pirgün	DSİ 5. Bölge Md.	"	(312) 2		
	Eda Nurhan AKPINAR	DSİ Genel Md.	"	(312) 4		
	Hüseyin ALTINTAŞ	DSİ Genel Müd.	"	(312)		
	Yasin GENÇ	DSİ 5. Bölge Müd.	"	544		

PROJETAS



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DSİ

Tarih: ...../...../....

DSİ ÇORUM İLİ SULAMA PROJELERİ BİLGİLENDİRME TOPLANTISI

Katılımcı Listesi

No.	İsim Soyisim	Kurum Adı	Kurumdaki Görevi	Telefon	Mail Adresi	İmza
	Basak Zeynep SÖYHAN	ÇNH destek ekibi	Sosyolog	054		
	Pınar PELİT	TULIP ÇNH BDE Biyoçeşitlilik sp.	Biyoçeşitlilik Uzm.	05		
	Hasan ERDEM	TULIP ÇNH	Çevre Uzmanı	539		
	M. Gökhan ÖZCAN	DSİ 5. Bölge Müd.	Emlak ve Kam. Şb. Müdürü	05		
	Mehmet ULUCAN	DSİ 54. Şube Md.	Harita Müh.	05		
	Cemil KAYA	DSİ 54. Şube Md.	İnşaat Müh.	05		

PROJETAS

Annex 13: Slides of the ESMP Consultation and Stakeholder Engagement Meeting Presentation

Sulama Projelerinin Risk Seviyesi

- Çevresel riskler aşağıdaki nedenlerden dolayı "Orta" olarak değerlendirilmiştir,
  - Proje kapalı bir sulama sistemidir. Mevcut rezervuardan alınan su, mevcut tarım arazilerinin sulanması için kullanılacaktır.
  - Sulamadan dönen su için bir drenaj sistemi mevcuttur.
  - Yeraltı boruları için sınırlı kazı yapılacak ve kazılan malzeme proje alanını orijinal haline getirmek için kullanılacaktır.
  - Sulama borularının güzergahı boyunca herhangi bir doğal koruma alanı bulunmamaktadır.
- Sosyal riskler aşağıdaki nedenlerden dolayı "Orta" olarak değerlendirilmektedir,
  - Proje alanı tarım arazisi olarak kullanılmaktadır.
  - Mülklerin çoğu özel mülkiyet (mülkiyet hakkı, kalıcı ve geçici irtifak hakkı) olduğu için arazi edinimi gerekecektir. Arazi ediniminin geçim kaynakları üzerindeki etkisi düşüktür.
  - İnşaat çalışmalarının yerel halk üzerindeki olası etkileri düşük ila orta düzeyde, ağırlıklı olarak geri döndürülebilir, kısa vadeli ve çoğunlukla proje alanı ve yakın çevresiyle sınırlı olacaktır.
  - Proje sırasında fiziksel yeniden yerleşime ihtiyaç duyulmayacaktır.

Çevresel ve Sosyal Yönetim Planı (ÇSYP)'nin Amaçları

- ÇSYP'nin temel amacı, Çorum İli Sulama Projesi'nin inşaat ve işletme aşamalarında projenin olası sosyal ve çevresel etkilerini ve risklerini belirlemektir. Ayrıca, bu etkileri azaltmaya ve ortadan kaldırmaya yönelik önlemler değerlendirilmekte ve tüm planlama önlemleri ve izleme faaliyetleri için sorumlu taraflar ÇSYP kapsamında listelenmektedir.
- Çevre kalitesinin korunması, çevresel ve sosyal etki ve risklerin azaltılmasına yönelik tedbirler belirlenmiştir. Projenin inşaat ve işletme aşamalarında alınacak tedbirler farklı mercilerin sorumluluğundadır. İlgili makamlar sorumluluklarını ulusal mevzuat ve ÇSYP'de belirtilen uluslararası kriterler temelinde yürütürler.
- ÇSYP'de yer alan önlemler, inşaat faaliyetlerinin olumsuz etkilerine karşı çevreyi, inşaatta görev alan personeli ve yöre halkını korumaya yönelik olup, işletme aşamasındaki önlemler de çevreyi ve insanları korumaya yönelik unsurları içermektedir ÇSYP tarafından belirlenen inşaat ve işletme aşamalarında uyulması gereken kurallar, ÇSYP tarafından belirlenen etki azaltma ve izleme planları ile denetlenmektedir.


Dünya Bankası Ç&S Standartları (ÇSS)
ÇSS 1: Çevresel ve Sosyal Risklerin ve Etkilerin Değerlendirilmesi ve Yönetimi projenin her aşamasıyla ilgili çevresel ve sosyal risk ve etkilerin değerlendirilmesi, yönetilmesi ve izlenmesine yönelik sorumlulukları belirler.
ÇSS 2: İşgücü ve Çalışma Koşulları kapsamlı finansal kalkınma ve yoksulluğun azaltılması için istihdam ve gelir yaratmayı hedefler.
ÇSS 3: Kaynak Verimliliği ve Kirlilik Önleme Yöntemi proje uygulamasında bütünsel bir yaklaşımla kaynak verimliliği ve kirliliğin önlenmesi ve kirlilik yönetimi gerekliliklerine atıfta bulunur.
ÇSS 4 :Toplum Sağlığı ve Güvenliği sağlık, emniyet ve güvenlik risklerini ve bunların proje faaliyetlerini nedeniyle topluluklar üzerindeki etkilerini vurgular.
ÇSS 5: Arazi Edinimi, Arazi Kullanımına İlişkin Kısıtlamalar ve Gönülsüz Yeniden Yerleşim, zorunlu yeniden yerleşimden kaçınılmasını, kaçınılamıyor ise yerinden edilmiş kişiler üzerindeki olumsuz etkilerin azaltılması için gerekli önlemlerin alınması.
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PROJETAS


Dünya Bankası Ç&S Standartları (ÇSS)
ÇSS 6: Biyoçeşitliliğin Korunması ve Canlı Doğal Kaynakların Sürdürülebilir Yönetimi, biyoçeşitliliğin ve habitatların korunması ve canlı doğal kaynakların sürdürülebilir yönetim teşvik edilmesini gerektirir.
ÇSS 7: Yerli Halkların Haklarının Tanınması: Yerli halkların haklarının tanınması, korunması ve geliştirilmesi gerektirir. Projelerin yerli halklar üzerindeki etkilerinin değerlendirilmesi ve bu etkilerin azaltılması için yerli halkların aktif katılımı sağlanmalıdır. Ayrıca, projelerin yerli halkların kültürel ve doğal kaynaklarına saygılı bir şekilde gerçekleştirilmesi esastır.
ÇSS 8: Kültürel Miras, geçmiş, bugün ve gelecek arasındaki bağlantıların korunması gerektirir. Projenin her aşamasında kültürel mirası korumayı amaçlayan eylemleri belirtir.
ÇSS 9: İşçi Sağlığı ve Güvenliği: Projelerde çalışan işçilerin sağlık ve güvenliğinin korunması, çalışma koşullarının iyileştirilmesi ve işçi haklarının korunması gereklidir. Projelerde işçi sağlığı ve güvenliği standartlarına uyulmalı, güvenli çalışma ortamları sağlanmalı ve iş kazalarının önlenmesi için gerekli tedbirler alınmalıdır.
ÇSS 10: Paydaş Katılımı ve Bilgi Paylaşımı, açık ve şeffaf paydaş katılımı, iyi uluslararası uygulamalarla desteklenir. Bu katılım, sürdürülebilirliği artırır ve proje tasarımının başarısına katkı sağlar.
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Proje Bilgileri

Bilgiler/ Yerleşim Yerleri	Seyitnizam	İbrahimköy	Kızılhamza
Proje Kapsamı ve Hedefi	Çorum Seyitnizam Sulama Projesi, Seyitnizam Göleti'ni su kaynağı olarak kullanarak 504,2 hektar araziyi sulamayı ve Seyitnizam, Tutaş, Killik ve Gazipaşa köylerindeki arazileri sulamayı amaçlamaktadır.	İbrahimköy Sulama Projesi, Çorum'da 310,9 hektar araziyi sulamak amacıyla mevcut İbrahimköy Göleti'ni su kaynağı olarak kullanılacaktır.	Çorum kızılhmaza sulama projesi çorum'da 252 hektar araziyi sulamak amacıyla mevcut kızılhamza göletini su kaynağı olarak kullancaktır.
Teknik Özellikler	Proje, 3.767,08 metre polietilen sulama borusu ve 18.317,16 metre işletme ve bakım yolu inşasını içermektedir. Sulama hattı hendekleri 1,5 m genişliğinde ve 2,5 m derinliğinde açılacak ve borular yerleştirilecektir	Proje, 17.866,90 metre polietilen sulama borusu ve 16.339,55 metre işletme ve bakım yolu inşa etmeyi hedefleyen bir projedir. Planlanan sulama hattı için 1,5 m genişliğinde ve 2,5 m derinliğinde açılacak hendeğe sulama boruları yerleştirilecektir.	Proje, 10.590,09 metre polietilen sulama borusu ve 10.399,88 metre işletme ve bakım yolu yapılması planlanmaktadır. Planlanan sulama hattı için 1,5 m genişliğinde ve 2,5 m derinliğinde açılacak hendeğe sulama boruları yerleştirilecektir
Ulaşım ve Altyapı	Sulama alanı, il merkezine 75 km, Alaca ilçe merkezine 24 km uzaklıktadır ve alana asfalt yol ile erişim sağlandığından yeni bir erişim yolu inşa edilmesine gerek yoktur.	Sulama alanı il merkezine 48 km, Alaca ilçe merkezine ise 16 km uzaklıktadır. Alana asfalt yol ile bağlantı sağlandığından yeni bir erişim yolu inşa edilmesine gerek yoktur.	Sulama alanı şehir merkezine 38 km, Ortaköy ilçe merkezine ise 18 km uzaklıktadır. Alana asfalt yol ile bağlantı sağlandığından yeni bir bağlantı yolu yapımına gerek yoktur.
ÇSYP'nin Amacı:	Çevresel ve Sosyal Yönetim Planı (ÇSYP), projenin inşaat öncesi, inşaat ve işletme aşamalarındaki potansiyel sosyal ve çevresel etkileri ve riskleri değerlendirmek ve ele almaktır.		

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Çevresel ve Sosyal Yönetimi Planı (ÇSYP)

Çevresel Etkiler;

- ❑Toprak Kalitesi
- ❑Su Kullanımı
- ❑Atık Üretimi
- ❑Gürültü Etkisi
- ❑Hava Kalitesine Etkiler
- ❑Depremsellik
- ❑Biyoçeşitlilik ve Korunan Alan

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PROJETAS

Toprak Kalitesi

Etki tespiti ve Değerlendirme

- Proje sırasında doğrudan toprak kirliliği olmayacak ancak kazara dökülme riski uygun önlemlerle yönetilecektir. Sulama güzergahında 12 m genişlikte ve 30 cm derinlikte üst toprak sıyrılacak, geçici olarak depolanacak, borular yerleştirildikten sonra önce alt toprak, ardından üst toprak geri serilecektir. Fazla alt toprak onaylı depolama alanlarına taşınacak, sıyrılan üst toprak ise peyzaj ve yerel halkın ihtiyaçları için kullanılacaktır.
- İnşaat sırasında çakıl dökülmeleri kolayca temizlenebilir ve kirlilik riski en aza indirilecektir. Araç bakımları proje alanı dışında yapılacak, tehlikeli maddeler için ikincil muhafaza sağlanacaktır. Zorunlu bakım sırasında dökülmelere karşı önlemler alınacak ve şantiye yakıt tankı kullanılarak sızıntı riski azaltılacaktır.
- İşletme aşamasında onarım ve bakım faaliyetlerinin toprak kalitesi üzerindeki riskleri benzer önlemlerle yönetilecektir. Projenin normal işletimi toprak kalitesine risk oluşturmaz

Su Kullanımı

Etki Tespiti ve Değerlendirme

- İnşaat aşamasında şantiyede yaklaşık 15 personelin istihdam edilmesi beklenmektedir. Kişi başına günlük ortalama su tüketimi 2,99 litredir.
- Su ihtiyacı, atıksu oluşumu ve katı atık oluşumu 15 personel için hesaplanmış olup toplam günlük su talebi 12,9 m3/gün olacaktır.
- Su ihtiyacı mevcut duruma benzer şekilde yeraltı su kaynaklarından sağlanacaktır.

Atık Üretimi

	Seyitnizam	İbrahimköy	Kızılhamza
Atık Üretimi	❑ Sahada çalışan personel, ağırlıklı olarak organik atıklardan oluşan evsel katı atık üretecektir. Bu aşamada istihdam edilen 15 personelin kişi başına günlük ortalama evsel katı atık üretimi 14,7 kg/gündür. ❑ İnşaat aşamasında ortaya çıkan bir diğer atık ise atık sudur. İstihdam edilmesi planlanan 15 personel için günlük ortalama evsel katı atık üretimi 2,99kg/gün olarak hesaplanmıştır. ❑ İnşaat sırasında meydana gelebilecek atık türleri malzemeler, tehlikeli atıklar, ömrünü tamamlamış lastikler, atık yağ, atık piller ve akümülatörler ve tıbbi atıklardır.	❑ Sahada çalışan personel, ağırlıklı olarak organik atıklardan oluşan evsel katı atık üretecektir. Bu aşamada istihdam edilen 15 personelin kişi başına günlük ortalama evsel katı atık üretimi 14,7 kg/gündür. ❑ İnşaat aşamasında ortaya çıkan bir diğer atık ise atık sudur. İstihdam edilmesi planlanan 15 personel için günlük ortalama evsel katı atık üretimi 2,99kg/gün olarak hesaplanıştır. ❑ İnşaat sırasında meydana gelebilecek atık türleri malzemeler, tehlikeli atıklar, ömrünü tamamlamış lastikler, atık yağ, atık piller ve akümülatörler ve tıbbi atıklardır.	❑ Sahada çalışan personel, ağırlıklı olarak organik atıklardan oluşan evsel katı atık üretecektir. Bu aşamada istihdam edilen 15 personelin kişi başına günlük ortalama evsel katı atık üretimi 14,7 kg/gündür. ❑ İnşaat aşamasında ortaya çıkan bir diğer atık ise atık sudur. İstihdam edilmesi planlanan 15 personel için günlük ortalama evsel katı atık üretimi 2,99kg/gün olarak hesaplanmıştır. ❑ İnşaat sırasında meydana gelebilecek atık türleri malzemeler, tehlikeli atıklar, ömrünü tamamlamış lastikler, atık yağ, atık piller ve akümülatörler ve tıbbi atıklardır.

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Gürültü Etkisi

	Seyitnizam	İbrahimköy	Kızılhamza
Gürültü Etkisi	❑ İnşaat aşamasında araç, makine ve ekipmanlardan kaynaklanan gürültü oluşması beklenmektedir. İnşaat çalışmalarına toplam 3 aracın katılacağı tahmin edilmektedir. Boru hattının inşası sırasında aynı anda aynı yerde en fazla 3 aracın çalışması öngörülmüştür. ❑ Seyitnizam, Tutaş, Killik ve Gazipaşa köylerinde beklenen en yüksek gürültü seviyeleri sırasıyla 73,03 dBA, 66,67 dBA, 62,85 dBA ve 60,07 dBA olup, bu seviyeler ulusal ve uluslararası gürültü sınır değerlerinin altındadır. Tüm araç ve ekipmanların aynı anda çalışması durumunda Seyitnizam Köyü'nde gürültü seviyesi 74,10 dBA'ya çıkabilir, ancak proje alanının coğrafi yapısı nedeniyle tüm araçların anda çalışması mümkün değildir.	❑ İnşaat aşamasında araç, makine ve ekipmanlardan kaynaklanan gürültü oluşması beklenmektedir. İnşaat çalışmalarına toplam 3 aracın katılacağı tahmin edilmektedir. Boru hattının inşası sırasında aynı anda aynı yerde en fazla 3 aracın çalışması öngörülmüştür. ❑ Proje alanına en yakın yerleşim yerleri olan İbrahimköy köyü, Alaca İlçesi ve Kızkaraca köylerinde beklenen en yüksek gürültü seviyelerinin sırasıyla 73,03 dBA, 44,68 dBA ve 39,14 dBA'dan az olması beklenmektedir. İbrahimköy Köyü'nde 73,03 dBA gürültü seviyesine ulaşılacağı öngörülmektedir. Ancak inşaat çalışmalarının gündemi ve proje alanının coğrafi yapısı nedeniyle tüm araçların aynı anda aynı bölgede aktif olması mümkün değildir.	❑ İnşaat aşamasında araç, makine ve ekipmanlardan kaynaklanan gürültü oluşması beklenmektedir. İnşaat çalışmalarına toplam 3 aracın katılacağı tahmin edilmektedir. Boru hattının inşası sırasında aynı anda aynı yerde en fazla 3 aracın çalışması öngörülmüştür. ❑ Proje alanına en yakın yerleşim yerleri olan Kızılhamza ve Soğucak köylerinde beklenen en yüksek gürültü seviyelerinin sırasıyla 52,72 ve 44,52 dBA'dan düşük olması beklenmektedir. ❑ Tüm araç ve ekipmanların aynı anda aynı yerde çalıştığı senaryoda, proje alanına 170 m mesafedeki Sarısüleyman Köyü'nde 68,21 dBA gürültü seviyesine ulaşılacağı öngörülmektedir. Ancak inşaat çalışmalarının gündemi ve proje alanının coğrafi yapısı nedeniyle tüm araçların aynı anda aynı bölgede aktif olması mümkün değildir

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Hava Kalitesine Etkiler

	Seyitnizam	İbrahimköy	Kızılhamza
Toz Emisyonları	❑ Projenin inşaatı sırasında araç hareketleri ve kazı faaliyetlerinden kaynaklanan toz emisyonlarının oluşması beklenmekte olup, toplamda 0,46 kg/saat toz emisyonu tahmin edilmektedir	❑ Projenin inşaatı sırasında araç hareketleri ve kazı faaliyetlerinden kaynaklanan toz emisyonlarının oluşması beklenmekte olup, toplamda 0,48 kg/saat toz emisyonu tahmin edilmektedir	❑ Projenin inşaatı sırasında araç hareketleri ve kazı faaliyetlerinden kaynaklanan toz emisyonlarının oluşması beklenmekte olup, toplamda 0,97 kg/saat toz emisyonu tahmin edilmektedir.
Kullanılacak Araçlar	❑ Proje sırasında 3 kamyon, 1 ekskavatör, 2 GBS, 1 yağmur kamyonu, 1münübüs, 1 kamyonet, 1 traktör, 1 sokak yağmurlama aracı kullanılacaktır.	❑ Proje sırasında 3 kamyon, 1 ekskavatör, 2 GBS, 1 yağmur kamyonu, 1münübüs, 1 kamyonet, 1 traktör, 1 sokak yağmurlama aracı kullanılacaktır.	❑ Proje sırasında 3 kamyon, 1 ekskavatör, 2 GBS, 1 yağmur kamyonu, 1münübüs, 1 kamyonet, 1 traktör, 1 sokak yağmurlama aracı kullanılacaktır.

Depremsellik

Etki Tespiti ve Değerlendirme

❑Proje alanı, orta düzeyde sismik aktiviteye işaret eden 3. derece deprem risk bölgesi içinde yer almaktadır. Bu bölgede yer almak, inşaat ve işletme aşamaları için planlanan faaliyetlerin tasarım kriterlerinin sismik riske uygun olması gerektiğini ve borular ve bağlantılar gibi malzemelerin dikkatli seçilmesinin şart olduğunu göstermektedir. İşletme aşamasında, özellikle küçük depremler de dahil olmak üzere her olaydan sonra şebeke sızıntılarını tespit etmek ve onarmak için düzenli denetimler yapılmalıdır.

Biyoçeşitlilik ve Korunan Alan

Etki Tespiti ve Değerlendirme

- Dünya Mirası Doğal Alanları, Biyosfer Rezervleri, Uluslararası Öneme Sahip Ramsar Sulak Alanları, Önemli Biyoçeşitlilik Alanları, Önemli Kuş Alanları ve Sıfır Yok Oluş için İttifak Alanları gibi uluslararası kabul görmüş yüksek biyoçeşitlilik değerine sahip alanlar dikkate alındığında, proje alanı içerisinde uluslararası kabul görmüş yüksek biyoçeşitlilik değerine sahip alan bulunmamaktadır.

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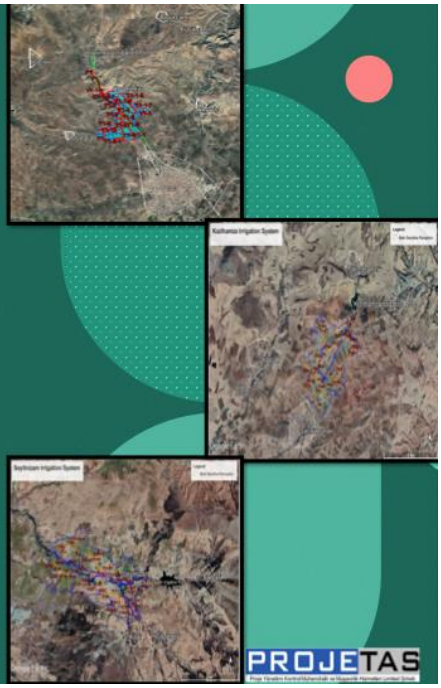
PROJETAS

Çevresel ve Sosyal Yönetim Planı (ÇSYP)

Sosyal Etkiler;

- Nüfus Değişimi
- İş Sağlığı ve Güvenliği
- Ekonomi ve İstihdam
- Toplum Sağlığı Güvenliği
- Arazi Edinimi ve Geçim Kaynakları
- İşgücü Yönetimi ve İşgücü Akını
- Hassasiyet, Sosyal Eşitlik ve Eşitlik



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PROJETAS

Nüfus Değişimi

Etki Tespiti ve Değerlendirme;

- Proje sonucunda tarımsal sulamanın artması ile nüfusta değişim meydana gelebilir ve/veya nüfusun azalması engellenebilir. Sulu tarımın yaygınlaşması, tarımda teknolojik ve sürdürülebilir bir sulama sisteminin kullanılması çiftçiler için olumlu gelir getirici sonuçlar yaratır. Proje, bölgeden göç etmiş veya göç etmeyi planlayan kişilerin bölgede kalmasını sağlayabilir. Proje nüfusun korunmasına ve/veya artmasına etki etmese bile sulu tarım yapan çiftçi sayısında artış olabilir.

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PROJETAS

İş Sağlığı ve Güvenliği (İSG)

Etki Tespiti ve Değerlendirme;

- Gerçekleşebilecek iş kazalarından kaynaklanabilecek potansiyel yaralanmalar meydana gelebilir. Bu süreçleri etkili bir şekilde yönetebilmek için hem inşaat hem de işletme süreçlerinin tamamında ulusal ve uluslararası iş sağlığı ve güvenliği yasalarına uyulması gerekmektedir.
- Hem inşaat hem de işletme süreçleri boyunca bu süreçleri etkin bir şekilde yönetmek için ulusal ve uluslararası iş sağlığı ve güvenliği mevzuatına uymak gerekmektedir. İşe başlamadan önce kapsamlı bir risk değerlendirmesi yapılacak ve çalışanların güvenliğini ve sağlığını sağlamak için uygun kontrol önlemleri uygulanacaktır. İSG planı ve ilgili prosedürler sahada uygulanacaktır.

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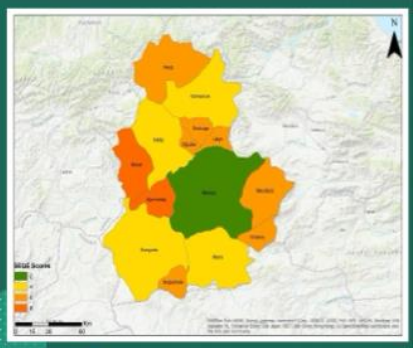
PSI

PROJETAS

Ekonomi ve İstihdam

Etki Tespiti ve Değerlendirme;

- Sulanabilir alanların artırılması, katma değeri yüksek ürünlerin üretilmesi ve tarımsal verimliliğin artırılması projenin çıktılarıdır. Proje etkilerine gelince, alt projenin inşaat işleri için sınırlı geçici istihdam sağlanacağı öngörülmektedir. Bu çalışmalar kapsamında yerel işçiler istihdam edilecektir. Ayrıca, inşaat sırasında yerel malzemelerin kullanılması ve çeşitli mal ve hizmetlerin yerel kaynaklardan temin edilmesine özen gösterilmesi yoluyla yerel ekonomiye katkı sağlanmasına öncelik verilecektir.



Toplum Sağlığı ve Güvenliği

Etki Tespiti ve Değerlendirme;

- İnşaat aşamasında, yoğun trafik faaliyetleri yerel halkı etkileyebilir. Ağır inşaat makineleri, kamyonlar ve ekskavatörler, köy yollarını kullanarak trafik kazası riskini artırabilir. İnşaat sırasında yolların geçici olarak kapanması, acil durumlarda sağlık hizmetlerine erişimi kısıtlayabilir.
- Proje kapsamında kurulacak işçi kampı, çevresel hassasiyet gözetilerek uygun hazine arazilerinde ve muhtarların önerileri dikkate alınarak seçilecektir. Kamp alanı, yatakhane, yemekhane, duş/tuvalet tesisleri, dinlenme alanları ve bakım-onarım istasyonu gibi tesislere sahip olacak. Akaryakıt tankları ve tehlikeli kimyasallar için sızdırmaz muhafaza yapılacaktır.
- Sulama sisteminin bakımı düzgün yapılmazsa veya borularda sızıntılar olursa, çevredeki toplumun sağlığı olumsuz etkilenebilir. Artan trafik, dar veya bakımsız yollarda topluluk üyeleri için risk oluşturabilir. Erozyon ve sedimantasyon gibi etkileri önlemek için düzenli bakım ve erozyon kontrol önlemleri uygulanmalıdır.

Arazi Edinimi ve Geçim Kaynakları

Etki Tespiti ve Değerlendirme;

YERLEŞİM İLİ/ İLÇESİ/ KÖY	Özel			Hazine		Köy tüzel kişiliği		Kamu Kurumları		Tescil dışı alan		Toplam	
	Parsel Sayısı	Büyüklüğü (m²)	Sahipleri/Kullanıcıları	Parsel Sayısı	Büyüklüğü (m²)	Parsel Sayısı	Büyüklüğü (m²)	Parsel Sayısı	Büyüklüğü (m²)	Parsel Sayısı	Büyüklüğü (m²)	Parsel Sayısı	Büyüklüğü (m²)
ÇORUM/ ALACA/ İBRAHIMKÖY	291	99692.99	478	13	5477.24	2	3.92	8	776.60	2	600.12	316	76253.54

YERLEŞİM İLİ/ İLÇESİ/ KÖY	Özel			Hazine		Köy tüzel kişiliği		Kamu Kurumları		Toplam	
	Parsel Sayısı	Büyüklüğü (m²)	Sahipleri/Kullanıcıları	Parsel Sayısı	Büyüklüğü (m²)	Parsel Sayısı	Büyüklüğü (m²)	Parsel Sayısı	Büyüklüğü (m²)	Parsel Sayısı	Büyüklüğü (m²)
ÇORUM/ ORTAKÖY/ KIZILHAMZA	67	21187.60	131	2	801.15	0	0	1	11,00	70	21999.75
ÇORUM/ ORTAKÖY/ SARISÜLEYMAN	178	46616.72	333	3	258.82	1	1.9	0	0	182	46877.44
TOPLAM	**246**	**67804.32**	**464**	**5**	**1059.97**	**1**	**1.9**	**1**	**11.00**	**252**	**68877.19**

YERLEŞİM İLİ/ İLÇESİ/ KÖY	Özel			Hazine		Köy tüzel kişiliği		Toplam	
	Parsel Sayısı	Büyüklüğü (m²)	Sahipleri/ Kullanıcıları	Parsel Sayısı	Büyüklüğü (m²)	Parsel Sayısı	Büyüklüğü (m²)	Parsel Sayısı	Büyüklüğü (m²)
ÇORUM/ ALACA/ TUTAŞ	223	57780.56	300	0	0	0	0	223	57780.56
ÇORUM/ ALACA/ SEYİTNİZAM	57	12162.46	130	0	0	1	23.09	58	12185.55
ÇORUM/ ALACA/ GAZİPAŞA	32	9581.65	134	2	126.92	0	0	34	9708.57
ÇORUM/ ALACA/ KİLLİK	261	340388.73	153	0	0	1	1281.82	262	341670.55
TOPLAM	**573**	**419913.41**	**717**	**2**	**126.92**	**2**	**1304.91**	**577**	**421345.24**

İzleme ve Değerlendirme

- ÇSYP uygulaması yakın ve sürekli izlemeye tabi tutulacak ve Yüklenici tarafından proje sahasında haftalık olarak hazırlanacak ÇSYR'ler aracılığıyla raporlanacaktır. Bu raporlar, projeye atanan çevresel, sosyal ve İSG uzmanları tarafından onaylanacaktır. Raporlar daha sonra bağımsız olarak izlenecek ve denetim ve doğrulama için DSİ 54. Bölge Şube Müdürlüğü'ne raporlanacak, bu şube de raporları haftalık olarak DSİ Bölgesel Proje Uygulama Birimi'ne (PUB) gönderecektir.
- Çevresel ve Sosyal Yönetim Planı (ÇSYP), İşgücü Yönetim Planı veya Paydaş Katılım Planı (PKP) uygulaması ile ilgili herhangi bir sorun DSİ Bölge PUB tarafından fark edilirse, DSİ Bölge Şube Müdürlüğü'nü bilgilendirecek ve bu sorunları gidermek için atılacak adımlar üzerinde anlaşmaya varacaktır. Önemli olumsuz etkileri olan herhangi bir olay veya kaza durumunda, Yüklenici derhal DSİ Bölge Şube Müdürlüğü'nü bilgilendirecek, DSİ Bölge PUB'u ve ardından Proje Koordinasyon Birimi'ni (PKB) 48 saat içinde bilgilendirecektir. PKB daha sonra aynı zaman dilimi içinde Dünya Bankası'nı bilgilendirecek ve olayın veya kazanın ayrıntılarını ve bunu ele almak için alınan veya planlanan önlemleri sağlayacaktır. Kök neden analizi, önlemler ve telafi tedbirlerini içeren ayrıntılı bir rapor, talep üzerine 30 iş günü içinde Banka'ya sağlanacaktır. Aylık ÇSMR'ler hazırlanacak ve DSİ Merkezi PUB'a sunulacak, DSİ Merkezi PUB tarafından Dünya Bankası'na iletilen üç aylık ÇSMR'ler ile sonlandırılacaktır.

Kültürel Miras

Etki Tespiti ve Değerlendirme;

	Seyitnizam	İbrahimköy	Kızılhamza
Sit Alanı	❑ Seyitnizam Göleti'nden sulama yapılacak alanda bulunan 1. Derece Arkeolojik Sit Alanı olan Tombultepe höyüğü bulunmaktadır.	❑ Proje etki alanı sınırları içerisinde somut bir kültürel miras bulunmamaktadır.	❑ Proje alanı sınırları içerisinde 1.Derece Arkeolojik Sit Alanı olarak tescil edilmiş olan Delihasan (Sarısüleyman) höyük yer almaktadır.
	❑ Çalışmalar sırasında somut kültür varlığı veya tesadüfi buluntularla karşılaşılması halinde derhal durdurulacak ve sorumlu makamlarla iletişime geçilecektir. Buluntuların kayıt altına alınması ve gerekli önlemlerin alınması için Tesadüfi Buluntu Prosedürü uygulanacaktır. Proje, höyüğe güvenli bir mesafede duracak ve koruyucu barikatlarla çevrilecektir.		

İşgücü Yönetimi ve İş Gücü Akışı

Etki Tespiti ve Değerlendirme;

- ❑İnşaat sürecinde yaklaşık 15 işçi çalışacak; işgücü akışı kontrol altında tutulacak ve zorla çalıştırma veya çocuk işçiliği olmayacaktır.
- ❑İşçiler, düşme, hareketli ekipman çarpması, göçük, elektrik çarpması ve kimyasal maruziyet gibi ciddi risklerle karşılaşabilir.
- ❑İşçi hakları ve güvenliği için TULIP standartlarına uygun olarak adil muamele, yazılı sözleşme ve güvenlik önlemleri sağlanacaktır.
- ❑Çalışma kampı için uygun hazine arazileri tercih edilecek, muhtar önerileri dikkate alınacak ve çevresel standartlar sürekli izlenecektir.

Hassasiyet, Sosyal Adalet ve Eşitlik

Etki Tespiti ve Değerlendirme;

- ÇSYP saha çalışması, etkilenen yerleşim yerlerinde farklı hassasiyetlere sahip bireylerin bulunduğunu göstermiştir.
- Proje sahasından geçen yollarda trafik kazası riski var ve köylere giden yolların kapanması, yaşlılar ve engelliler için sağlık hizmetlerine erişim zorluğu yaratabilir.

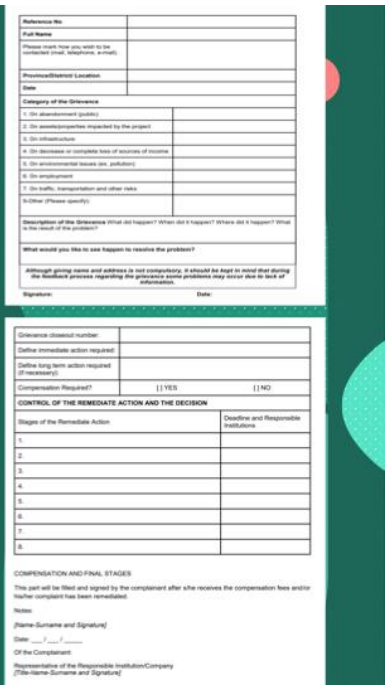
Paydaş Katılım Planı

Birim	Resmi	Adres	Telefon	E-posta
Kamu Kurumları				
Tarım ve Orman Bakanlığı (TOB)	**İbrahim YUMAKLI**	Üniversiteler Mah. Dumlupınar Bulvarı, No: 161, 06800, Çankaya/ANKARA	0312 287 33 60	tarimveormanbakan 01.kep.tr
Tarım Reformu Genel Müdürlüğü (TRGM)		Üniversiteler, Dumlupınar Blv. No: 161, 06800 Çankaya/Ankara	312 2588962	
Tarım ve Orman Bakanlığı 11. Bölge Müdürlüğü	**Halim ÖZDEMİR**	19 Mayıs Mah. Ağabalı Cad. No: 13/A İlkadım/SAMSUN	0362 435 65 98	bolge11.dkmp@tari n.gov.tr
OGM (Orman Genel Müdürü)	**Mehmet ÇELİK**	Beştepe, Söğütözü Cd. 8/1, 06560 Yenimahalle/Ankara	0312 296 40 00	ogm@ogm.hs01.ke
Amasya Orman Bölge Müdürlüğü	Ferdi ÖZER Bölge müdürü	Kirazlıdere Mahallesi Mehmet Varinli Caddesi No:112 AMASYA	0 358 218 40 10	-
Çorum Orman İşletme Müdürlüğü	Aytaç YILMAZ (Orman İşletme Müdürü)	Çepni, İnönü Cd. No:70, 19040 Çorum Merkez/Çorum	0364227790 1	-
Alaca Orman İşletme Şefliği		Çepni, İnönü Cd. No:70, 19040 Çorum Merkez/ÇORUM	+90364227 7901	-
Doğa Koruma ve Milli Parklar Genel Müdürlüğü (DKMP)- Çorum Doğa Koruma ve Milli Parklar Şube Müdürlüğü		Mimar Sinan, İnönü Cd. No: 72, 19100 Çorum Merkez/Çorum	(0364) 224 34 31	
Doğu Karadeniz Projesi Bölge Kalkınma İdaresi Başkanlığı (DOKAP)		Maden, Atatürk/3 Sokak No:2A, 28340 Piraziz/Giresun	(0454) 361 52 41	
DSİ 5. Bölge Müdürlüğü		Mustafa Kemal Mah. 2151/1.Cadde A Blok No24 Çankaya/ANKARA	0 312 219 77 00	dsi5@dsi.gov.tr
DSİ 5. Bölge Müdürlüğü 54. Şube Çorum		Mimar Sinan Mah., İnönü Cad., Merkez, Çorum, Türkiye	0 364 213 84 60	
Çorum Tarım İl Müdürlüğü	**Hayrullah GÖKTEKİN**	Çepni Mahallesi, Necmettin Erbakan Caddesi, No: 11 ÇORUM	0 364 213 83 25/ 0 364 213 83 26	corum@tarimormar
Alaca İlçe Tarım Müdürlüğü	Cumhur ATALIK	Ayhan, Can Sk., 19600 Alaca/Çorum	0 364 213 83 25- 10	

Etkilenen yerleşim yerleri				
Seyitnizam Köyü	İnanç AYKAÇ	Seyitnizam/ Alaca/ Çorum	+90 537 963 64 49	-
Tutaş Köyü	Dursun ARSLAN	Tutaş/ Alaca/ Çorum	+90 534 354 33 94	-
Gazipaşa Köyü	Muhtalip GÜL	Gazipaşa/ Alaca/ Çorum	+90 542 299 92 01	
Valilik				
Çorum Valiliği	Recep ÇIPLAK	Merkez, Karakeçili Mah, Gazi Cd. No:1, 19030 Merkez/Çorum		corum@icisleri.gov
Belediye				
Çorum Belediyesi	Dr. Halil İbrahim Aşgın Belediye Başkanı	Kunduzhan Mah. Farabi Cad. No: 22	+90 364 225 08 10, +90 364 333 03 33, +90 364 213 49 00	iletisim@corum.bel
Alaca Belediyesi	Halil İbrahim ŞALTU	Denizhan Mah. Yozgat Cad. Cumhuriyet Meydanı Yeni Hizmet Binası Alaca	+90 364 411 57 91-92	alaca@alaca.bel.tr
Diğer				
Çorum Ziraat Odası	Çorum Ziraat Odası	Çorum Ziraat Odası	Çorum Ziraat Odası	Çorum Ziraat Odası
Çorum Ticaret Borsası	Çorum Ticaret Borsası	Çorum Ticaret Borsası	Çorum Ticaret Borsası	Çorum Ticaret Bors
Toprak Mahsulleri Ofisi Çorum Başmüdürlüğü	Toprak Mahsulleri Ofisi Çorum Başmüdürlüğü	Toprak Mahsulleri Ofisi Çorum Başmüdürlüğü	Toprak Mahsulleri Ofisi Çorum Başmüdürlüğü	Toprak Mahsuller Çorum Başmüdürlü
Çorum Sanayi ve Ticaret Odası	Çorum Sanayi ve Ticaret Odası	Çorum Sanayi ve Ticaret Odası	Çorum Sanayi ve Ticaret Odası	Çorum Sanayi ve Odası
Çorum Esnaf ve Sanatkarlar Odaları Birliği	Çorum Esnaf ve Sanatkarlar Odaları Birliği	Çorum Esnaf ve Sanatkarlar Odaları Birliği	Çorum Esnaf ve Sanatkarlar Odaları Birliği	Çorum Esnaf ve Sa Odaları Birliği
Çorum Orman-Sen	Çorum Orman-Sen	Çorum Orman-Sen	Çorum Orman-Sen	Çorum Orman-Sen
TOBB Kadın Girişimciler Kurulu Çorum	TOBB Kadın Girişimciler Kurulu Çorum	TOBB Kadın Girişimciler Kurulu Çorum	TOBB Kadın Girişimciler Kurulu Çorum	TOBB Kadın Gir Kurulu Çorum

Şikayet Mekanizması İletişim Bilgileri

DSİ 5. Bölge Müdürlüğü	Adres	DSİ 5. Bölge Müdürlüğü Mustafa Kemal Mah. 2151/1.Cadde A Blok No24 Çankaya/ANKARA
	Phone	0 312 219 77 00
	E-mail	DSI5@DSI.gov.tr
	Web	https://bolge05.DSI.gov.tr/Sayfa/Detay/992
DSİ 54. Şube	Address	Mimar Sinan, İnönü Cd. No:165, 19100 Çorum Merkez/Çorum
	Phone	0 364 213 84 60
	E-mail	DSI5@DSI.gov.tr
	Web	https://bolge05.DSI.gov.tr/Sayfa/Detay/992
CIMER	Phone	150
	Web	https://www.cimer.gov.tr/



Reference No	
Full Name	
Please mark how you wish to be contacted (mail, telephone, e-mail)	
Province/District/ Location	
Date	
Category of the Grievance	
1. On abandonment (public)	
2. On assets/properties impacted by the project	
3. On infrastructure	
4. On decrease or complete loss of sources of income	
5. On environmental issues (ex. pollution)	
6. On employment	
7. On traffic, transportation and other risks	
8-Other (Please specify)	
Description of the Grievance What did happen? When did it happen? Where did it happen? What is the result of the problem?	
What would you like to see happen to resolve the problem?	

Although giving name and address is not compulsory, it should be kept in mind that during the feedback process regarding the grievance some problems may occur due to lack of information.

Signature: Date:

Grievance closeout number:		
Define immediate action required:		
Define long term action required (if necessary):		
Compensation Required?	[ ] YES	[ ] NO

CONTROL OF THE REMEDIATE ACTION AND THE DECISION

Stages of the Remediate Action	Deadline and Responsible Institutions
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	

COMPENSATION AND FINAL STAGES

This part will be filled and signed by the complainant after s/he receives the compensation fees and/or his/her complaint has been remediated.

Notes:

[Name-Surname and Signature]

Date: __/__/____

Of the Complainant

Representative of the Responsible Institution/Company

[Title-Name-Surname and Signature]