REPUBLIC OF TURKEY

MINISTRY OF AGRICULTURE AND FORESTRY

GENERAL DIRECTORATE OF STATE HYDRAULIC WORKS

Türkiye Second Irrigation Modernization and Water Efficiency Project

Kahramankazan Akıncı

Irrigation Renovation

Construction Project

ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

March 2026

REPUBLIC OF TÜRKİYE
MINISTRY OF AGRICULTURE AND FORESTRY

WORLD BANK GROUP

rast mühendislik engineering

PROJECT TAG

March 2026		
Project Coordinator	Engin TURAN	Environmental Engineer
Environmental Engineer	Hakan BEKAR	Environmental Engineer
Social Specialist	Onur Ali TAŞKIN	Sociologist
Biodiversity Specialist	Ahmet Can TINAZ	Biologist
Archaeologist	Seray AYAZ DAĞ	Archaeologist
Other Experts	Çiğdem CANKARA KADIOĞLU	Geologist

DOCUMENT REVISION HISTORY SHEET

Rev.	Date	Description
00	06.03.2026	First Draft
01	31.03.2026	First Revision
02	21.04.2026	Second Revision

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF PHOTOGRAPHS

LIST OF ABBREVIATIONS

ABB	Ankara Metropolitan Municipality
AFAD	Disaster and Emergency Management Authority
AoI	The area of Influence
ASKİ	Ankara Metropolitan Municipality Water and Sewerage Administration
CHS	Community Health and Safety
CIMER	Presidential Communication Center
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CoC	Code of Conduct
DD	Data Deficient
DSİ	State Hydraulic Works
EHS	Environment, Health and Safety
EIA	Environmental Impact Assessment
EN	Endangered
E&S	Environmental and Social
ESCP	Environmental and Social Commitment Plan
ESIA	Environmental and Social Impact Assessment
ESF	Environmental and Social Framework
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
ESS	Environmental and Social Standard
ESSF	Environmental and Social Screening Form
GBV	Gender-Based Violence
GM	Grievance Mechanism
I-ESMS	Institutional Environmental and Social Management System
IUCN	International Union for Conservation of Nature
LC	Least Concern
LMP	Labor Management Plan
MoEUCC	Ministry of Environment, Urbanization and Climate Change
NGO	Non-Governmental Organization
NT	Near Threatened
OG	Official Gazette
OHS	Occupational Health and Safety
PDO	Project Development Objective
PGA	Peak Ground Acceleration
PMU	Project Management Unit
RF	Resettlement Framework
SEA	Sexual Exploitation and Abuse
SEP	Stakeholder Engagement Plan
SH	Sexual Harassment
STS	Special Technical Specifications
TIMPII	Türkiye Second Irrigation Modernization and Water Efficiency Project
TurkStat	Turkish Statistical Institute

VU	Vulnerable
WB	World Bank
WBG	World Bank Group
WHO	World Health Organization

EXECUTIVE SUMMARY

This Environmental and Social Management Plan (ESMP) has been prepared for the Kahramankazan Akıncı Irrigation Renovation Project (hereinafter referred to as the "Sub-Project"), which will be implemented by the General Directorate of State Hydraulic Works (DSİ) under the Türkiye Second Irrigation Modernization and Water Efficiency Project (TIMPII), financed by the World Bank. The ESMP has been prepared in accordance with the World Bank Environmental and Social Framework (ESF) and relevant national legislation. Its purpose is to identify potential environmental and social (E&S) risks and impacts and to define mitigation, monitoring and institutional measures to ensure environmentally and socially sound project implementation.

The Sub-Project is located in Kahramankazan District of Ankara Province, approximately 30 km northwest of Ankara, within the Sakarya River Basin. The irrigation scheme covers an agricultural irrigation area of approximately 3.793 ha, consisting of 2.785 ha on the right bank and 1.008 ha on the left bank. The irrigation water is supplied from Kurtboğazı Dam, which regulates the flows of Ankara Stream and Kirmir Stream and provides water for both irrigation and drinking water supply in the region.

The Sub-Project aims to modernize the existing irrigation infrastructure and improve water use efficiency. Within this scope, the existing open canal irrigation system will be replaced by a closed, pressurized pipe irrigation network, including pipelines, hydrants, valves, and associated control structures. The works will largely follow the alignment of existing irrigation canals and DSİ service roads. The project does not modification of the dam structure. The modernization of the irrigation system is expected to reduce water losses and improve irrigation efficiency.

For environmental and social assessment purposes, the Area of Influence (AoI) has been defined as a 500 meter buffer zone around the irrigation infrastructure. Within this area, 12 settlements have been identified, including Örencik, Yassıören, Yazıbeyli, İymir, Çimşit, Emirgazi, Karalar, Kınık, İçören, Günbaşı, Uçarı and Ciğir. Land use in the project area is predominantly agricultural. Based on available data and field observations, the project footprint does not intersect with protected areas or sensitive habitats.

Potential environmental and social impacts are expected to be temporary, site-specific, and mainly associated with construction activities. These may include dust emissions,

noise from construction equipment, temporary traffic disturbances, occupational health and safety risks, and short-term disruptions to irrigation services during construction. These impacts are considered limited and manageable through appropriate mitigation measures.

The Sub-Project is not expected to cause physical displacement of households or residential structures. Where necessary, land acquisition or temporary land use will be carried out in accordance with national legislation and the requirements of the World Bank ESF and the project-specific Resettlement Framework (RF) shall be strictly complied with. Chance-find procedures will also be implemented during excavation works to address potential cultural heritage discoveries.

The ESMP defines mitigation and monitoring measures addressing potential environmental and social risks during project implementation. These include dust and noise control, management of construction waste and excavated materials, protection of soil and water resources, traffic safety measures and occupational health and safety practices. Stakeholder engagement activities will be maintained throughout the project lifecycle, and a Grievance Mechanism (GM) will be established. TIMPII Stakeholder Engagement Plan (SEP) will be used for this sub-project and all project parties (contractor, State Hydraulic Works (DSİ) PMU,) will be responsible for ensuring compliance with the TIMPII SEP.[1] The GM for the Kahramankazan Akıncı Dam Irrigation Renovation Project is designed in accordance with the Stakeholder Engagement Plan (SEP) of the Second Türkiye Irrigation Modernization and Water Efficiency Project (TIMPII). The project-based GM is described in detail in Section 6 of the TIMPII Stakeholder Engagement Plan. The steps completing the GM and the description of this process are provided accordingly. There are specific steps comprising the complaint mechanism, and this process is detailed in Section VI.3.

The implementation and supervision of the ESMP will be carried out by the Project Management Unit (PMU) established within DSİ, which will include environmental, social, and occupational health and safety specialists responsible for monitoring ESMP implementation.

[1]https://cdniys.tarimorman.gov.tr/api/File/GetGaleriFile/425/DosyaGaleri/7572/timp_2_draft_stakeholder_engagement_plan_february_2025.pdf

Overall, the Kahramankazan Akıncı Irrigation Renovation Sub-Project is expected to generate long-term environmental and socio-economic benefits, including improved irrigation efficiency, reduced water losses, and enhanced agricultural productivity.

CHAPTER I.

PROJECT DESRIPTION

I.1 Introduction

Under the Türkiye Second Irrigation Modernization and Water Efficiency Project, financed by the World Bank and implemented by the General Directorate of State Hydraulic Works (DSİ), the overall objective is to improve irrigation service delivery and enhance water use efficiency within selected irrigation schemes. The Project Development Objective (PDO) is to reduce water losses and support sustainable agricultural production through the rehabilitation and modernization of existing irrigation infrastructure.

This Environmental and Social Management Plan (ESMP) has been prepared for the Kahramankazan Akıncı Irrigation Renovation Sub-Project to ensure that all potential Environmental and Social Management Plan (ESMP) risks and impacts are managed in full compliance with the World Bank Environmental and Social Framework (ESF), its applicable Environmental and Social Standards (ESSs), and the relevant legislation of the Republic of Türkiye.

The ESMP serves as a practical and site-specific management instrument that provides a structured framework for identifying, assessing, mitigating, monitoring, and managing potential E&S risks and impacts that may arise during the planning, construction, and operation phases of the Sub-Project. In this context, the ESMP aims to:

- Prevent or minimize potential adverse environmental and social impacts;
- Define and implement appropriate mitigation measures and, where necessary, compensation mechanisms for unavoidable impacts;
- Safeguard occupational health and safety (OHS) and community health and safety (CHS);
- Ensure meaningful stakeholder engagement and the effective functioning of the grievance mechanism;
- Achieve full compliance with national regulatory requirements and the World Bank ESSs.
- In addressing these matters, the framework documents prepared specifically for the project have been followed.[2]

[2] https://www.dsi.gov.tr/Sayfa/Detay/1997

Prepared in accordance with the Special Technical Specifications (STS), this ESMP considers the applicable World Bank Environmental and Social Standards, namely ESS1, ESS2, ESS3, ESS4, ESS5, ESS6, ESS8, and ESS10.

The environmental and social risk classification of the Sub-Project has been determined as “Moderate Risk.” This classification reflects the rehabilitation nature of the works within the existing irrigation footprint, the absence of significant or irreversible environmental impacts, the lack of critical natural habitats or protected cultural heritage sites within the project area, and the limited, temporary, and reversible characteristics of the anticipated construction activities.

I.2 Project Background

Türkiye’s irrigation infrastructure largely consists of systems constructed several decades ago. Over time, insufficient operation and maintenance financing, physical deterioration and deferred rehabilitation needs have resulted in a decline in system performance. In particular, water losses in irrigation conveyance and distribution system due to seepage, evaporation, and structural degradation in open canal irrigation networks have reduced the quantity and reliability of irrigation services. This situation has led to significant reductions in agricultural productivity within irrigated areas and in some cases, farmers have shifted from high-yield irrigated agriculture to lower-yield and risk-prone rainfed farming.

In this context, the Türkiye Second Irrigation Modernization and Water Efficiency Project, financed by the World Bank and implemented by the General Directorate of State Hydraulic Works (DSİ), aims to improve irrigation service delivery and enhance water use efficiency in selected irrigation schemes. The Project supports sustainable water resource management, strengthens resilience to climate change, and contributes to increased agricultural productivity.

The Project focuses on the rehabilitation and modernization of existing irrigation systems, particularly those that have been operating for decades without adequate operation and maintenance financing. Investments under the Project include the conversion of open canal systems into closed, pressurized pipe networks; reduction of water conveyance losses; strengthening of measurement and monitoring infrastructure; and promotion of digital irrigation practices. These investments will enable more controlled, measurable, and efficient water use. Importantly, the Project

will make use of an already allocated and dedicated water quota within the relevant reservoir without increasing water abstraction, thereby ensuring that water balance at the basin or sub-basin level is not adversely affected.

The Project consists of three main components:

Component 1 – Rehabilitation and Modernization of Irrigation Systems:

Rehabilitation of existing irrigation infrastructure and conversion to closed, pressurized pipe systems.

Component 2 – Institutional Strengthening, Digital Irrigation, and Smart Water Management:

Enhancement of technical capacities of irrigation associations and relevant institutions, strengthening of water measurement and accounting systems, and support for digital irrigation applications.

Component 3 – Project Management:

Coordination, monitoring, and reporting of Project activities, including implementation of environmental and social risk management requirements in line with the World Bank's Environmental and Social Framework (ESF).

The Kahramankazan Akıncı Irrigation Renovation Sub-Project is implemented under Component 1 of the Project and involves the conversion of the existing open canal irrigation system into a closed, pressurized pipe network. The Sub-Project is expected to reduce water losses, improve irrigation coverage, and support sustainable increases in agricultural productivity.

I.3 Sub-Project Description

I.3.1 Sub-Project Objectives

The existing irrigation system is characterized by high operation and maintenance costs and significant water losses occur due to seepage and evaporation from open canals. Over time, physical deterioration and technical limitations of the infrastructure have reduced the efficiency, reliability, and sustainability of irrigation service delivery.

The primary objective of the Kahramankazan Akıncı Irrigation Renovation Construction Works is to convert the existing open canal irrigation system into a closed, pressurized

pipe network in order to reduce water losses in irrigation conveyance and distribution processes and improve overall irrigation efficiency.

In this context, the Sub-Project aims to:

- Enhance water use efficiency;
- Strengthen the reliability and continuity of irrigation service delivery;
- Reduce operation and maintenance costs; and
- Support sustainable increases in agricultural productivity.

The existing irrigation system consists predominantly of open trapezoidal canals and associated hydraulic structures, which have been in operation for several decades. Over time, physical deterioration, seepage losses, operational inefficiencies, and maintenance constraints have reduced system performance. The proposed Sub-project does not involve the development of a new irrigation scheme or expansion into new irrigation areas; rather, it focuses on rehabilitating and modernizing the existing infrastructure within the current irrigation boundaries.

Under the Sub-project, the existing open canals will be progressively decommissioned and replaced by buried pressurized pipelines installed largely along the current canal alignment. In sections where feasible, installation works will be limited to the existing DSİ service road corridor, allowing continuity of irrigation supply during construction. Moreover, the construction of the main pipeline is planned to be completed outside the irrigation season to minimize disturbance to agricultural activities.

The modernized system will enable controlled and pressurized water delivery to farmers, support the integration of water metering devices, and facilitate the adoption of advanced irrigation techniques such as drip and sprinkler systems. By reducing evaporation and seepage losses associated with open canals, the Sub-project is expected to improve overall system efficiency without increasing water abstraction beyond existing allocations.

The modernization works will be implemented within the established irrigation network and will not involve modifications to the dam structure or changes in reservoir operating rules.

Under the Sub-Project, the existing irrigation system covering approximately 3.793 hectares and consisting of two main sections (right bank and left bank) will be modernized. The planned closed, pressurized irrigation system will serve a total area

of 3.793 hectares, of which 2.785 hectares are located on the right bank and 1.008 hectares on the left bank.

I.3.2 Sub-Project Location

The Sub-Project is located within the Sakarya Basin, inside the administrative boundaries of Kahramankazan district in Ankara Province. The Project area is situated approximately 30 km from Ankara city center (as the crow flies).

The Sub-Project site lies between the coordinates 40°17’00’’N – 32°40’00’’E and 40°07’30’’N – 32°35’00’’E and consists of two main sections, namely the right and left bank irrigation areas.

The works to be carried out under the Sub-Project will take place within the boundaries of the existing irrigation area and will primarily follow the alignment of the current open canal routes. The Sub-Project does not involve the development of a new irrigation area or the creation of a new water source.

The location map and general layout of the Project area are presented in Figure 1.

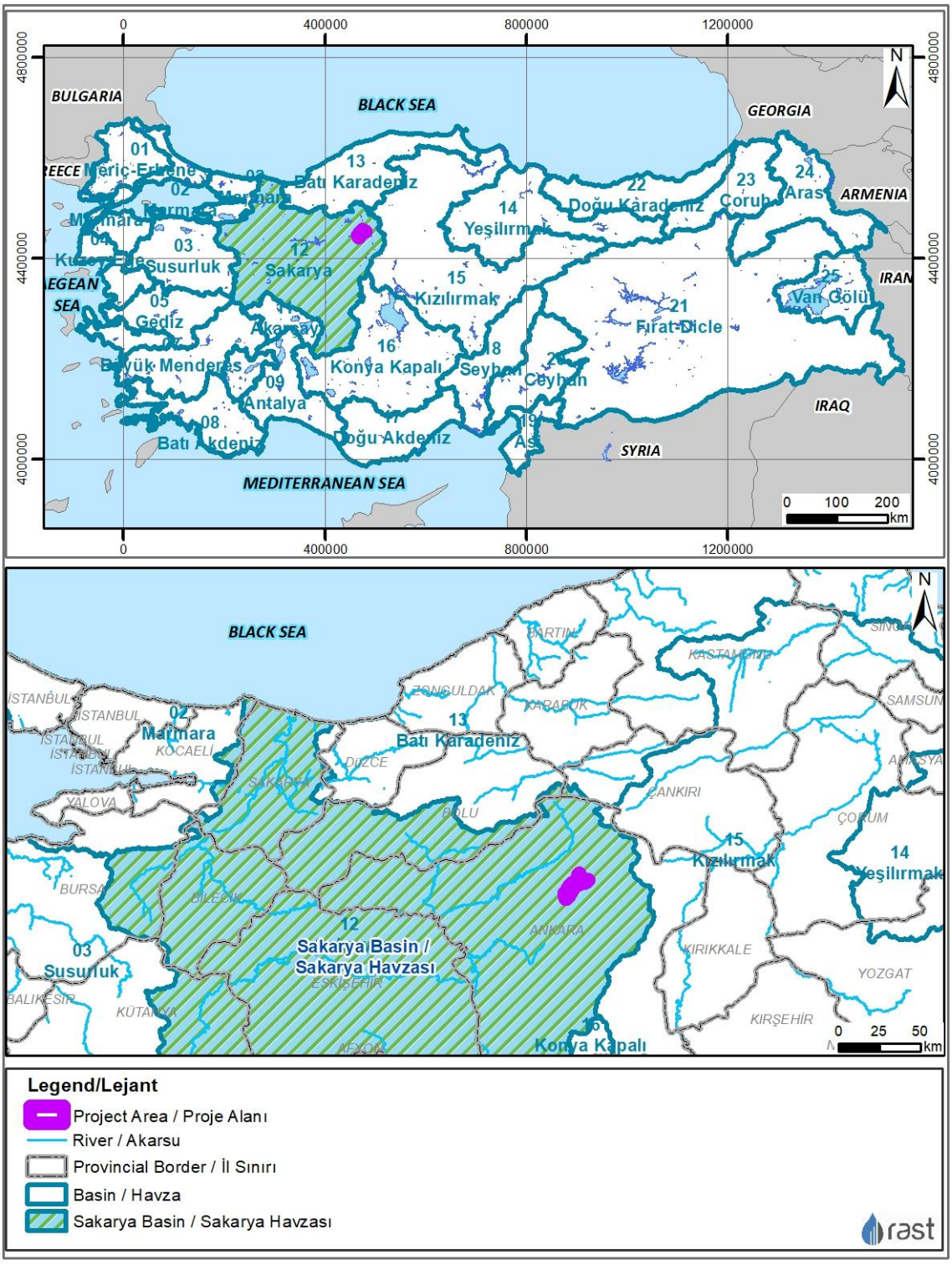


Figure 1. Location Map of the Sub-Project Area

Photographs illustrating the canals and agricultural land in the irrigation area are given in Photograph 1.

Photograph 1. Photographs from Canals and an Agricultural Land

I.3.3 Sub-Project Components

The Sub-Project components are limited to the rehabilitation and replacement of the existing open-canal network and associated hydraulic structures. No new irrigation areas are planned under the Sub-project. All works will be implemented within the existing irrigation network and will not extend beyond the established irrigation boundaries.

The existing open trapezoidal (irrigation) canals, which currently serve as the primary water distribution system, will be progressively decommissioned and replaced with a buried, pressurized pipeline network. The replacement works will follow the existing canal alignment in order to minimize land acquisition requirements and disturbance to agricultural parcels. In this context, two main irrigation pipelines will be constructed to convey water from the branch allocated for irrigation at Kurtboğazı Dam to the irrigation areas.

The length of the right bank main irrigation pipeline is 21+500 m, while the length of the left bank main irrigation pipeline is 12+457.81 m. These pipelines will be designed

and constructed by taking into account the alignment of the existing open canal along the route.

In addition to the main pipelines, distribution (secondary) irrigation pipelines with a total length of 63.230 m on the right bank and 32.401 m on the left bank will be installed. Pipeline details are given in Table 1

Table 1. Pipeline Details

Section	Irrigation Area (ha)	Pipeline Type	Lenght (m)	Total (m)	Min. Diameter (mm)	Maks. Diameter (mm)	Pipe Material
Right Bank[3]	2.785	Main Pipeline	21.500,00	84.730,00	160	1800	PE100 GRP
		Secondary Pipeline	63.230,00		110	700	
Left Bank[4]	1.008	Main Pipeline	12.457,81	44.858,81	160	1200	
		Secondary Pipeline	32.401,00		110	900	

Bedding material will be required for the construction of the pipelines. For this purpose, the construction contractor is expected to procure the required material from sand and gravel quarries located along Ova Stream. It shall be ensured that the sand and gravel quarries from which the material will be sourced have valid Environmental Impact Assessment (EIA) documentation.

Within the scope of the Sub-Project, a water intake structure, main irrigation canals, and the irrigation network will be constructed, along with hydrants, air release valves, drainage structures, thrust blocks, line isolation valves, and associated protection structures.

The general layout plan of the Sub-Project area is provided in Figure 2 and Figure 3 (Annex 4).

[3] Akıncı Irrigation Facility Rehabilitation Planning and Project Design – Temelsu Uluslararası Müh. Hiz. A.Ş.

[4] Akıncı Irrigation Facility Rehabilitation Project Design – Part 2 (As-Built Project) – Yetkin Mühendislik

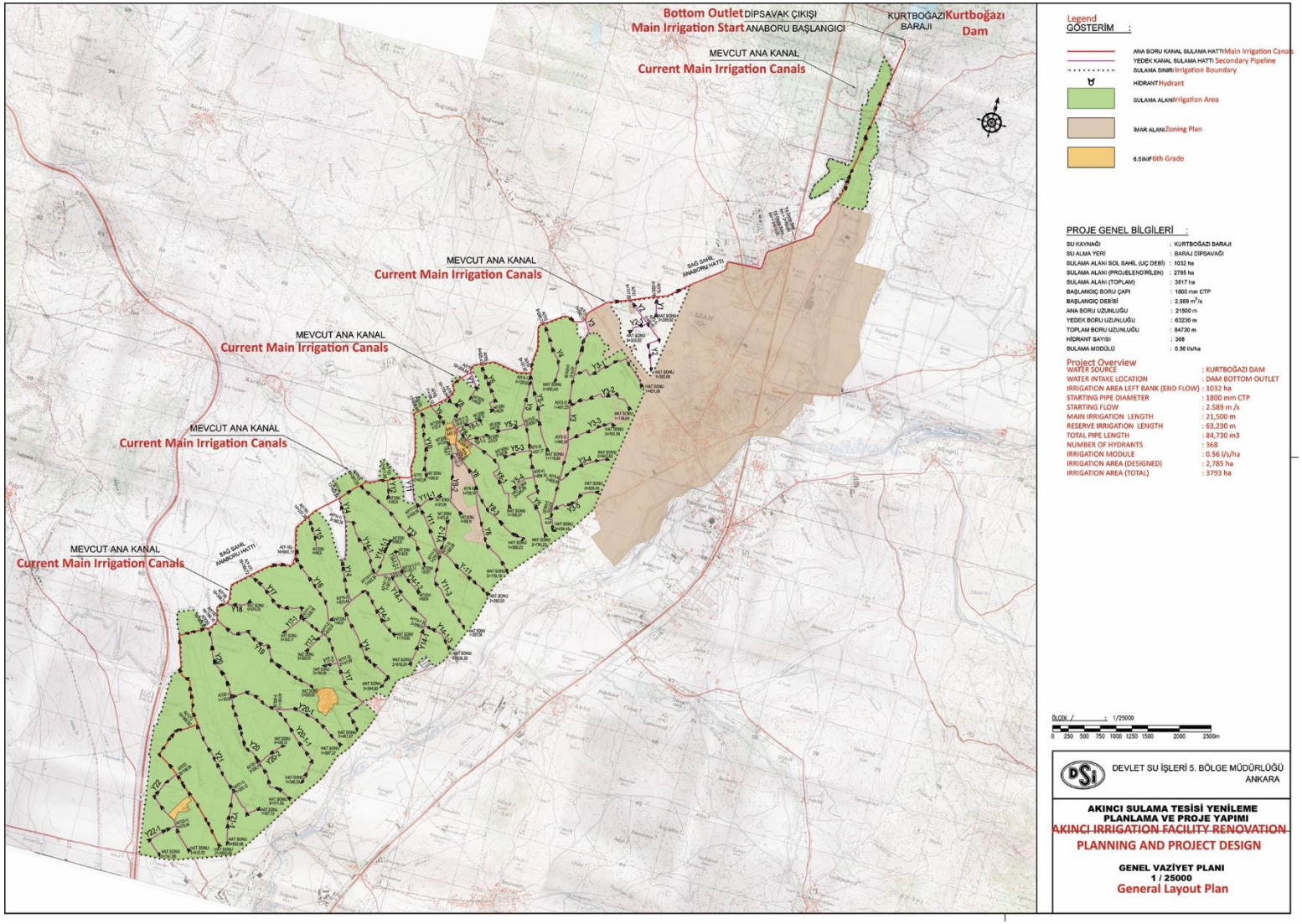


Figure 2. General Layout Plan (Right Bank)

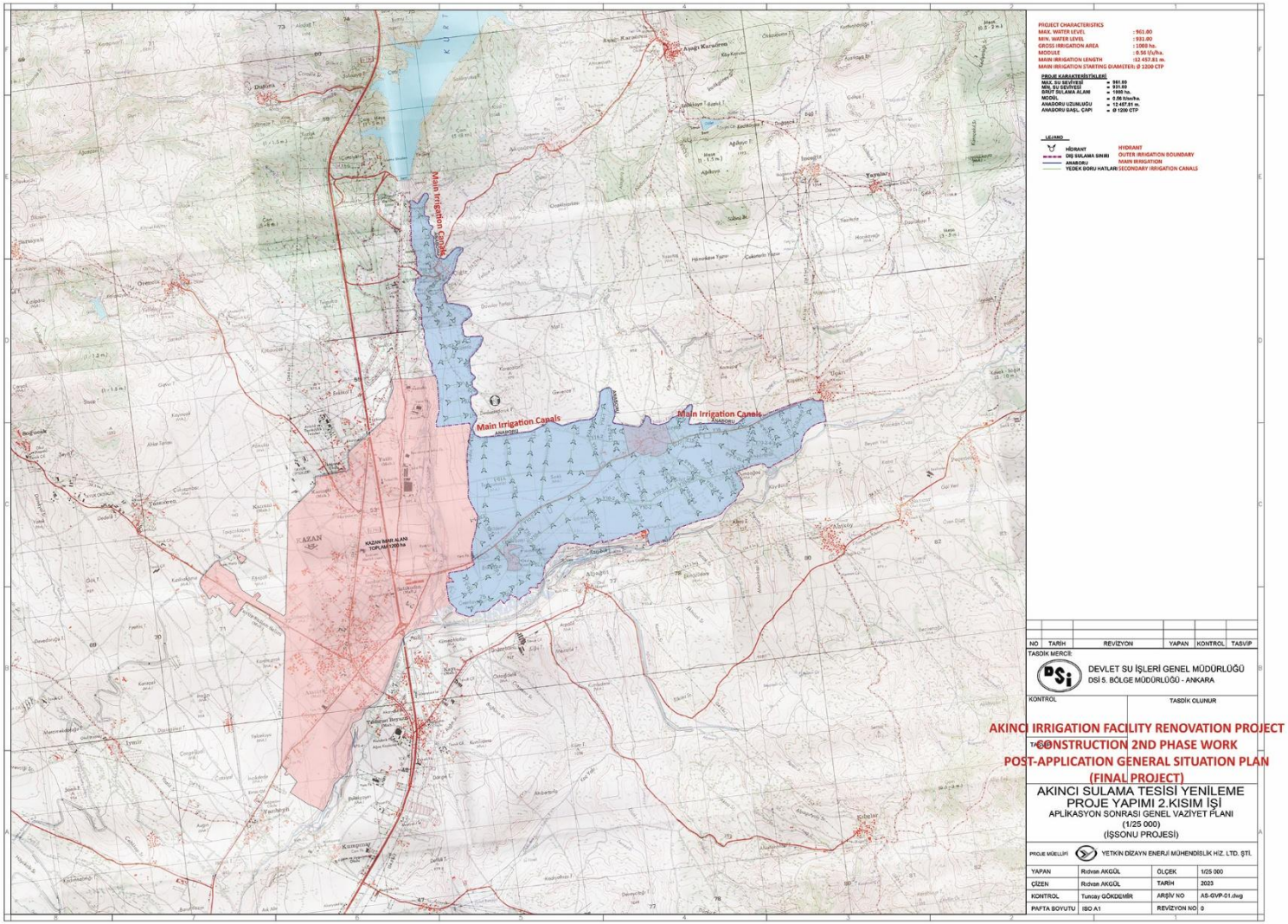


Figure 3. General Layout Plan (Left Bank)

I.3.3.1 Integration of Water Control and Metering Devices

As part of the modernization process, the Sub-Project will enable the integration of water metering devices and improved flow control mechanisms within the irrigation units. These measures are intended to enhance water accounting, promote equitable distribution, and support efficient irrigation practices.

I.3.3.2 Decommissioning and Rehabilitation of Existing Canal Sections

Following commissioning of the pressurized system, the existing open canal sections will be taken out of operation. Where applicable, canal sections will be filled, stabilized, or otherwise rehabilitated to ensure safe and stable land conditions and to prevent safety risks associated with abandoned open structures.

The Sub-Project does not include modifications to the Kurboğazı Dam structure, reservoir capacity, or basin-level water allocation arrangements. All work will be implemented within the boundaries of the existing irrigation area.

The World Bank's ESF requires the application of the ESSs to Associated Facilities. As defined under the ESF, Associated Facilities are facilities or activities that are not funded as part of the Project but are: (a) directly and significantly related to the Project; (b) carried out, or planned to be carried out, contemporaneously with the Project; and (c) necessary for the Project to be viable, and would not have been constructed, expanded, or conducted if the Project did not exist. In this context, no facilities or activities associated with the Sub-Project meet all three of these criteria. Therefore, no Associated Facilities have been identified under the Sub-Project.

I.3.4 Project Schedule and Workforce

I.3.4.1 Project Schedule

The overall implementation period of the Sub-Project is estimated to be approximately two (2) years. This timeframe covers the installation of the pressurized pipeline system, construction of associated hydraulic structures, reinstatement works, testing, and final commissioning of the system.

Construction activities are expected to be implemented in phased sections along the irrigation area rather than simultaneously across the entire area. This approach will

allow for better coordination with irrigation periods, minimize disruption to agricultural activities, and facilitate progressive reinstatement of completed sections.

The main construction stages are anticipated to include:

- Site preparation and establishment of temporary work areas,
- Trench excavation and pipe laying,
- Installation of valve chambers, hydrants and control structures,
- Backfilling and surface reinstatement,
- System pressure testing and commissioning.

The exact sequencing of works will be determined during detailed construction planning and may take into account seasonal irrigation demand, weather conditions, and agricultural production cycles.

I.3.4.2 Workforce

During the peak construction period, the Sub-Project is expected to employ 45 workers, including skilled and unskilled labor. The workforce will primarily consist of construction personnel such as machine operators, pipe installation teams, technical supervisors, health and safety staff, and site management personnel.

It is anticipated that part of the workforce may be recruited locally where feasible, while specialized technical staff may be recruited from outside the sub-project area. No permanent workforce is expected during the operation phase, as the system will be operated and maintained by DSİ and/or relevant irrigation union using existing institutional capacity.

Where necessary, temporary construction site facilities will be established in compliance with national regulations and good international practices, including provisions related to occupational health and safety, sanitation, and waste management. Workers' accommodation facilities or camps shall comply with the World Bank Group (IFC) Guidelines on Workers' Accommodation.

For the establishment of the construction site facilities, a land parcel (Lots 167/1 and 167/2) located immediately in front of the Kurtboğazı Dam body, at the starting point of the main pipeline of the sub-project, has been proposed (Figure 4). The said property is located within the sub-project area and is owned by the State Hydraulic Works (DSİ).

The exact location for the construction site facilities will be finalized prior to the construction phase.

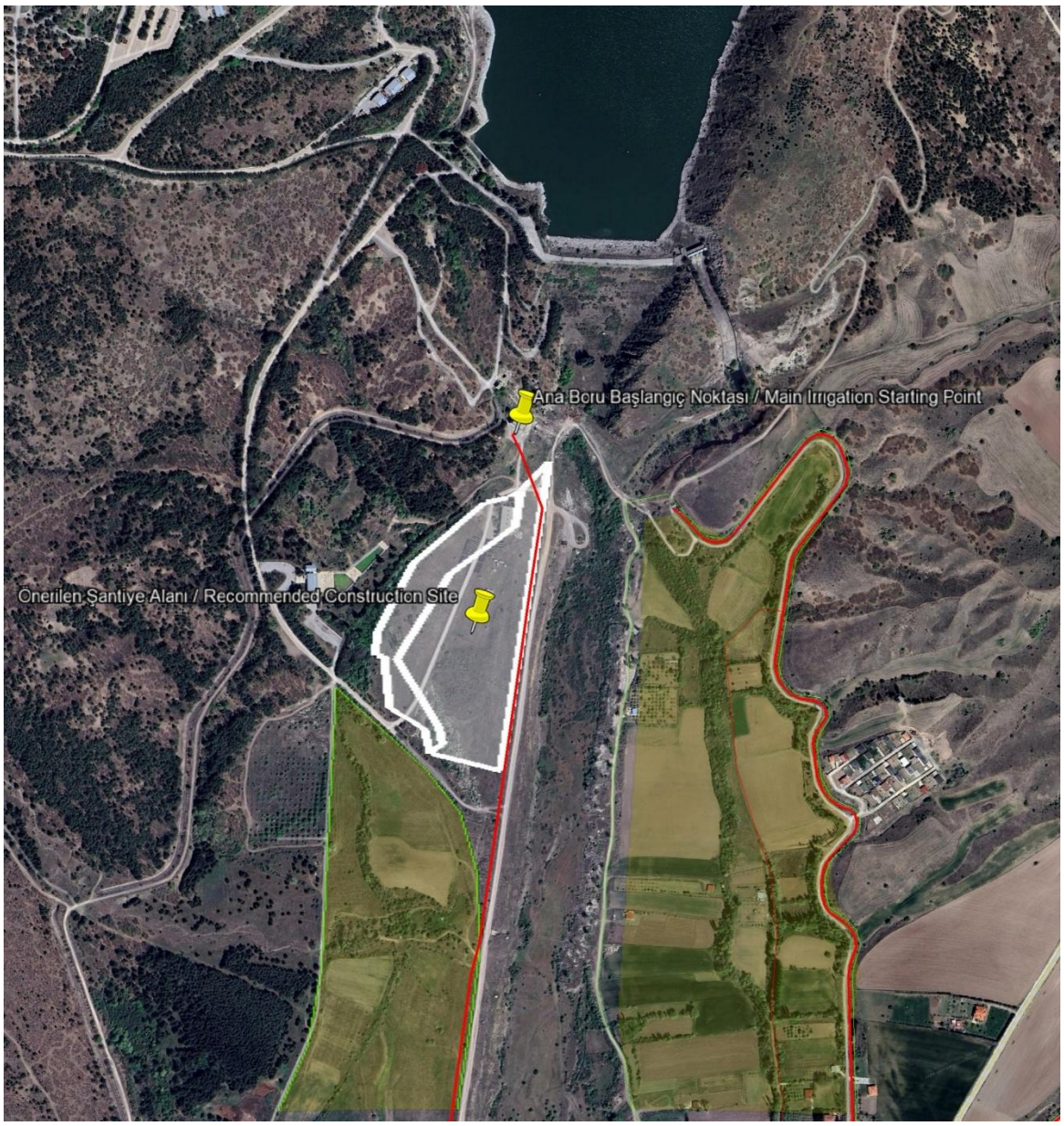


Figure 4. Location of the Proposed Construction Site Area

I.4 Legal Framework

I.4.1 National Legal Framework

The Sub-Project is required to comply with the following laws during the construction, and operational phases. Adherence to these laws is essential to mitigate or prevent potential risks and adverse impacts on the environment and human health.

Environmental Law

- Law No: 2872
- OG: 11.08.1983, No. 18132

Environmental Law No. 2872 establishes the legal framework for protecting the environment, ensuring sustainable use of natural resources, and preventing environmental pollution. Enacted in 1983, it provides measures to safeguard ecosystems and mitigate environmental risks associated with development projects.

Occupational Health and Safety Law

- Law No: 6331
- OG: 30.06.2012, No. 28339

This law outlines the duties, responsibilities, rights, and obligations of employers and employees to ensure occupational health and safety in workplaces. It sets out the necessary measures to create safer working environments and reduce workplace risks.

Labor Law

- Law No: 4857
- OG: 10.06.2003, No. 25134

The Labor Law governs the rights and obligations of employers and employees in Türkiye. It covers aspects such as working conditions, employment contracts, wages, and social security provisions to ensure fair labor practices.

Law on the Protection of Cultural and Natural Assets

- Law No: 2863
- OG: 23.07.1983, No. 18113

This law aims to protect the cultural heritage and natural resources Türkiye, ensuring their preservation for future generations. It provides guidelines for identifying, documenting, and safeguarding cultural and natural assets from harm during development activities.

EIA Exemption Status

Additionally, in the letter from the Provincial Directorate of Environment, Urbanisation and Climate Change (Annex 1), it is stated that a Project Presentation File must be prepared in accordance with Article 15 of the Regulation. The Project Presentation File

was submitted to the Ankara Provincial Directorate of Environment, Urbanisation and Climate Change on March 18, 2026.

Additional by-laws and regulations related to these laws, to which the sub-project must comply, are provided in Annex 2 for further reference.

I.4.2 International Standards

The Kahramankazan Akıncı Irrigation Renovation Construction Project will be financed mainly by the World Bank (WB). Therefore, Environmental and Social Standards (ESSs) () alongside the national legislation shall be met.

	ESS1 (Assessment and Management of Environmental and Social Risks and Impacts) sets out the Borrower's responsibilities for assessing, managing and monitoring environmental and social risks and impacts associated with each stage of a project supported by the Bank through Investment Project Financing, in order to achieve environmental and social outcomes consistent with the ESSs.
	ESS2 (Labor and Working Conditions) recognizes the importance of employment creation and income generation in the pursuit of poverty reduction and inclusive economic growth. Borrowers can promote sound worker-management relationships and enhance the development benefits of a project by treating workers in the project fairly and providing safe and healthy working conditions.
	ESS3 (Resource Efficiency and Pollution Prevention and Management) recognizes that economic activity and urbanization often generate pollution to air, water, and land, and consume finite resources that may threaten people, ecosystem services and the environment at the local, regional, and global levels. This ESS sets out the requirements to address resource efficiency and pollution prevention and management throughout the project life-cycle.
	ESS4 (Community Health and Safety) addresses the health, safety, and security risks and impacts on project-affected communities and the corresponding responsibility of Borrowers to avoid or minimize such risks and impacts, with particular attention to people who, because of their particular circumstances, may be vulnerable.
	ESS5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement - involuntary resettlement should be avoided. Where involuntary resettlement is unavoidable, it will be minimized and appropriate measures to mitigate adverse impacts on displaced persons (and on host communities receiving displaced persons) will be carefully planned and implemented.
	ESS6 (Biodiversity Conservation and Sustainable Management of Living Natural Resources) recognizes that protecting and conserving biodiversity and sustainably managing living natural resources are fundamental to sustainable development and it recognizes the importance of maintaining core ecological functions of habitats, including forests, and the biodiversity they support. ESS6 also addresses sustainable management of primary production and harvesting of living natural resources, and recognizes the need to

	consider the livelihood of project-affected parties, including Indigenous Peoples, whose access to, or use of, biodiversity or living natural resources may be affected by a project.
	ESS8: Cultural Heritage recognizes that cultural heritage provides continuity in tangible and intangible forms between the past, present and future. ESS8 sets out measures designed to protect cultural heritage throughout the project life-cycle.
	ESS10 (Stakeholder Engagement and Information Disclosure) recognizes the importance of open and transparent engagement between the Borrower and project stakeholders as an essential element of good international practice. Effective stakeholder engagement can improve the environmental and social sustainability of projects, enhance project acceptance, and make a significant contribution to successful project design and implementation.

Figure 5. The World Bank Environmental and Social Standards

The gap analysis between local regulations and the WB ESS is provided in Annex 3.

CHAPTER II.

BASELINE DATA

II.1 Sub-Project Area

The Sub-Project area is located within the boundaries of Kahramankazan District of Ankara Province. The Sub-Project area lies within the administrative boundaries of the neighborhoods of Örencik, Yassıören, Yazıbeyli, İymir, Çimşit, Emirgazi, Karalar, Kınık, İçören, Günbaşı, Uçarı, and Ciğir. The sub-project area satellite image is shown in Figure 6 and views of the area are shown in Photograph 2.

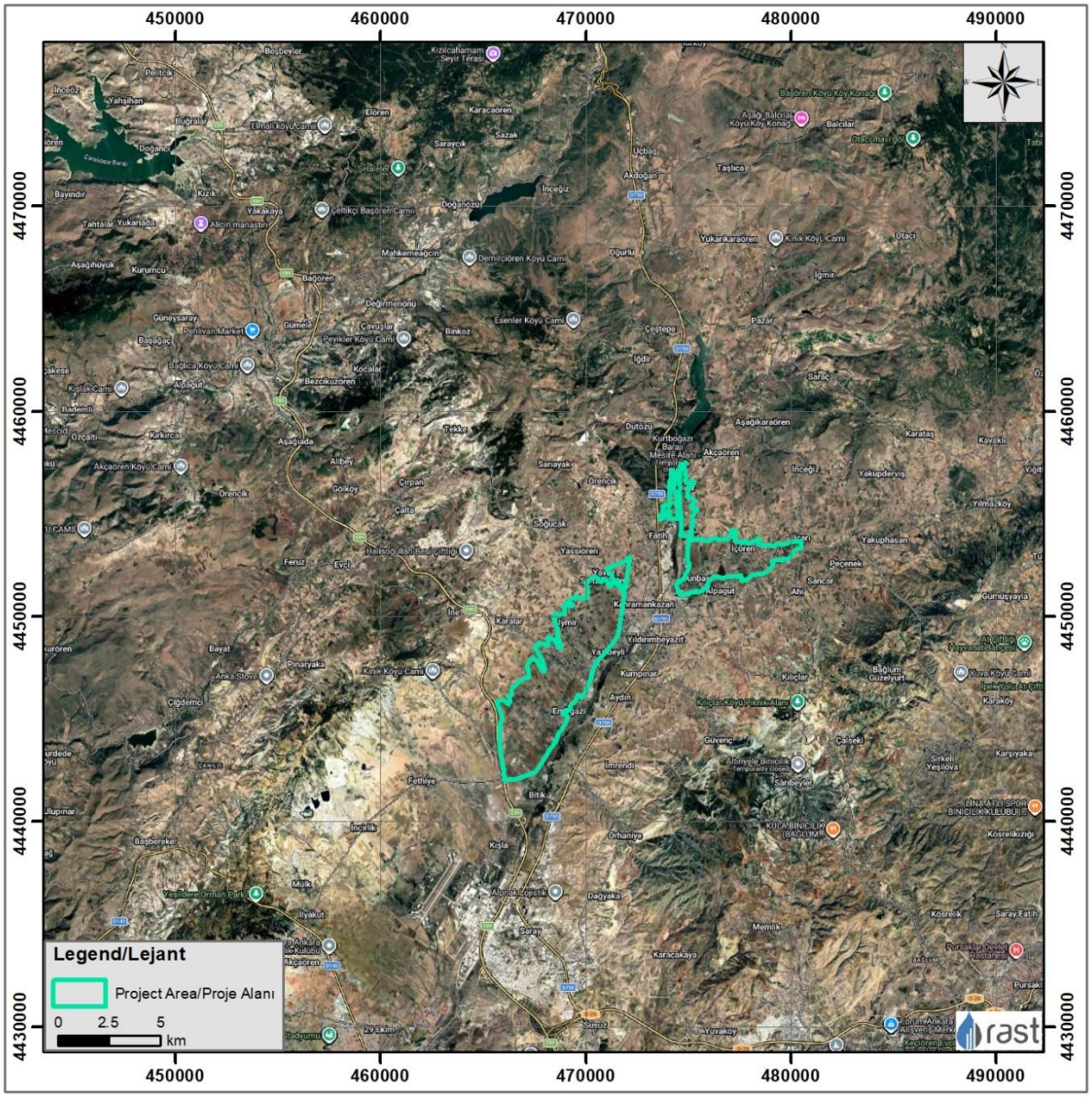


Figure 6. Satellite Image of the Sub-Project Area

Photograph 2. Views from the Sub-project Area

II.2 Area of Influence (AoI)

The Area of Influence (AoI), determined in accordance with national legislation and the WB ESSs, represents the geographical area that may be directly or indirectly affected by the Sub-Project during its construction and operation phases. In this context, the AoI considers potential impacts on physical environmental components such as air, water, and soil, as well as on ecosystems, human health, quality of life, and economic activities, thereby enabling the integrated assessment of environmental and socio-economic dimensions.

For the Sub-Project, the AoI has been defined as a 500-meter buffer zone surrounding the irrigation project boundary. Within this area, a total of 12 neighborhoods (Örencik, Yassıören, Yazıbeyli, İymir, Çimşit, Emirgazi, Karalar, Kınık, İçören, Günbaşı, Uçarı, and Ciğir) have been identified.

The sub- project Area of Influence is illustrated in Figure 7.

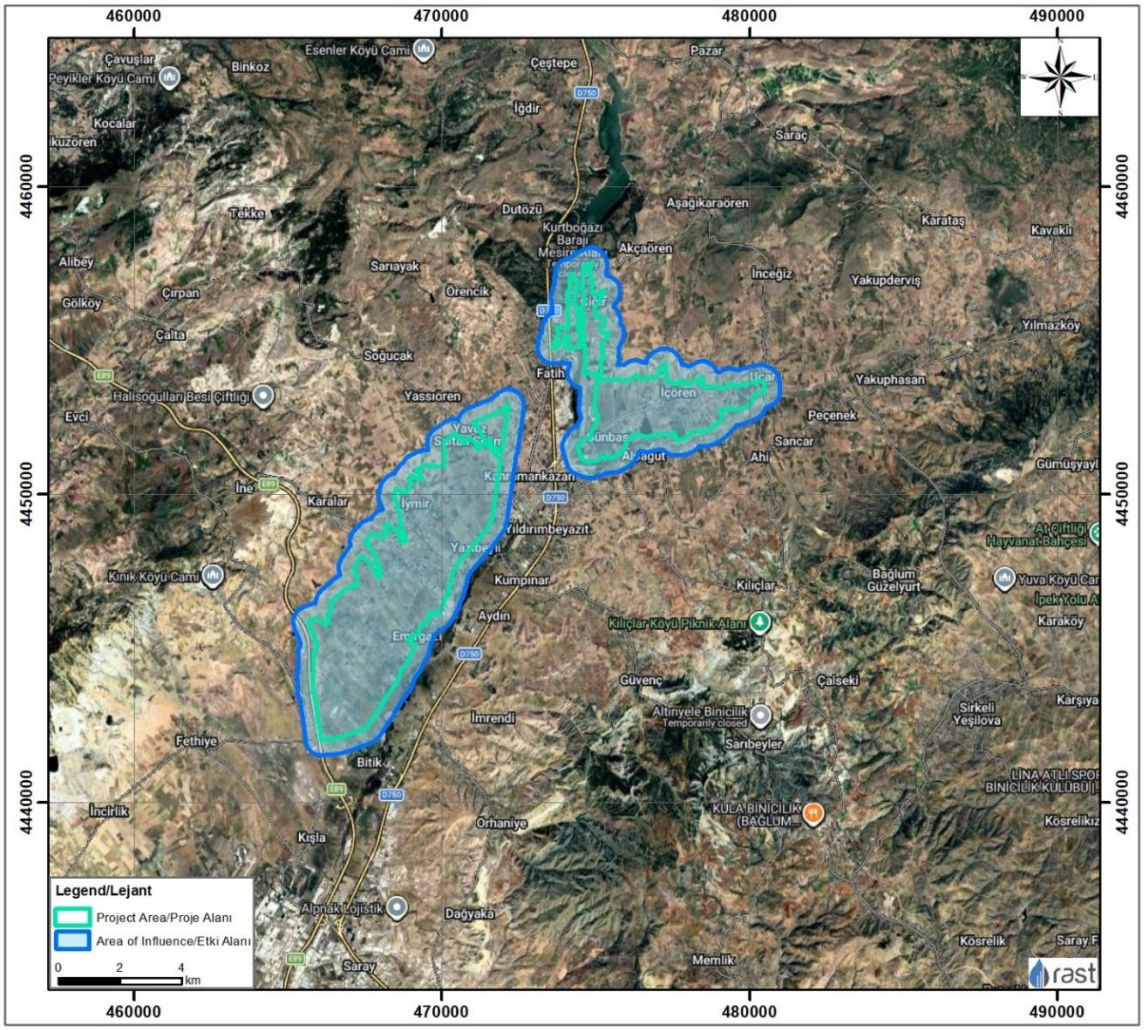


Figure 7. Area of Influence of the Sub- Project

II.3 Environmental Baseline Conditions

II.3.1 Land Use and Topography

The Sub-Project area is divided into two sections, right bank and left bank, based on the flow direction of Kurtboğazı Stream. The right bank covers approximately 2.785 hectares, while the left bank extends over approximately 1.008 hectares.

Agricultural activities in the Sub-Project area are predominantly rainfed, with approximately 84% of the land cultivated under dry farming conditions. Wheat, barley, and chickpeas are the main crops grown in non-irrigated areas, while sugar beet is the most common crop in irrigated areas. Other crops such as silage maize, melon, potato, sunflower, various vegetables, alfalfa, and certain fruit varieties are cultivated on a limited scale.

The elevation of the Sub-Project area ranges between approximately 850 and 940 meters above sea level. Sloping areas are mainly located along the foothills forming the boundary of the plain. On the right bank, the general slope direction is from northwest to southeast, whereas on the left bank it runs from north to south. Ova Stream flows to the south of the study area, while Kurtboğazı Stream runs between the right and left banks. The overall slope gradient across the area varies between 0% and 10%.

Surrounding Akıncı Plain are hills with elevations ranging from approximately 1.100 m to 1.600 m. On the right bank, north of the existing main canal, are the ridges of Çobanevciği, Höyükaltı, Çürüsün, and Bağdoruk, as well as Pirenhi Hill. On the left bank, north of the existing main canal, are Dedenindoruk, Güvence, Köyüstü, and Karnapa Hills, together with Karnapa Ridge.

II.3.2 Geology

The surrounding area of the study site is generally characterized by NE–SW trending folds dipping toward the northeast and southwest. Synclines form the basins, while anticlines constitute the elevated areas in the region. The younger Pliocene-aged deposits within the area exhibit faint horizontal stratification due to their weakly consolidated to unconsolidated nature. These deposits unconformably overlie all underlying units and do not display any significant deformation or structural features.

The Sub-Project area was subjected to a highly complex deformation during the Neogene period. Until the Late Miocene, a north–south compressional regime prevailed in the region. This regime resulted in the formation of predominantly NE–SW trending anticlines and synclines located downstream of Kurtboğazı Dam. The presence of continental and volcanic/volcanoclastic units deposited together within intracontinental basins formed as a result of tectonic movements indicates a paleogeographic setting characterized by lakes surrounding volcanic fields during the Miocene period.

The oldest unit in the study area is the Permo-Triassic Karatepe Formation (PTRk), located on the western side of the right bank. The Jurassic–Cretaceous Soğukçam Formation (JKs), Paleocene Kızılçay Formation (Tpek), Middle Eocene Güvenç Formation (Teg), Early–Middle Miocene Ilıcadere (Tmı), Uludere (Tmu), and Hançili (Tmh) formations, Upper Miocene Bakacaktepe Formation (Tmb), Early–Middle Pliocene Özlü Basalt (Tmö), Pliocene Örencik Formation (Tplö), and Quaternary alluvium (Qal) outcrop along and around the pipeline alignment.

II.3.3 Climate

The Sub-Project area is characterized by the typical continental (semi-arid) climate of the Central Anatolia Region. Winters are cold and wet (rain and/or snow), while summers are hot and dry. Due to its distance from maritime influence and the orographic barrier (rain shadow effect) created by surrounding elevations, annual precipitation is relatively low. Precipitation is generally concentrated in winter and spring and marked seasonal temperature differences occur.

According to long-term meteorological data for the period 1927–2025[5], the average annual total precipitation is 392.2 mm, and the average annual number of rainy days is 103. Based on these data, the Sub-Project area is classified as semi-arid, with precipitation occurring mainly in winter and spring. The annual average temperature is 12.1 °C, with an average maximum of 30.6 °C in July and an average minimum of -3.1 °C in January.

[5] https://www.mgm.gov.tr/veridegerlendirme/il-ve-ilceler-istatistik.aspx?k=A

II.3.4 Soil Quality

The dominant soils within the Sub-Project area are derived from marl/limestone and are calcareous and clayey in character. Loamy soils are locally observed in stream valleys, while alluvial and colluvial soils are widely distributed across the plain (alluvial: materials deposited by streams and tributaries; colluvial: slope deposits).

Heavy-textured (clayey) soils are predominant in both the topsoil and subsoil layers. In the topsoil, the proportion of heavy-textured soil is approximately 64% on the right bank and 81% on the left bank. In the subsoil, this proportion is approximately 72% on the right bank and 87% on the left bank.

Previous studies reported low levels of salinity (289 ha on the right bank and 310 ha on the left bank) and sodicity in limited areas. However, recent field observations did not confirm the presence of sodicity, and the classification of the relevant parcels has been revised accordingly.

Under current conditions, the reported low salinity levels are not expected to adversely affect plant growth or crop yields in areas without groundwater problems where irrigated agriculture is practiced.

II.3.5 Air Quality

The primary sources of air emissions within the Sub-Project's Area of Influence are construction-related dust and vehicle exhaust emissions. However, as no specific air quality complaints have been reported in the area, no baseline monitoring has been conducted under the Project.

In cases where site-specific baseline data are not available, information from the National Air Quality Monitoring Network operated by the Ministry of Environment, Urbanization and Climate Change may be used. The Ankara Törekent, Eryaman, Ostim, Keçiören, and Çubuk air quality monitoring stations are located near the Sub-Project area (see Figure 8). Average values of the data recorded at these stations between 21 February 2025 and 21 February 2026 have been considered (see Table 2). These data provide a general indication of ambient air quality conditions in the Sub-Project area.

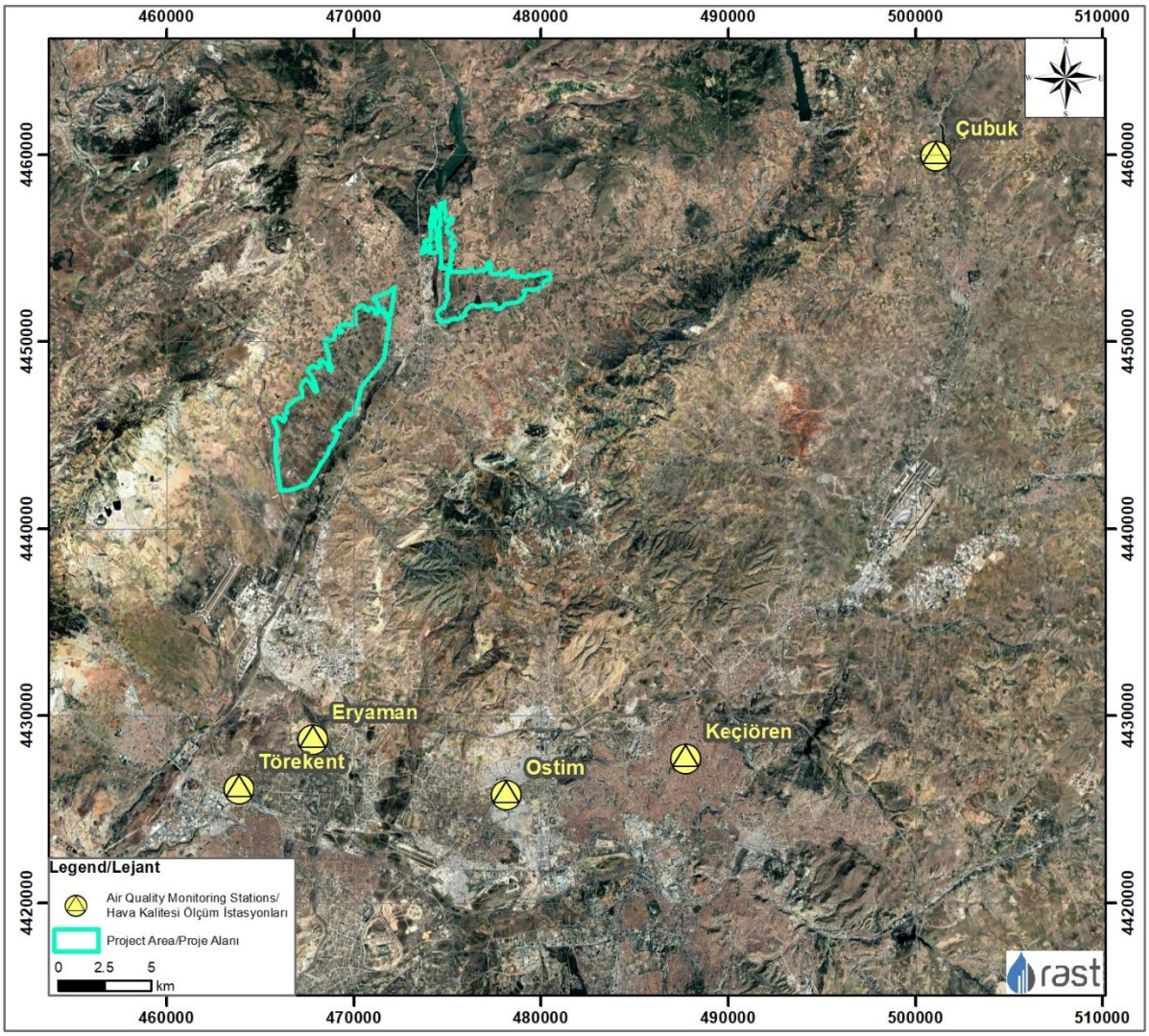


Figure 8. Sub-Project Area and Location of Air Quality Monitoring Stations

Table 2. Average Air Quality Monitoring Results (21 February 2025 – 21 February 2026)

	Air Quality Monitoring Stations				
	Ankara / Eryaman	Ankara - Törekent	Ankara - Ostim	Ankara - Keçiören Sanatorium	Ankara Çubuk
Distance to Sub-Project Area (km)	13	16	20	25	21
PM_{10} (µg/m³)	51,85	39,94	52,58	30,75	-
$PM_{2.5}$ (µg/m³)	19,84	6,00	9,50	10,77	-
SO_2 (µg/m³)	-	4,50	3,25	3,22	3,46
CO (µg/m³)	378,10	536,40	-	-	-
NO_2 (µg/m³)	40,02	64,59	59,64	76,08	11,96
NO_X (µg/m³)	61,01	93,30	97,17	126,73	17,35
NO (µg/m³)	21,10	29,74	37,55	50,68	5,38
O_3 (µg/m³)	31,64	-	54,90	52,69	75,67

II.3.6 Noise

The Sub-Project area is generally located in close proximity to residential settlements. However, no complaints have been received from residents regarding noise levels associated with irrigation activities. In addition, the Sub-Project is not expected to generate significant noise emissions. Therefore, no baseline monitoring has been conducted for noise conditions at the site.

II.3.7 Water Resources and Use

The water source for the Sub-Project is Kurtboğazı Dam (Photograph 3), located in the Sakarya Basin. Kurtboğazı Dam is a multipurpose dam used for both drinking water supply and irrigation purposes. Under the Kurtboğazı Dam System, the waters of Ankara Stream and Kirmir Stream are regulated by the Kurtboğazı, Kavşakkaya, Akyar, and Eğrekkaya dams to meet the drinking water demand of Ankara Province as well as the irrigation water demand of Akıncı Plain (see Figure 9).

Photograph 3. Kurtboğazı Dam General Overview
(https://www.aski.gov.tr/TR/ICERIKDETAY/Kurtbogazi-Baraji/32/15)

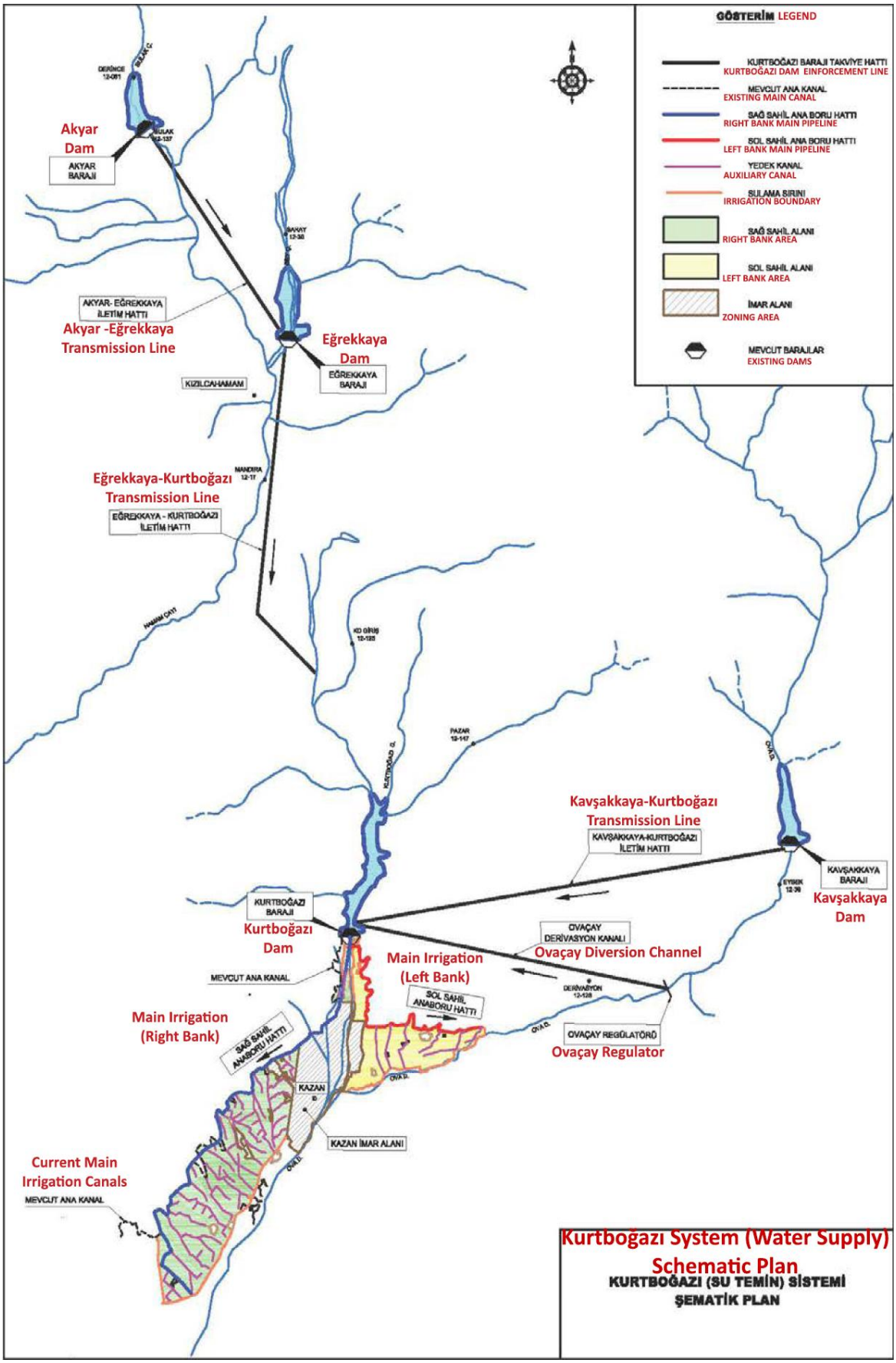


Figure 9. Schematic Plan of Kurtboğazı Water Supply System

The characteristic features of Kurtboğazı Dam are presented in Table 3. In addition, the characteristics of the existing Akıncı Plain irrigation system (conventional system) are provided in Table 4.

Table 3. General Characteristics of Kurtboğazı Dam

Description	Value	Unite
Rainfall Area	330	km^2
Minimum Operating Level	931	m
Normal Operating Level	961	m
Maximum Water Level	962,88	m
Total Storage Volume	92.053	hm^3
Minimum Storage Volume	5.922	hm^3
Active Storage Volume	86.131	hm^3
Spillway		
Location	Left Bank	
Type	Gated	
Spillway Length	60	m
Spillway Crest Elevation	958,5	m
Spillway Head	4,38	m
Spillway Capacity	433	m^3/sn
Maximum Flood Level	962,88	m
Bottom Outlet		
Location	Sağ Sahil	
Type	Çelik Boru	
Diameter	1.800	mm
Steel Pipe Length	180	m
Bottom outlet capacity	15,8	m^3/sn

Table 4. Characteristics of the existing Akıncı Plain irrigation system (conventional system)

Description	Value	Unit
Gross Irrigation Area	2.800	ha
Right Bank Main Canal Length	27+720	km
Left Bank Main Canal Length	12+537	km
Irrigation System Type	Klasik Şebeke	

II.3.8 Wastewater Management

The settlements within the Sub-Project area are connected to the existing municipal sewerage infrastructure. Generated wastewater is conveyed through the municipal sewer network to the Kahramankazan Wastewater Treatment Plant (with a treatment capacity of 10,289 m^3/day), which is operated by the Ankara Metropolitan Municipality (ABB), where it is treated.

II.3.9 Waste Management

Currently, only domestic and packaging waste are generated within the Sub-Project area. The management of these wastes is under the responsibility of Kahramankazan District Municipality. The waste collected by the district municipality is transported to the Sincan Çadırtepe Sanitary Landfill, which is operated by the ABB and holds the required environmental permits and licenses, where it is disposed of.

II.3.10 Natural Hazard Potential

The Sub-Project area and its surrounding vicinity are not considered to be under significant risk from rockfall, landslides, avalanches, floods, subsidence, or similar natural hazards. Nevertheless, as in many parts of Türkiye, seismic potential must be taken into consideration.

According to the Türkiye Earthquake Hazard Map prepared by the Disaster and Emergency Management Authority (AFAD), the Sub-Project area is located within the 0.150–0.160 g peak ground acceleration (PGA) range (see Figure 10). These values are generally assessed as indicating a moderate level of seismic hazard.

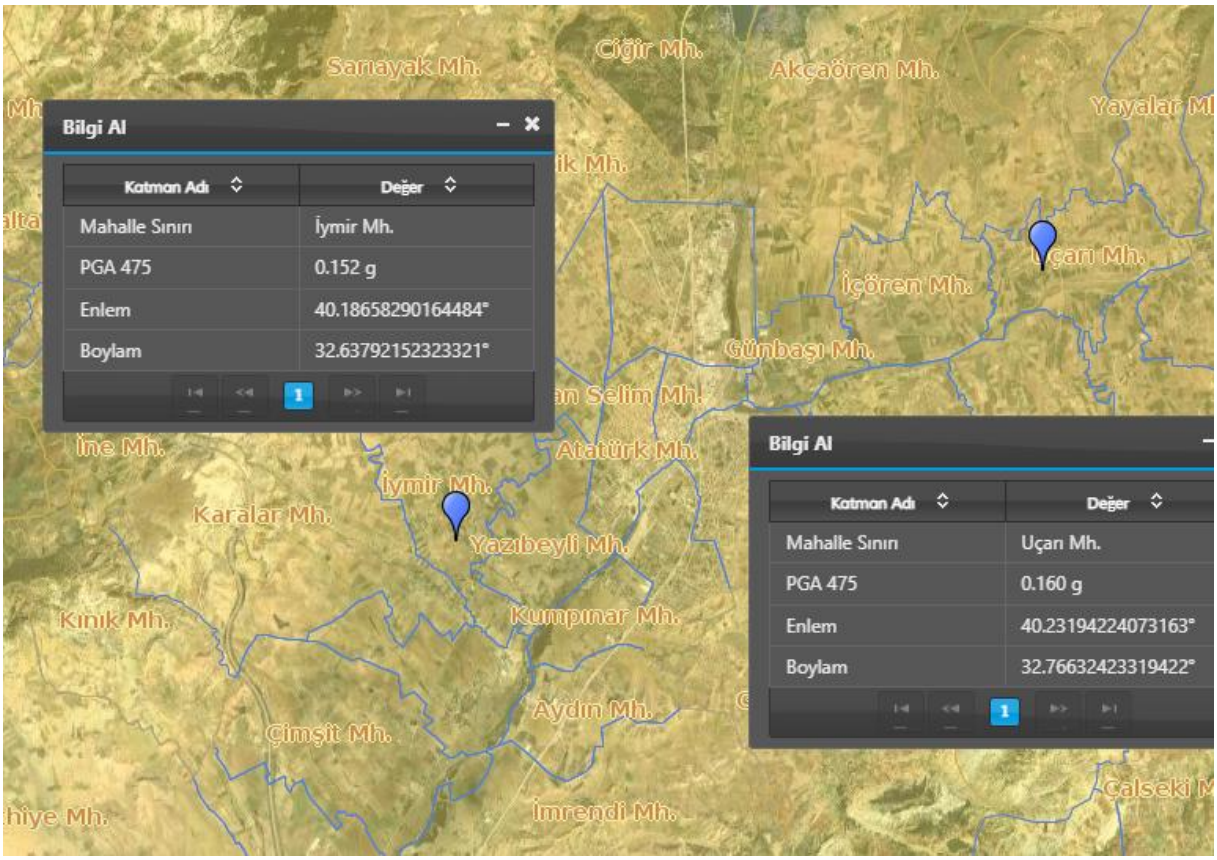


Figure 10. Türkiye Earthquake Hazard Map

II.3.11 Biodiversity and Protected Areas

II.3.11.1 Biodiversity

Within the scope of the Kazan Akıncı Irrigation Rehabilitation Project, during the field surveys conducted in the sub-project area on 14 February 2026, the results of academic studies previously carried out in the region, the information obtained from interviews with local residents, and the data derived from field studies previously conducted by our team were evaluated together.

As a result of these assessments, it was determined that 59 plant, 3 amphibian, 9 reptile, 132 bird, and 19 mammal species may potentially occur within the sub-project area and its immediate surroundings. The list of species is provided in Annex 5.

Among these, 59 plant species were identified; however, none were found to have a high conservation status under the IUCN Red List, the Bern Convention, or CITES, and no endemic plant species were recorded within the Sub-Project area.

All three amphibian species considered likely to occur in the area are classified as LC (Least Concern) according to the IUCN Red List. Under the Bern Convention, one species is listed in Appendix II, while the other two are listed in Appendix III. No endemic amphibian species were identified within the Sub-Project area.

Among the nine reptile species identified, eight are classified as LC one species is classified as VU (Vulnerable) according to the IUCN Red List. The species classified as VU is the spur-thighed tortoise (Testudo graeca). Under the Bern Convention, six reptile species are listed in Appendix II, while three are listed in Appendix III. No endemic reptile species were identified within the Sub-Project area.

Among the 132 bird species considered likely to occur in the area, the European turtle dove (Streptopelia turtur), red-footed falcon (Falco vespertinus) and eastern imperial eagle (Aquila heliaca) are classified as VU according to the IUCN Red List. The Egyptian vulture (Neophron percnopterus) is classified as EN (Endangered), while the pallid harrier (Circus macrourus) and cinereous vulture (Aegypius monachus) are classified as NT (Near Threatened). All remaining bird species are classified as LC. No endemic bird species were identified within the Sub-Project area.

Among the 19 mammal species considered likely to occur in the area, the common bent-wing bat (Miniopterus schreibersii) is classified as VU, the Anatolian ground

squirrel (Spermophilus xanthoprymnus) as NT and the Anatolian blind mole rat (Nannospalax xanthodon) as DD (Data Deficient) according to the IUCN Red List. All other mammal species are classified as LC. No endemic mammal species were identified within the Sub-Project area.

The species listed above were identified based on available literature, previous field studies and the habitat characteristics of the Sub-Project area and its surroundings and are therefore considered as having the potential to occur in the area. It should be noted that not all of these species are expected to be present at the same time within the Sub-Project area; rather, the list is intended to provide a general representation of the region's fauna and flora. A summary of the literature review is presented in Table 5.

Table 5. Summary Table of the Fauna Species

Fauna Species	Number of Species	BERN			Endemic	IUCN				
		Annex 1	Annex 2	Annex 3		VU	NT	LC	DD	EN
Amphibians	3		1	2	-			3		
Birds	132				-	3	2	126		1
Mammalia	19				-	1	1	16	1	
Reptilians	9		6	3	-	1		8		

II.3.11.2 Protected Areas

The Provincial Directorate of Environment, Urban Planning and Climate Change stated in its letter (Annex 6) that there are no natural assets that need to be protected under the Cultural and Natural Assets Protection Law No. 2863 and that the area is not a natural site.

In addition, according to the official letter of the Ankara Directorate of Nature Conservation and National Parks (Annex 7), the sub-project area does not fall within any protected area designated under the National Parks Law No. 2873 (National Park, Nature Park, Natural Monument, and Nature Conservation Area), the Terrestrial Hunting Law No. 4915 (Wildlife Protection Area and Wildlife Development Area), the Regulation on the Protection of Wetlands, or the National Biodiversity Inventory and Monitoring Project.

II.4 Current Social Status of the Project

II.4.1 Demography and Population

The sub-project area is located within the administrative boundaries of Kahramankazan District in Ankara Province. According to the 2025 data of the Address Based Population Registration System of the Turkish Statistical Institute (TÜİK), the total population of Kahramankazan District is approximately 61.143. Although the district's population has shown a stable but limited growth trend in recent years, population density remains low compared to the central districts of Ankara. The district has a mixed structure, comprising both rural neighborhoods and developing industrial zones.

Kahramankazan is located approximately 45–50 km from the Ankara metropolitan center and has, in recent years, acquired the characteristics of a district receiving inward migration due to investments in the defense industry and organized industrial zones. However, the sub-project site predominantly comprises rural areas where agricultural activities constitute the primary land use.

The main sources of livelihood in the district are agriculture, livestock breeding, and industrial employment. Specifically, within the sub-project site, the primary economic activity is irrigated and rainfed agriculture.

The population of the neighborhoods within the project's area of influence is listed below in Table 6.

Table 6. Population Sizes of Neighborhoods

Neighborhood	Permanent population	Number of households
Emirgazi	200	30
Karalar	120	35
Cimsit	45	15
Gunbasi	60	20
Yassioren	150	40
Kinik	35	20
Yazibeyli	70	25
Orencik	20	7
Ucari	5	3
Cigir	220	50
Icoren	250	60
Iymir	101	30

Source: Mukhtar interviews, 2025

II.4.2 Cultural Heritage

Based on the reviews conducted along with the alignment of the existing main irrigation canal and the pipelines planned for rehabilitation, no records of any registered cultural heritage assets directly located within the footprint of the project components were identified. Baseline assessments carried out within the scope of the ESMP also confirm that no registered cultural heritage assets are present within the direct impact area of the sub-project. However, archaeological sites and registered rural structures have been identified within the boundaries of the irrigation area and in its vicinity (Annex 8). These assets are in relative proximity to the project alignment and are officially registered and protected under national legislation and their conservation falls under the authority of the relevant Regional Council for the Conservation of Cultural Property.

The locations of the main registered sites and assets within or near the irrigation area in relation to the sub-project area are presented in Figure 11, while detailed information is provided in Table 7 and their visual appearances are shown in Photograph 4.

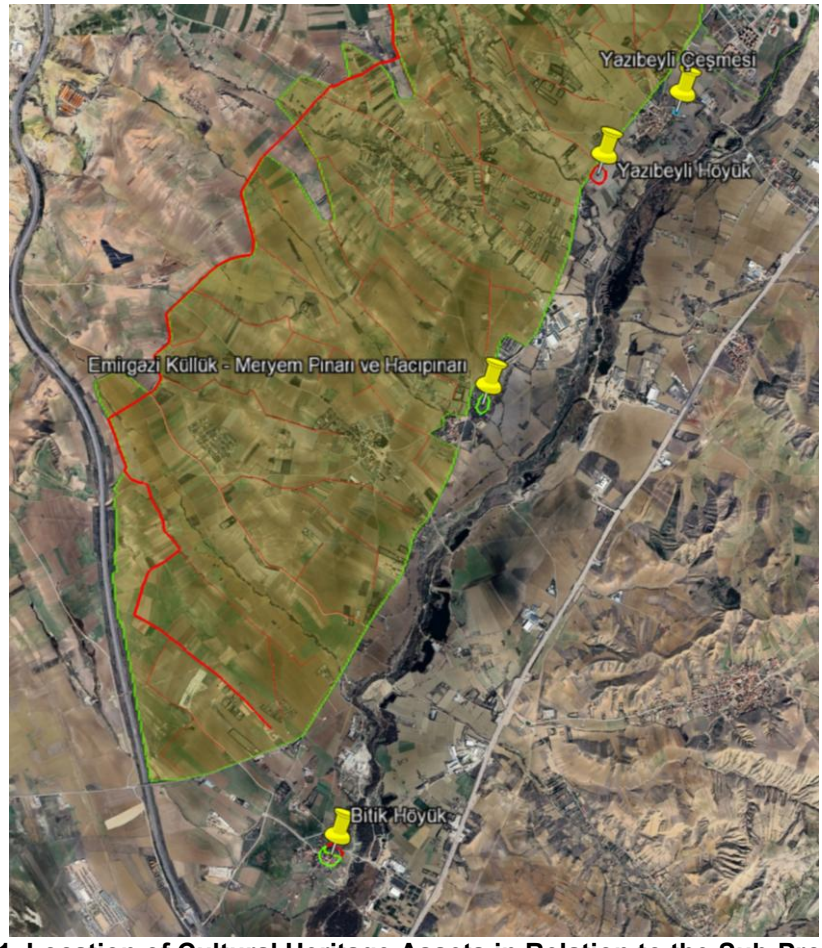


Figure 11. Location of Cultural Heritage Assets in Relation to the Sub-Project Area

Table 7. Registered Sites and Assets

No	Name of Cultural Heritage Asset	Province / District	Location of the Asset			Approximate Distance to Project Activities (pipeline, access road, drainage canal, etc.) (meter)	Period
			Within Project Area	Within Project Area of Influence	Outside Project Area and Area of Influence		
1	Yazıbeyli (Halkavun) Mound — 1st Degree Archaeological Site	*Ankara/Kahramankazan*			x	66	Bronze and Iron Age
2	Bitik Mound — 1st and 2nd Degree Archaeological Site				x	1253	Phrygian, Hittite and Classical Period
3	Emirgazi Neighborhood Küllük Locality — 3rd Degree Archaeological Site				x	234	Roman and Byzantine Period
4	Hacıpınarı (Dede) Fountain				x	294	Ottoman Period
5	Meryem Pınarı Fountain				x	321	Ottoman Period
6	Registered Fountain in Yazıbeyli Neighborhood (Parcel 105 / 12)				x	440	Ottoman Period

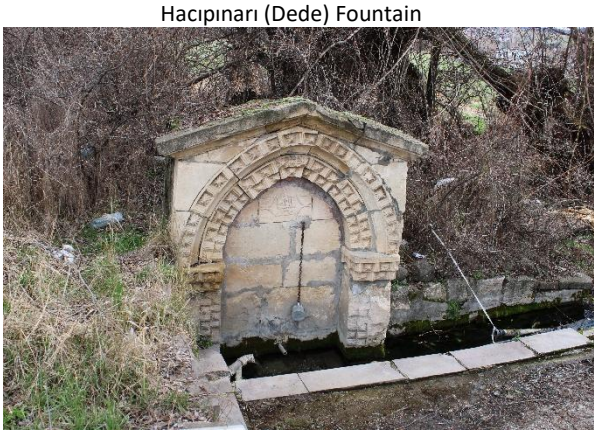

Yazıbeyli (Halkavun) Mound


Bitik Mound


Emirgazi Neighborhood Küllük Locality


Hacıpınarı (Dede) Fountain


Meryem Pınarı Fountain


Yazıbeyli Neighborhood Registered Fountain

Photograph 4. Photographs of Registered Sites and Assets

No construction or physical intervention will be undertaken within the legally defined protection boundaries of these cultural heritage assets. In cases where project activities are implemented in proximity to such sites, all works will be carried out in full compliance with the decisions and requirements of the relevant Conservation Council. Necessary permits will be obtained, and supervision by competent authorities will be ensured where applicable.

In addition, the Chance Find Procedure (Annex 9) has been incorporated into the ESMP to manage any unexpected discoveries of cultural heritage during construction, in line with national legislation and the requirements of the World Bank Environmental and Social Framework, particularly ESS8 on Cultural Heritage.

Considering (i) the absence of direct impacts on cultural heritage assets, (ii) the limited, linear nature of the works largely following existing alignments and (iii) the existing regulatory framework and mitigation measures defined in the ESMP, the current approach is deemed sufficient to manage potential risks related to cultural heritage.

Therefore, the preparation of a separate, site-specific Cultural Heritage Management Plan is not considered necessary for this sub-project.

II.4.3 Livelihoods and Employment

The neighborhoods of Emirgazi, Karalar, Kinik, Cimsit, Iymir, Yazıbeyli, Yassıoren, Orencik, Cigir, Gunbasi, Icoren, and Ucari located within the Sub-Project Area of Influence are rural settlements, and their economic structure is predominantly based on agricultural activities.

In the neighborhoods located within the Sub-Project Area of Influence, the primary sources of livelihood consist of irrigated and rainfed agriculture, together with small-scale livestock activities. In areas where irrigation infrastructure is available, cereal crops such as wheat, barley, and chickpeas, as well as fodder crops, vegetables, and locally industrial crops are cultivated. Agricultural production is largely carried out by family-run farms, and land ownership is predominantly household-based.

In the neighborhoods, livestock activities are carried out on a limited scale in the form of cattle farming, small ruminant farming, and household-level poultry production. Livestock activities are generally integrated with agricultural production systems.

Due to the facilities located in Kahramankazan District center and the organized industrial zones, some household members residing in the neighborhoods are employed in the industrial and service sectors. In the relevant neighborhoods, there are households generating non-agricultural income. In the rural settlements of the area, a model of part-time engagement in agriculture alongside industrial employment is observed.

This situation indicates that the neighborhood economy is not entirely dependent on agriculture; however, agriculture continues to constitute the primary source of income.

In the neighborhoods, income sources are diversified and consist of agricultural production income, wage employment in the district center and organized industrial zones, and, to a limited extent, income derived from livestock farming.

In the relevant neighborhoods, women play an active role in agricultural production processes and contribute to livestock activities and household-based production.

Although the rate of women's wage employment is limited in rural neighborhoods, it is observed that women assume an active economic role within the family-based production model.

In the neighborhoods, seasonal labor intensity increases in line with agricultural production cycles; however, there is no significant outward migration or large-scale seasonal labor mobility.

The economic structure is directly or indirectly linked to agricultural production and the associated irrigation infrastructure.

II.4.4 Main Economic Activities in the Sub-Project Area

Kahramankazan District has a mixed economic structure that encompasses both rural production activities and the industrial and service sectors. While agriculture and livestock farming have traditionally held a significant role across the district, recent developments in organized industrial zones, together with investments linked to the defense and aerospace industries, have led to economic diversification within the district. Nevertheless, the neighborhoods of located within the Sub-Project Area of Influence retain their rural characteristics, and economic activities are predominantly based on agricultural production.

In these neighborhoods, crop production constitutes the primary source of livelihood. The area is located within the Central Anatolian agricultural basin, and cereals, particularly wheat and barley, are predominant in the cropping pattern. In addition, pulses such as chickpeas and lentils, as well as sugar beet cultivation, are traditionally practiced across the district. Fodder crop production is carried out in an integrated manner with livestock farming, and the crop–livestock production cycle constitutes an important component of the rural household economy. In certain neighborhoods, market-oriented vegetable production and specific products such as melon cultivation, which is identified with the district, also form part of the economic activities. Agricultural production is predominantly undertaken by family-run farms, and land ownership is household-based, with parcels distributed in small- and medium-scale holdings (Table 8).

Table 8. The Agricultural Products Produced in the Neighborhoods and their Annual Yields

Neighborhood	Beet	Corn	Sunflower	Wheat	Barley	Chickpea	Vegetables
Emirgazi	1000	3000	200	3000	1000	200	1000
Karalar	-	250	50	3000	3000	-	Unknown
Cimsit	10000	10000	20	10000	10000	-	Unknown
Gunbasi	1000	-	-	1000	1000	-	-
Yassioren	3500	400	200	350	350	-	Unknown
Kinik	-	-	200	2000	2800	300	Unknown
Yazibeyli	-	500	-	600	600	-	Unknown
Orencik	200	-	-	1000	100	500	-
Ucari	-	-	-	-	-	-	Unknown
Cigir	1000	1000	300	1000	1000	200	Unknown
Icoren	-	1000	200	2000	2000	500	Unknown
Iymir	-	500	100	5000	3000	400	Unknown

Source: Mukhtar Interviews, 2025

Livestock activities constitute an economically complementary source of income in the district and in the neighborhoods forming Sub-Project AoI. In addition to cattle and small ruminant farming, household-level poultry production and limited-scale beekeeping activities are observed. These activities are generally carried out in a semi-commercial manner or for household subsistence rather than on a fully commercial scale. Income derived from livestock activities is complementary to crop production income (Table 9).

Table 9. Livestock Data in the Neighborhoods

Neighborhood	Cattle	Small cattle	Beehive
Emirgazi	-	-	-
Karalar	90	1200	15
Cimsit	20	-	-
Gunbasi	10	400	-
Yassioren	200	300	-
Kinik	100	150	20
Yazibeyli	30	-	-
Orencik	1000	300	-
Ucari	60	-	10
Cigir	80	250	10
Icoren	50	100	-
Iymir	10	-	-

Source: Mukhtar Interviews, 2025

Pasture use was inquired about in neighborhoods where livestock farming is practiced. The locations indicated by the mukhtars show that the water channels to be constructed within the scope of the Project will not affect the pastures and access roads.

It has been recorded that almost every household in AoI keeps 8-10 poultry for home consumption. Cattle are also mostly (80-90%) raised for home consumption and All

beekeeping activities are for home consumption. On the other hand, poultry raised for commercial purposes.

The development of the industrial and service sectors in Kahramankazan District creates alternative and complementary employment opportunities for the population residing in rural neighborhoods. In neighborhoods with access to the district center and organized industrial zones, it is known that some household members are employed on a wage basis in industrial facilities, logistics enterprises, or the service sector. This situation indicates that non-agricultural income sources are also present in rural neighborhoods. In particular, a proportion of the working-age population simultaneously engages in agricultural production and wage employment, thereby diversifying household income structures.

Vegetable production in the neighborhoods is not fully known by the village heads. Vegetable production mostly takes place on land leased by foreigners coming from outside the city.

According to the interviews, high-yield and high-income crops such as beets and sunflower seeds are desired to be cultivated in the region, but due to the current irrigation demand not being met, it is necessary to turn to corn, wheat, and barley.

II.4.5 Education and Health Services

In terms of education services, it has been observed that some of these neighborhoods do not have schools, and access to formal education is provided through a school transportation system. This situation indicates that educational infrastructure at the neighborhood level is limited, while the provision of education services is primarily structured around the district center and central schools. Within the scope of the school transportation system, students are transported to schools by shuttle services during the day, which constitutes a common access mechanism in rural settlements. In this context, access to education services is closely linked to service routes and scheduling. At the district level, the administrative coordination of education services is carried out by the Kahramankazan District Directorate of National Education.

In terms of health services, it has been determined that there are no health clinics or family health units located within the neighborhoods, and residents seek primary healthcare and hospital services in the district center. In the district center, primary healthcare services are delivered through family health centers. At the district level,

preventive healthcare and coordination functions are carried out under the structure of the Kahramankazan District Health Directorate.

In terms of secondary healthcare services, Kahramankazan State Hospital operates in the district center, and information regarding its institutional structure, access, and transportation is available on the official website of the Ministry of Health. Within this framework, residents of rural neighborhoods are required to travel regularly to the district center for medical examinations, diagnostic procedures, non-emergency outpatient services, and referral processes. The absence of healthcare units at the neighborhood level results in a service delivery structure in which access is closely linked to transportation availability and seasonal conditions, particularly for the elderly population, persons with chronic illnesses, pregnant women, and households with children.

In the neighborhoods within the Project Area of Influence, education and health services are delivered through a centralized structure; access to education services is ensured through the school transportation system, while access to health services is primarily provided through health centers and the State Hospital located in the district center. This existing context also constitutes a determining background in terms of planning the venue and timing of meetings and selecting appropriate communication channels within the stakeholder engagement and consultation processes.

Transportation from the neighborhoods to the district center is unproblematic due to paved roads, and transportation to education and health services is provided within a range of 3 to 12 km.

II.4.6 Vulnerable/Disadvantaged Individuals/Groups and Social Equity

The identification of vulnerable groups is based on two key criteria:

- Being disproportionately affected by the negative impacts of the project and
- Difficulty participating in consultation activities.

In this context, people with physical or mental disabilities, people over 65 living alone, female heads of households, poor individuals who live on government/association assistance and asylum seekers/refugees who do not speak Turkish are defined as vulnerable in the AoI.

The number of people classified as vulnerable groups in the neighborhoods is as follows in Table 10.

Table 10. Vulnerable People in the Neighborhoods

Neighborhood	People with physical or mental disabilities	Those over 65 living alone	Female heads of households	Asylum seekers/refugees who do not speak Turkish	Poor individuals who live on government/association assistance
Emirgazi	-	-	2	-	-
Karalar	-	-	-	-	-
Cimsit	1	-	-	-	-
Gunbasi	1	-	3	-	-
Yassioren	3	-	2	-	2
Kinik	-	-	1	-	2
Yazibeyli	-	-	-	-	-
Orencik	-	-	-	-	-
Ucari	-	2	-	-	-
Cigir	1	-	1	-	-
Icoren	-	-	-	-	2
Iymir	-	-	2	-	-

II.4.7 Infrastructure Services

Drinking water services across the district are provided by the Ankara Metropolitan Municipality Water and Sewerage Administration (ASKİ). In rural neighborhoods, a drinking water distribution network is in place, and water supply is provided through household connections to the piped distribution network. In some neighborhoods, households utilize individual water storage tanks and booster pump systems. With regard to agricultural activities, irrigation water is managed through a separate system, and the existing irrigation canals and transmission lines are located within the Sub-Project AoI.

A sewerage system is in place in the district center and is connected to a wastewater treatment plant. In rural neighborhoods, sewerage infrastructure may vary from one neighborhood to another, and in some settlements septic tank systems or individual on-site wastewater solutions are utilized. Wastewater services are also carried out under the coordination of ASKİ.

An electricity distribution network is available in all neighborhoods, and households are connected to the national electricity grid. The electricity infrastructure is also important for agricultural production activities, particularly for irrigation systems and the use of agricultural equipment. Although power outages may occasionally occur in rural areas, electricity access is generally ensured.

A natural gas distribution network is available in the Kahramankazan district center, and in recent years, access to natural gas has also been extended to rural neighborhoods within the scope of infrastructure expansion works. In the neighborhoods of Emirgazi, Karalar, Kınık, Çimşit, İymir, Yazıbeyli, Yassıören, Örencik, Çiğir, Günbaşı, İçören, and Uçarı located within the Project Area of Influence, a natural gas distribution network is in place, and households benefit from natural gas connections.

Kahramankazan District is located in close proximity to the Ankara–Istanbul highway corridor and has strong transport connectivity. Asphalt and gravel roads are available between the district center and the neighborhoods. Internal neighborhood roads generally consist of asphalt pavement or gravel surfaces. Adverse weather conditions during the winter season may affect the usability of certain rural roads. Due to agricultural production activities, tractor and heavy vehicle traffic constitute an important component of the internal road structure within the neighborhoods.

Solid waste collection services are carried out by the Kahramankazan Municipality. In the neighborhoods, household waste is collected at regular intervals and transported to the district-wide disposal system. Agricultural waste is generally managed on-site or reintegrated into the production cycle.

Internet and mobile communication infrastructure is widely available in the district center. In rural neighborhoods, mobile network coverage is available; however, internet speed and coverage quality may vary from one neighborhood to another.

In the neighborhoods within the Project Area of Influence, access to basic infrastructure services is generally ensured; however, due to their rural settlement character, the quality and diversity of services are more limited compared to the district center. Drinking water supply, electricity, and road connections are available, while sewerage and natural gas infrastructure may vary at the neighborhood level. As in the case of education and health services, certain services are delivered through a centralized structure, and residents access these services through travel to the district center.

II.4.8 Traffic and Transportation

Kahramankazan District is located approximately 45–50 km from the Ankara metropolitan center and, due to its proximity to the Ankara–Istanbul highway corridor (D-140 and connecting roads), occupies an accessible position in terms of regional

transportation. A regular road connection exists between the district center and Ankara, and transportation is provided by private vehicles and public transport services.

The neighborhoods of Emirgazi, Karalar, Kınık, Çimşit, İymir, Yazıbeyli, Yassıören, Örencik, Çiğir, Günbaşı, İçören, and Uçarı located within the Sub-project Area of Influence have a rural settlement character, and transportation access is provided through village roads and neighborhood roads connected to the district center. Motorized vehicle access is available in all neighborhoods. The majority of the roads connecting to the district center are asphalt-paved, while some internal neighborhood roads consist of gravel or concrete surfaces.

The inter-neighborhood transportation network also accommodates tractor and agricultural vehicle traffic due to the intensity of agricultural activities. In particular, agricultural vehicle movements increase during planting and harvest periods. Heavy vehicle traffic is more concentrated in industrial areas close to the district center, while it is generally low in rural neighborhoods within the Sub-project Area of Influence.

Although public transport services are limited, minibus or shuttle connections operate at certain hours between the district center and the neighborhoods. The implementation of education services through a school transportation system requires the daily transport of students from the neighborhoods to the district center. Access to health services and other public services is also largely dependent on transportation to the district center.

During the winter season, adverse weather conditions (snow and icing) may temporarily affect rural road conditions; however, road maintenance and snow removal services are carried out by the municipality and relevant public institutions. Road widths are in line with rural settlement standards, and there is no intensive urban traffic character.

CHAPTER III.
ENVIRONMENTAL AND SOCIAL ASSESSMENT

III.1 Introduction

Following an assessment of the potential environmental and social risks and impacts associated with the Kahramankazan Akıncı Irrigation Renovation Construction Project, an Environmental and Social (E&S) Screening Form was developed and is presented in Annex 11.

As indicated in the Screening Form, the environmental and social risk category of the Sub-project has been determined as ‘Moderate’. This section reassesses the initially defined risk categorization in light of the identified baseline conditions and anticipated construction and operational impacts.

III.2 Overview of Project Risk Profile

The Sub-project involves the rehabilitation and modernization of an existing irrigation distribution system within an established irrigation area. The works are limited to the replacement of open-canal with buried pressurized pipelines, largely following the existing alignment and service road corridors. The Sub-project does not include the construction of a new dam andsignificant land acquisition. Basin-level water savings will be achieved.,

Given the nature and scale of the Sub-project, the anticipated environmental and social risks are site-specific, largely temporary, and reversible. The environmental and social risk assessment are presented in the following sub-titles.

III.3 Environmental Risk Assessment

III.3.1 Air Quality and Noise

Construction activities such as trench excavation, pipe laying and vehicle movement may generate localized dust emissions and temporary noise. These impacts are expected to remain limited to the construction corridor and nearby agricultural areas. No significant air emissions are expected during operation.

Given the rural character of the Sub-project area and the temporary nature of construction activities, the significance of air and noise impacts is assessed as low to moderate during construction and negligible during operation. All construction activities

will be carried out in compliance with the requirements of the Industrial Air Pollution Control Regulation and the Regulation on the Assessment and Management of Environmental Noise.

III.3.2 Soil and Land Disturbance

Temporary soil disturbance, topsoil stripping and localized compaction will occur along the trench alignment. However, the works are limited to the existing irrigation corridor and the service roads. With proper topsoil management and reinstatement, impacts on agricultural productivity are expected to be temporary and reversible.

Excavation works are estimated to generate approximately 325,262 m³ of material (Annex 10). For excavations carried out outside the concrete canal sections, the upper layer of the excavated material will be separated and treated as topsoil for reuse, where appropriate. The remaining material will be used for backfilling and ground leveling following pipe installation works. Any surplus material will be transported to licensed excavation/inert construction waste disposal (dumping/stockpiling) sites operated or designated by the Ankara Metropolitan Municipality (ABB) for final disposal. Excavation material management, transport and disposal practices will be carried out in compliance with the provisions of the Regulation on Excavation Soil, Construction and Demolition Waste.

No permanent loss of agricultural land is anticipated.

III.3.3 Water Resources

The Sub-project does not involve increased abstraction of water resources beyond existing allocations. During construction, there may be temporary and localized disruption to irrigation services in certain sections. However, phased implementation and coordination with DSİ are expected to minimize such impacts.

In the long term, the Sub-project is expected to result in a positive environmental outcome through reduced seepage and evaporation losses and improved water use efficiency. All construction activities will be carried out in compliance with the provisions of the Water Pollution Control Regulation to prevent potential contamination of surface water resources and irrigation infrastructure.

III.3.4 Biodiversity

Based on the 14 February 2026 site visit findings, the Sub-project area is predominantly agricultural land located within the existing canal corridor. The site visit confirmed the absence of designated protected areas, critical habitats and other biodiversity features that would trigger ESS6 requirements within the Sub-Project area and its AoI. Therefore, no significant biodiversity impacts are anticipated and any vegetation clearance will be limited to the existing canal corridor.

III.4 Social Risk Assessment

III.4.1 Land Use and Access

The sub-project covers the rehabilitation of the existing irrigation infrastructure located within the administrative boundaries of Kahramankazan District. The works will be carried out along the existing irrigation network alignments within the boundaries of the neighborhoods of Emirgazi, Karalar, Kınık, Çimşit, İymir, Yazıbeyli, Yassıören, Örencik, Çiğir, Günbaşı, İçören, and Uçarı.

According to the current Sub-project description, no intervention requiring residential demolition or physical displacement within settlement areas is envisaged. The Sub-project Area of Influence predominantly consists of agricultural land. No direct intervention in public buildings or residential areas within neighborhood centers is planned.

Within the scope of the Sub-project, the expropriation information is provided in the planning report as follows:

- Expropriation of 46.842,23 m² of property;
- Expropriation of 397.892,00 m² of permanent easement rights;
- Expropriation of 372.130,85 m² of temporary easement rights.

World Bank ESS5 provisions will apply during the expropriation process. In this context:

- In cases of expropriation or restrictions on land use, affected persons will be identified.
- In the event of physical or economic displacement, the necessary Resettlement Plan or Resettlement Framework will be implemented.

- Land rehabilitation will be ensured in cases of temporary land use.
- Compensation processes will be carried out in accordance with national legislation and the requirements of ESS5.

Temporary access restrictions to agricultural lands may occur during the construction of irrigation canals. However, these restrictions are expected to be short-term. Additionally, alternative routes for accessing agricultural lands will be provided. Another potential impact is a temporary disruption in the supply of irrigation water from existing irrigation canals. Any damage caused to these canals during construction will be repaired promptly to prevent loss of livelihood.

III.4.2 Community Health and Safety

During the construction phase of the Sub- Project, there will be certain impacts on traffic patterns and community safety in the area. The use of roads providing access to residential areas by heavy construction machinery may pose traffic safety risks to the local population. Short-term transportation disruptions caused by road works may temporarily hinder villagers' access to healthcare facilities. Alternative route planning and safety measures are an important part of the project to minimize these negative impacts.

Regular maintenance and control of the irrigation system is important to minimize the community health risks that may arise during the operational phase. Effective traffic management to counter increased traffic density from service vehicles and farmers will reduce the likelihood of accidents. To ensure environmental sustainability, protective measures such as sediment traps should be implemented to counter soil erosion caused by improper irrigation. This will both protect community health and prevent negative impacts on water ecosystems. Although the risk of SEA/SH is low for project activities, and due to the influx of labour into the region, each project worker will be required to sign a code of conduct. All project activities will be carried out in line with the labour management plan prepared for the project.[6]

The Contractor are obliged to give code of conduct training, including GBV and SEA/SH, to each worker so that the presence of workers who will work during the construction do not result in any disturbance/conflict within the local communities and

[6]https://cdniys.tarimorman.gov.tr/api/File/GetGaleriFile/425/DosyaGaleri/7572/timp2_labor_management_procedure.pdf

their interaction with community members do not result in inappropriate behaviors/misconducts. DSI will ensure that the Contractors develop a Code of Conduct and that all workers are informed and receive training about it before starting to work. A Code of Conduct will be part of the employment contract to be signed by all workers at the job start-up phase. The training given in the Code of Conduct will be checked and reported by Environmental and Social Experts. Scaling and evaluation will be carried out at the end of the training provided. According to the results of the evaluation, training material will be updated by adding the learnings from near misses or incidents, as they occur.

III.4.3 Labor and Working Conditions

Occupational health and safety risks, particularly related to trench excavation, represent the most significant construction-phase risk. However, these risks are typical for linear infrastructure sub-projects and can be controlled through appropriate safety management systems.

No significant labor influx or associated social conflict risks are anticipated given the moderate workforce size (approximately 45 workers) and the rural setting. All labor and occupational health and safety practices during construction will be implemented in compliance with the Occupational Health and Safety Law No. 6331 and related secondary legislation. In addition to national legislation, ESS2 and ESS4 will be fully implemented, including mitigation measures aimed at managing the labour influx and preventing SEA/SH. Compliance with the labour management plan prepared specifically for the project will also be ensured.

III.4.4 Occupational Health and Safety

The objective of OHS management under the Kahramankazan Akıncı Irrigation Renovation Construction Project is to prevent occupational accidents and health risks through compliance with national legislation, World Bank ESS2, and relevant international good practice.

At a minimum, the Contractor will prepare and implement a site-specific OHS Plan before construction starts. This will include risk assessments, safe working procedures, emergency preparedness and response, incident reporting, worker training, provision of personal protective equipment, first aid arrangements and regular site inspections.

The Contractor will be responsible for identifying site-specific hazards, implementing preventive and protective measures, assigning qualified OHS personnel, providing adequate resources and equipment and ensuring that all workers and subcontractors comply with OHS requirements. Chemical and hazardous material handling, storage and spill response measures will also be implemented as part of OHS management.

DSİ will supervise the Contractor's compliance with OHS requirements through document review, site monitoring and follow-up of corrective actions, incidents and non-compliances.

III.5 Risk Categorization

Based on the analysis presented in the previous sections, the Sub-Project is characterized by:

- Limited spatial footprint within an existing infrastructure corridor,
- Temporary and reversible construction impacts,
- Absence of resettlement,
- No major changes in water abstraction or basin hydrology,
- No impacts on critical habitats or protected areas,
- Manageable occupational and community safety risks.

Accordingly, the environmental and social risk level of the Sub-Project is assessed as Moderate, consistent with the initial screening results.

The identified risks can be effectively managed through the implementation of the mitigation and monitoring measures defined in this ESMP.

CHAPTER IV.
ESMP MATRIX:
RISKS, IMPACTS, MITIGATION, AND MONITORING

IV.1 Construction Phase

The construction phase of the Sub-Project will primarily include excavation of trenches along the alignment of the existing irrigation canal, installation of pressurized pipeline sections, backfilling of trenches, and site reinstatement works.

Construction activities will be planned in a manner that will not adversely affect the continuity of irrigation services, and the principle of avoiding construction works during the irrigation period will be adopted. Except for mandatory situations, construction works will be carried out in segments / phases, thereby preventing irrigation interruptions and minimizing temporary impacts on agricultural activities

During the construction phase, surplus excavated material that is deemed unsuitable for reuse will be temporarily stored at locations to be designated by the construction contractor, ensuring that such storage does not prevent on-site activities, access roads, or stream crossings. The selected storage areas will be properly managed to prevent interference with the existing surface water pathways. To mitigate potential adverse impacts from precipitation and surface runoff, drainage channels will be constructed around the disposal areas in order to control storm water flow and prevent erosion, sediment transport, and material instability.

Excavated material found suitable for reuse will be utilized as backfill material. The suitability of excavated material for reuse will be determined based on laboratory and field tests to be conducted during the construction phase.

The main environmental impacts during construction phase are expected to relate to temporary soil disturbance, topsoil stripping, localized dust emissions, noise generation, waste production, and short-term alterations to surface drainage patterns. Given the linear nature of the Sub-project and its location within predominantly agricultural land, impacts are anticipated to be site-specific, temporary and reversible, provided that appropriate mitigation measures are implemented.

From a social perspective, the key risks are associated with temporary access restrictions to agricultural parcels, potential disruption of irrigation supply in certain sections, construction-related traffic movement, and community health and safety risks including labor influx arising from open trench works. Occupational health and safety risks, particularly those related to deep trench excavation, represent a significant construction consideration and require strict control measures.

Overall, the construction-related environmental and social impacts are expected to remain localized and manageable through the implementation of the mitigation and monitoring measures presented in the following table.

Table 11. ESMP Matrix: Risks, Impacts, Mitigation, and Monitoring Table – Construction Phase

ID	Expected Environmental and Social Risks and Impacts	Related WB ESSs	Proposed Mitigation Measures	Impact Reduction		Impact/Effect Monitoring			Cost of Mitigation and Monitoring
				Time / Frequency	Responsibility	Monitoring Parameter	Frequency	Responsibility	
Air Quality									
AQ-C 001	**Temporary deterioration of local air quality due to dust emissions generated during excavation, trenching, backfilling and stockpiling along the pipeline route.** Impacts are expected to be localized, short-term and reversible; however, they may affect nearby agricultural fields, farm workers and, if any, nearby settlements.	ESS1 ESS3	- Prioritize use of the existing DSİ canal service road as the primary work corridor where feasible, to reduce disturbance to cultivated land and minimise dust deposition on crops. - Regular water spraying on active excavation areas and soil stockpiles during dry and windy conditions. - Limiting stockpile height/footprint; separate stockpiling away from field edges where possible. - Progressive backfilling to minimise exposed surfaces; avoid leaving open trenches/stockpiles for extended periods. - Suspension of dust-generating works during extreme wind conditions where necessary.	Throughout construction phase; increased frequency during dry and windy conditions	Construction Contractor	-Visual observation of dust levels along the construction corridor -Evidence of dust deposition outside the work corridor (e.g., adjacent agricultural fields) -Records of dust suppression activities (e.g., water spraying) -Complaints from farmers/residents regarding dust -Ambient dust measurement results (PM10 or settled dust) if complaints occur	-Daily during active excavation and trenching works -Daily site inspection, with additional checks during windy conditions -Daily review of dust suppression records -Continuous review of grievance records -In case of complaint or visible excessive dust emissions	Construction Contractor Supervision (DSİ Representative)	Included in the Project Budget
AQ-C 002	**Dust emissions from movement of construction vehicles on unpaved roads and temporary access routes**, potentially affecting crops, farm operations and nearby residences. This impact is expected to remain temporary and manageable with appropriate controls.	ESS1 ESS3	- Use DSİ service road for haulage and material transport where available; restrict off-road driving in cultivated land. - Watering of unpaved routes during dry conditions. - Enforcing speed limits (max. 30 km/h) on site/access roads. - Covering trucks transporting fine materials; wheel cleaning where dust/mud may be carried to public roads.	Throughout construction phase	Construction Contractor	-Visible dust plumes generated by construction vehicles along access routes -Vehicle speed compliance on site and access roads -Records of watering of unpaved access roads -Complaints from farmers/residents related to vehicle-generated dust -Ambient dust measurements (PM10 or settled dust) if excessive dust or complaints	-Daily visual inspection during active vehicle movement -Daily monitoring of vehicle speed compliance -Daily review of watering records during dry conditions -Continuous review of grievance records -In case of complaint or visible excessive dust emissions	Construction Contractor Supervision (DSİ Representative)	Included in the Project Budget
AQ-C 003	**Localized and temporary exhaust emissions (NOx, PM, CO) from construction machinery and transport vehicles**, contributing to short-term deterioration of ambient air	ESS1 ESS3	- Use of well-maintained machinery compliant with Turkish emission standards. - Prohibition of unnecessary engine idling.	Throughout construction phase	Construction Contractor	-Maintenance and inspection records of construction machinery -Visible black smoke or abnormal exhaust	-Monthly review of machinery maintenance records -Daily visual inspection during site supervision	Construction Contractor Supervision (DSİ Representative)	Included in the Project Budget

ID	Expected Environmental and Social Risks and Impacts	Related WB ESSs	Proposed Mitigation Measures	Impact Reduction		Impact/Effect Monitoring			Cost of Mitigation and Monitoring
				Time / Frequency	Responsibility	Monitoring Parameter	Frequency	Responsibility	
	quality within the construction corridor.		- Routine maintenance/inspection; immediate repair of polluting equipment.			emissions from equipment -Engine idling practices during construction activities -Complaints from workers or nearby receptors regarding exhaust emissions	-Daily observation of idling practices during active works -Continuous review of grievance records		
AQ-C 004	**Potential dust deposition on cultivated fields** adjacent to works, which may temporarily affect crop quality/yield if not properly managed. The risk is reduced where works can be limited to the DSİ service road, but may still occur in sections without such corridor.	ESS1	- Route selection at section level: adopt DSİ service road alignment where feasible; if not, maintain minimum practical corridor width in fields. - Increased watering frequency near actively cultivated lands and during harvesting/critical growth periods. - Temporary wind barriers in sensitive locations where applicable. - Ongoing coordination with landowners on timing and sequencing of works.	During trenching activities near cultivated lands	Construction Contractor in coordination with DSİ	-Visible dust deposition on adjacent cultivated fields -Effectiveness of dust control measures near agricultural plots (e.g., watering frequency) -Complaints from farmers regarding dust impacts on crops -Records demonstrating use of the DSİ service road corridor where feasible	-Daily visual inspection during trenching works near cultivated lands -Daily monitoring during active construction in agricultural sections -Continuous review of grievance records -Weekly review of section-based corridor selection and work alignment	Construction Contractor Supervision (DSİ Representative)	Included in the Project Budget
Noise Level									
NL-C 001	**Temporary increase in ambient noise levels due to excavation, trenching, pipe laying, backfilling and operation of heavy machinery along the pipeline corridor.** Impacts are expected to be localized, short-term and reversible, primarily affecting farm workers.	ESS1	- Where feasible, limiting the works to the DSİ canal service road to reduce proximity to farm receptors and minimize disturbance within cultivated plots. - Use well-maintained equipment with silencers; avoid unnecessary idling. - Restrict works to daytime hours (e.g., 07:00–19:00). - Avoid simultaneous operation of high-noise equipment where practicable.	Throughout construction phase	Construction Contractor	-Condition of construction equipment and presence of silencers -Compliance with permitted working hours (daytime construction) -Complaints from farmers/residents regarding construction noise -Noise measurement results if complaints are received	-Daily site inspection during active construction works -Daily monitoring of working hour compliance -Continuous review of grievance records in case of complaint	Construction Contractor Supervision (DSİ Representative)	Included in the Project Budget
NL-C 002	**Noise disturbance to nearby rural settlements located close to sections of the route**, particularly during intensive excavation	ESS1 ESS4	- Schedule higher-noise activities away from early morning/late evening periods.	During works near settlements	Construction Contractor	-Distance of stationary equipment (generators, compressors) from nearby receptors	-Daily inspection during works near settlements -Daily monitoring during active construction in	Construction Contractor DSİ Representative	Included in the Project Budget

ID	Expected Environmental and Social Risks and Impacts	Related WB ESSs	Proposed Mitigation Measures	Impact Reduction		Impact/Effect Monitoring			Cost of Mitigation and Monitoring
				Time / Frequency	Responsibility	Monitoring Parameter	Frequency	Responsibility	
	and concrete works. While impacts are expected to remain within manageable levels in a rural setting, short-term disturbance may occur.		- Position stationary equipment (generators, compressors) as far as practicable from receptors; use temporary acoustic screens where needed. - Advance notice to residents for works near settlements; maintain grievance redress mechanism for rapid response.			-Implementation of noise control measures (e.g., acoustic screens where applicable) -Complaints from residents regarding construction noise -Noise measurement results if complaints are received	settlement-adjacent sections -Continuous review of grievance records in case of complaint		
NL-C 003	**Occupational noise exposure risks for workers** due to prolonged operation of heavy machinery and equipment.	ESS2	- Provide and enforce use of PPE (e.g., hearing protection). - Task rotation to limit exposure where necessary. - Toolbox talks on noise hazards; OHS inspections.	Throughout construction phase	Construction Contractor	-PPE compliance (use of hearing protection by workers) -Records of toolbox talks and OHS trainings related to noise hazards -OHS inspection findings regarding worker noise exposure -Records of task rotation where implemented	-Daily supervision during construction activities -Weekly review of toolbox talk and training records -Periodic OHS audits during construction phase -Continuous monitoring during high-noise activities	Construction Contractor Supervision (DSİ Representative)	Included in the Project Budget
NL-C 004	**Vibration and nuisance from compaction and heavy equipment movement**, potentially causing temporary disturbance to nearby structures or agricultural facilities. Impacts are expected to be minor and localized; however, sensitivity may increase near structures/utility crossings.	ESS1	- Avoid unnecessary high-impact compaction near sensitive structures; select appropriate compaction methods. - Pre-works visual checks of nearby structures in sensitive locations; respond promptly to complaints.	During compaction and heavy equipment operations	Construction Contractor	-Evidence of structural damage to nearby buildings, agricultural facilities or infrastructure -Complaints from nearby receptors related to vibration or equipment movement -Records of pre-construction visual condition checks of nearby structures	-Daily inspection during compaction and heavy equipment operations near sensitive structures -Continuous review of grievance records -Prior to works and periodic checks in sensitive sections	Construction Contractor DSİ Representative	Included in the Project Budget
Soil									
SO-C 001	**Loss or degradation of fertile topsoil due to stripping and trench excavation along agricultural lands.** Given that the project corridor largely traverses cultivated fields, improper topsoil	ESS1 ESS8	- Prioritise installation of new pipeline within the existing DSİ canal service road corridor where feasible, thereby minimizing direct disturbance to cultivated plots.	During excavation and reinstatement works	Construction Contractor	-Visual verification of topsoil stripping and segregation from subsoil -Storage conditions of topsoil stockpiles (separate and protected)	-Daily inspection during active trenching and excavation works -Daily monitoring of topsoil handling and storage practices	Construction Contractor Supervision (DSİ Representative)	Included in the Project Budget

ID	Expected Environmental and Social Risks and Impacts	Related WB ESSs	Proposed Mitigation Measures	Impact Reduction		Impact/Effect Monitoring			Cost of Mitigation and Monitoring
				Time / Frequency	Responsibility	Monitoring Parameter	Frequency	Responsibility	
	handling may result in reduced soil productivity and long-term impacts on crop yield. Impacts are expected to be localized and reversible with proper management.		- Separate stripping and storage of topsoil (minimum 20–30 cm or as encountered). - Strict segregation of topsoil and subsoil. - Limit stockpile height and apply compaction to prevent erosion. - Reinstatement of topsoil to original profile immediately after backfilling.			-Presence of works within the DSİ service road corridor where feasible -Quality of land reinstatement following backfilling	-Section-based monitoring during pipeline installation works -Inspection during reinstatement of agricultural lands		
SO-C 002	**Soil compaction caused by heavy construction machinery operating on agricultural land**, potentially reducing permeability and agricultural productivity. Risk is significantly reduced in sections where works are limited to the DSİ service road.	ESS1	- Restrict machinery movement to already defined working corridor. - Use existing DSİ service road as primary haul route where available. - Avoid unnecessary access to cultivated plots. - Post-construction soil loosening (sub-soiling) where compaction is observed.	Throughout construction phase	Construction Contractor	-Evidence of machinery movement outside the defined working corridor -Visual evidence of soil compaction within agricultural plots -Post-restoration soil condition following reinstatement works -Complaints from farmers regarding soil productivity or field condition	-Daily site supervision during active construction works -Continuous monitoring during machinery operations in agricultural sections -Inspection following restoration of each pipeline section -Continuous review of grievance records	Contractor DSİ Representative	Included in the Project Budget
SO-C 003	**Soil erosion from open trenches and temporary stockpiles**, particularly during rainfall events. While the terrain is generally moderate, localized runoff and sediment movement may occur.	ESS1 ESS6 ESS8	- Progressive excavation and backfilling to minimize exposed surfaces. - Stabilization of stockpiles if stored for extended periods. - Avoid leaving trenches open for prolonged periods. - Temporary diversion of runoff where necessary.	During excavation phase	Construction Contractor	-Evidence of sediment runoff from exposed soil or stockpiles -Stability of trench walls and temporary excavations -Condition and management of soil stockpiles -Evidence of sediment accumulation in nearby drainage paths	-Daily inspection during excavation works -Daily monitoring of trench stability and exposed surfaces -Inspection following rainfall events -Continuous monitoring during active excavation sections	Contractor Supervision (DSİ Representative)	Included in the Project Budget
SO-C 004	**Soil contamination due to accidental spills of fuel, oil or lubricants**, particularly within agricultural areas. Impacts are expected to be minor and manageable if promptly addressed.	ESS1 ESS3	- Refuelling only in designated areas (preferably on service road sections, or service stations). - Availability of spill kits at all active work areas. - Immediate removal of contaminated soil and disposal in accordance with Turkish regulations as hazardous waste.	Throughout construction phase	Construction Contractor	-Spill and incident records related to fuel, oil or lubricant leakage -Availability and condition of spill response kits at work areas -Designation and condition of refueling areas	-Daily site inspection during construction activities -Continuous monitoring during refueling operations -Incident-based reporting and follow-up inspection	Construction Contractor Supervision (DSİ Representative)	Included in the Project Budget

ID	Expected Environmental and Social Risks and Impacts	Related WB ESSs	Proposed Mitigation Measures	Impact Reduction		Impact/Effect Monitoring			Cost of Mitigation and Monitoring
				Time / Frequency	Responsibility	Monitoring Parameter	Frequency	Responsibility	
						-Evidence of contaminated soil and response actions taken	-Periodic review of spill response records		
Water Drainage									
WD-C 001	**Temporary disruption of irrigation water supply during construction**, particularly in sections where the new pressurized system replaces the existing open canal. In sections where irrigation services continue, by carrying out construction activities in sections / phases without coinciding with the irrigation season, the risk of irrigation interruption and temporary impacts on agricultural activities are reduced.	ESS1 ESS4 ESS10	- Conduct construction activities outside the irrigation season whenever possible - Implement phased construction to avoid full interruption along entire alignment. - Provide advance notice to farmers prior to planned interruptions. - Temporary bypass solutions where technically required.	Throughout construction phase	Construction Contractor in coordination with DSİ	-Records of construction sections implemented outside the irrigation season -Records of phased construction and sections with parallel irrigation operation -Duration of irrigation interruptions in affected sections -Complaints from farmers regarding irrigation disruption	-Continuous monitoring during construction in irrigation-sensitive sections -Section-based monitoring during pipeline installation works -Monitoring during periods of planned irrigation interruption -Continuous review of grievance records	Construction Contractor DSİ Representative	Included in the Project Budget
WD-C 002	**Disturbance of existing agricultural drainage patterns due to trench excavation**, potentially causing localized waterlogging or altered runoff in adjacent fields.	ESS1	- Maintain existing field drainage crossings during construction works. - Provide temporary drainage culverts across open trenches where required. - Ensure reinstatement of original drainage gradients following backfilling. - Avoid blockage of culverts and irrigation intakes.	During excavation and reinstatement	Construction Contractor	-Presence of water ponding or waterlogging in adjacent agricultural fields -Functionality of existing field drainage crossings during construction -Condition of temporary drainage culverts installed across trenches -Complaints or feedback from farmers regarding drainage problems	-Daily inspection during active trenching works -Monitoring during excavation and reinstatement activities -Inspection following rainfall events -Continuous review of grievance records	Construction Contractor Supervision (DSİ Representative)	Included in the Project Budget
WD-C 003	**Sediment transport to drainage channels during rainfall events**, especially from exposed soil stockpiles and trench walls.	ESS1 ESS3 ESS6	- Minimize exposed soil surfaces through progressive works. - Install temporary sediment control measures where runoff risk exists. - Avoid discharge of turbid water into natural or artificial drainage channels.	During excavation phase	Construction Contractor	-Visible sediment accumulation in drainage channels -Condition and effectiveness of temporary sediment control measures -Evidence of turbid water discharge from excavation areas	-Daily inspection during excavation works -Monitoring during active earthworks in sensitive drainage sections -Inspection following rainfall events -Continuous review of grievance records	Construction Contractor Supervision (DSİ Representative)	Included in the Project Budget

ID	Expected Environmental and Social Risks and Impacts	Related WB ESSs	Proposed Mitigation Measures	Impact Reduction		Impact/Effect Monitoring			Cost of Mitigation and Monitoring
				Time / Frequency	Responsibility	Monitoring Parameter	Frequency	Responsibility	
						-Complaints or observations related to sediment movement in nearby fields			
WD-C 004	**Accumulation of water in open trenches**, potentially causing localized flooding or instability, particularly in sections without service road corridor and during rainfall events.	ESS1	- Avoid leaving trenches open for extended periods. - Implement controlled dewatering where groundwater or storm water accumulates. - Pump water in a controlled manner to prevent erosion or downstream sedimentation.	During trench excavation	Construction Contractor	-Presence of standing water in open trenches -Dewatering activities and records where pumping is required -Stability of trench walls under wet conditions -Evidence of uncontrolled discharge or erosion from pumped water	-Daily inspection during active trench excavation -Monitoring during dewatering operations (if applicable) -Inspection following rainfall events -Continuous monitoring in sections with groundwater or stormwater accumulation	Construction Contractor Supervision (DSİ Representative)	Included in the Project Budget
WD-C 005	**Long-term positive impact: improved water use efficiency through transition from open canal to pressurized closed system**, reducing seepage losses, evaporation and uncontrolled withdrawals.	ESS1	- Proper commissioning and pressure testing. - Routine inspection and maintenance of valves and hydrants. - Monitoring of leakage rates and efficiency.	Commissioning following construction phase	Construction Contractor	-Leakage records identified during pressure testing and commissioning -Inspection records of valves, hydrants and pipeline connections -Evidence of leaks or pressure loss during system testing -Maintenance and inspection records related to system integrity	-Monitoring during pressure testing and commissioning stage -Periodic inspection during commissioning phase -Continuous monitoring during system start-up and testing -Review of inspection and maintenance records during commissioning	Construction Contractor DSİ Representative	Included in the Project Budget
Waste Management									
WM-C 001	**Generation of excess excavated material during trenching works**, which may lead to uncontrolled dumping, visual impact or obstruction of agricultural land if not properly managed. Impacts are expected to be localized and temporary.	ESS1 ESS3	- Reuse excavated suitable material for backfilling as priority. - Temporary storage within defined working corridor (preferably along DSİ service road where available). - Transport surplus material to licensed disposal sites approved by local authorities. - Prohibit disposal in agricultural fields, drainage channels or natural depressions.	During excavation and backfilling works	Construction Contractor	-Volume of excavated material reused for backfilling versus disposed material -Disposal receipts and records from licensed disposal sites -Condition and management of temporary material storage areas	-Daily site supervision during excavation and backfilling works -Weekly review of disposal documentation and records -Continuous monitoring of storage areas during active construction -Incident-based inspection if	Construction Contractor Supervision (DSİ Representative)	Included in the Project Budget

ID	Expected Environmental and Social Risks and Impacts	Related WB ESSs	Proposed Mitigation Measures	Impact Reduction		Impact/Effect Monitoring			Cost of Mitigation and Monitoring
				Time / Frequency	Responsibility	Monitoring Parameter	Frequency	Responsibility	
						-Evidence of uncontrolled dumping in agricultural lands or drainage areas	uncontrolled dumping is suspected		
WM-C 002	**Mixing of topsoil with subsoil and construction waste**, reducing its suitability for agricultural reinstatement.	ESS1 ESS3	- Strict segregation of topsoil, subsoil and construction waste. - Clearly designated storage areas within corridor. - No disposal of construction debris within topsoil stockpiles.	During excavation and reinstatement	Construction Contractor	-Visual verification of segregated stockpiles (topsoil, subsoil, construction waste) -Evidence of mixing of construction debris with topsoil stockpiles -Condition and designation of temporary storage areas within the working corridor -Complaints or observations regarding improper soil or waste handling	-Daily inspection during active excavation and trenching works -Continuous monitoring of stockpile management during construction -Inspection during reinstatement of agricultural lands -Continuous review of grievance records	Construction Contractor Supervision (DSİ Representative)	Included in the Project Budget
WM-C 003	**Generation of construction waste such as concrete debris, scrap metal, packaging materials and pipe off-cuts**, which may cause soil contamination or visual nuisance if improperly handled.	ESS1 ESS3	- Separate collection of recyclable materials (metal, plastic). - Temporary storage in designated areas. - Disposal through licensed waste contractors. - Removal of all debris from agricultural lands before handover.	Throughout construction phase	Construction Contractor	-Condition of construction waste storage areas -Waste transfer records and documentation from licensed waste contractors -Segregation of recyclable materials (metal, plastic, packaging) -Site cleanliness and removal of debris from agricultural lands before handover	-Weekly inspection during construction phase -Monitoring prior to handover of each completed pipeline section -Periodic review of waste transfer documentation -Continuous monitoring of site housekeeping practices	Construction Contractor DSİ Representative	Included in the Project Budget
WM-C 004	**Generation of hazardous waste (e.g., waste oil, used filters, contaminated absorbents)**, posing risk of soil and water contamination.	ESS1 ESS3	- Collection and storage in sealed, labelled containers on impermeable surface. - No maintenance within cultivated fields; use already designated areas (preferably on service road sections, temporary site facilities, or service stations). - Disposal via licensed hazardous waste contractors in accordance with Turkish regulations.	Throughout construction phase	Construction Contractor	-Presence and condition of hazardous waste storage containers (sealed and labelled) -Waste transfer forms and records from licensed hazardous waste contractors -Evidence of oil stains or contamination on soil at work areas	-Daily visual inspection during construction activities -Monthly review of hazardous waste documentation and transfer records -Continuous monitoring of storage areas during active works -Incident-based inspection if spill or	Construction Contractor Supervision (DSİ Representative)	Included in the Project Budget

ID	Expected Environmental and Social Risks and Impacts	Related WB ESSs	Proposed Mitigation Measures	Impact Reduction		Impact/Effect Monitoring			Cost of Mitigation and Monitoring
				Time / Frequency	Responsibility	Monitoring Parameter	Frequency	Responsibility	
						-Condition of designated areas used for equipment maintenance and refuelling	contamination is suspected		
WM-C 005	**Domestic waste generation from construction personnel**, potentially leading to littering within agricultural land or drainage channels.	ESS1 ESS3	- Provision of adequate waste bins at work fronts and site facilities. - Regular collection and disposal to municipal waste system. - Prohibition of open burning.	Throughout construction phase	Construction Contractor	-Availability and condition of waste bins at work fronts and site facilities -Evidence of littering in agricultural lands or drainage channels -Records of domestic waste collection and disposal to municipal system -Evidence of compliance with prohibition of open burning	-Weekly inspection during construction phase -Continuous monitoring of site cleanliness during active works -Periodic review of waste collection records -Incident-based inspection if improper disposal or burning is observed	Construction Contractor; Supervision (DSİ Representative)	Included in the Project Budget
WM-C-006	**Generation of domestic wastewater from construction personnel during construction activities (e.g., sanitary use, washing). If improperly managed, wastewater may lead to localized soil contamination or unhygienic conditions within the work areas.**	ESS1 ESS3	-Provision of adequate sanitary facilities (portable toilets or connection to existing sewerage network where available) at construction work fronts and site facilities. -Ensure regular maintenance and periodic emptying of portable sanitary units by licensed service providers. -Prohibit discharge of untreated wastewater to agricultural land, drainage channels or surface waters. -Where feasible, ensure connection of site facilities to the existing municipal sewerage infrastructure serving nearby settlements.	Throughout construction phase	Construction Contractor	-Availability and condition of sanitary facilities at work areas -Records of periodic emptying and maintenance of portable toilets (if used) -Evidence that wastewater is discharged to the municipal sewerage system or removed by licensed service providers -Absence of wastewater discharge to soil, drainage channels or agricultural land	-Weekly inspection during construction phase -Continuous monitoring of sanitation conditions at work areas -Periodic review of maintenance and service records -Incident-based inspection if leakage or improper discharge is observed	Construction Contractor Supervision (DSİ Representative)	Included in the Project Budget
WM-C-007	**Generation of equipment washing water from construction machinery (e.g., excavators, trucks or small equipment). Wash water may contain sediment, oil or grease, potentially leading to localized soil contamination or pollution of drainage channels if**	ESS1 ESS3	-Conduct equipment washing only in designated washing areas where feasible. -Use sediment traps or simple settling pits to remove suspended solids before discharge. -Prohibit direct discharge of washing water containing oil, grease or sediment to agricultural land, drainage channels or surface waters.	Throughout construction phase	Construction Contractor	-Presence of designated equipment washing areas -Condition and effectiveness of sediment traps or settling pits (if used) -Absence of uncontrolled discharge of wash water to soil or drainage channels	-Periodic inspection during construction phase -Additional inspection when equipment washing activities are conducted	Construction Contractor Supervision (DSİ Representative)	Included in the Project Budget

ID	Expected Environmental and Social Risks and Impacts	Related WB ESSs	Proposed Mitigation Measures	Impact Reduction		Impact/Effect Monitoring			Cost of Mitigation and Monitoring
				Time / Frequency	Responsibility	Monitoring Parameter	Frequency	Responsibility	
	discharged directly to the ground.		-Collect and properly manage oily residues generated during washing activities.			-Evidence of oil or grease contamination around washing areas			
WM-C-008	**Generation of concrete or cement-contaminated water (e.g., concrete truck wash water or cement slurry) during minor structural works such as valve chamber construction. Such wastewater may have high pH and may lead to soil or water contamination if improperly discharged.**	ESS1 ESS3	Establish designated, impermeable concrete washout areas within the construction site. Prohibit direct discharge of concrete wash water and cement slurry to soil, drainage channels or surface waters. Collect wash water in lined pits or containers and allow settling of solids prior to disposal. Reuse clarified water where feasible or dispose of it via licensed wastewater management systems. Collect and properly manage hardened concrete residues and dispose of them as construction waste. Ensure washing activities are carried out only in controlled areas away from agricultural land and water bodies	Throughout construction phase	Construction Contractor	-Presence and condition of designated concrete washout areas -Evidence of uncontrolled discharge of concrete wash water to soil or drainage channels -Condition of washout areas and management of hardened residues	-Inspection during concrete-related works -Periodic monitoring during construction phase	Construction Contractor Supervision (DSİ Representative)	Included in the Project Budget
Biodiversity									
BD-C 001	**Temporary and localized impacts on vegetation may occur along the canal alignment, service roads and working areas.**	ESS6	• Limiting the works, as far as possible, to the existing canal and road alignments • Avoiding unnecessary land clearing • Reinstating the stripped topsoil	Throughout construction phase	Construction Contractor	Observed damage to vegetation within the Sub-Project area	-Periodic monitoring during construction phase	Construction Contractor Supervision (DSİ Representative)	Included in the Project Budget
BD-C 002	**Adverse impacts on fauna may occur during construction activities**	ESS6	• Site personnel shall be provided with training on wildlife awareness and protection measures. • Vehicle speeds within the sub-project area shall be limited to 30 km/h. • All waste generated shall be managed and disposed of in accordance with applicable environmental legislation. • Feeding of domestic animals (e.g., cats and dogs) within or around the site shall be prohibited and food waste shall not be left in the area.	Throughout construction phase	Construction Contractor	Observed animal mortality within the Sub-Project area	-Periodic monitoring during construction phase	Construction Contractor Supervision (DSİ Representative)	Included in the Project Budget

ID	Expected Environmental and Social Risks and Impacts	Related WB ESSs	Proposed Mitigation Measures	Impact Reduction		Impact/Effect Monitoring			Cost of Mitigation and Monitoring
				Time / Frequency	Responsibility	Monitoring Parameter	Frequency	Responsibility	
			• Water resources shall not be polluted or adversely affected. • If an injured wild animal is encountered during works, the Nature Conservation and National Parks Ankara Provincial Directorate shall be notified. • Dust control measures shall be implemented, including watering of soil and unpaved roads. • Light pollution shall be minimized during night time works. • If wildlife is observed within the sub-project area, activities shall be temporarily suspended until the animal leaves the site.						
Occupational Health and Safety									
OHS-C 001	**Risk of trench collapse during excavation works (2.5–4.5 m depth)**, potentially resulting in serious injury or fatality. This represents one of the most significant construction risks of the Project.	ESS2	• Preparation and implementation of a detailed Excavation Safety Plan. • Use of trench shoring, benching or trench boxes where required based on soil conditions. • Daily inspection of trench stability. • Prohibition of worker entry into unsupported deep trenches. • Safe access/egress (ladders every 25 m or as per regulation).	During all trench excavation works	Construction Contractor	-Presence of trench shoring, benching or trench box systems -Records of daily trench inspection and stability checks -Evidence of safe access and egress points (ladders or ramps) -Compliance with prohibition of entry into unsupported trenches -Evidence of adequate spacing of ladders (approx. every 25 m or as required by regulation)	-Daily inspection before start of excavation works -Additional inspection after rainfall or ground disturbance -Continuous monitoring during trench excavation activities -Periodic supervision by DSİ representative during trenching works	Construction Contractor Supervision (DSİ Representative)	Included in the Project Budget
OHS-C 002	**Risk of falling into open trenches by workers or third parties**, particularly in sections near agricultural fields or access roads.	ESS2	• Installation of temporary fencing, warning tapes and signage along open trenches. • Adequate lighting where works extend into low-visibility conditions. • Securing trenches at end of each working day.	Throughout excavation phase	Construction Contractor	-Presence and condition of temporary fencing, warning tapes and signage around open trenches -Adequacy of trench protection measures (barricades, covers, guardrails)	-Daily site inspection during excavation works -Additional inspection at the end of each working day -Periodic checks during low-visibility or night works -Incident-based inspection following	Construction Contractor Supervision (DSİ Representative)	Included in the Project Budget

ID	Expected Environmental and Social Risks and Impacts	Related WB ESSs	Proposed Mitigation Measures	Impact Reduction		Impact/Effect Monitoring			Cost of Mitigation and Monitoring
				Time / Frequency	Responsibility	Monitoring Parameter	Frequency	Responsibility	
						-Evidence of adequate lighting in low-visibility conditions -Status of trench securing at the end of each working day	complaints or safety observations		
OHS-C 003	**Struck-by or caught-in hazards from heavy machinery and pipe handling operations.**	ESS2	- Defined machinery movement routes (preferably along DSİ service road where available). - Appointment of trained signallers during lifting operations. - Mandatory high-visibility clothing. - Exclusion zones around lifting and pipe-laying operations.	Throughout construction phase	Construction Contractor	-Compliance with PPE requirements (high-visibility clothing, helmets, safety boots) -Presence of trained signalers during lifting and pipe handling operations -Availability and implementation of lifting plans for heavy equipment and pipe installation -Presence of exclusion zones around lifting and pipe-laying areas -Compliance with defined machinery movement routes	-Daily supervision during construction works -Continuous monitoring during lifting and pipe handling operations -Periodic inspection of lifting plans and safety procedures -Incident-based inspection in case of near-miss or safety observation	Construction Contractor	Included in the Project Budget
OHS-C 004	**Exposure to overhead power lines and buried utilities**, posing electrocution or service interruption risks.	ESS2	- Identification and mapping of existing utilities prior to excavation. - Minimum approach distances maintained near overhead lines. - Coordination with relevant utility authorities before works.	Prior to and during works near utilities	Construction Contractor	-Availability of utility mapping and identification records prior to excavation -Compliance with minimum approach / safety distances near overhead power lines -Evidence of coordination with relevant utility authorities before works -Presence of warning signage or marking around identified utility lines -Records of utility clearance checks before excavation	-Prior to excavation works in relevant sections -Continuous monitoring during works near utilities -Spot checks during excavation activities -Additional inspection if unidentified utilities are encountered	Contractor; Supervision (DSİ Representative)	Included in the Project Budget

ID	Expected Environmental and Social Risks and Impacts	Related WB ESSs	Proposed Mitigation Measures	Impact Reduction		Impact/Effect Monitoring			Cost of Mitigation and Monitoring
				Time / Frequency	Responsibility	Monitoring Parameter	Frequency	Responsibility	
OHS-C 005	**Risk of flooding or water accumulation in trenches**, particularly during rainfall events or where groundwater is encountered, leading to drowning or instability hazards.	ESS2	- Avoid prolonged open trench sections. - Controlled dewatering where required. - Immediate evacuation of workers if trench stability is compromised. - Daily weather review and suspension of works during extreme rainfall.	During excavation phase	Construction Contractor	-Presence of standing water in trenches -Availability and functionality of dewatering equipment (pumps, drainage channels) -Records of weather risk assessment and daily weather review -Evidence of trench protection or worker evacuation during heavy rainfall	-Daily inspection during trench excavation works -Additional inspection after rainfall events -Continuous monitoring in sections prone to water accumulation -Incident-based inspection if flooding or instability is observed	Construction Contractor	Included in the Project Budget
OHS-C 006	**Traffic-related risks in sections adjacent to public roads or service roads**, including collision hazards.	ESS2	- Preparation of Traffic Management Plan. - Installation of warning signage and barriers near road sections. - Enforcing speed limits (max. 30 km/h) on site/access roads.	Throughout construction phase	Construction Contractor	-Presence and visibility of traffic signage and warning barriers near road sections -Compliance with site speed limits (max. 30 km/h on access roads) -Implementation of the Traffic Management Plan -Records of traffic-related incidents or near-misses	-Daily supervision during construction works -Continuous monitoring in sections adjacent to public or service roads -Incident-based inspection and reporting -Periodic review of traffic safety compliance	Construction Contractor Supervision (DSİ Representative)	Included in the Project Budget
OHS-C 007	**Relevant risks regarding GBV, SEA/SH, and the prohibition of child and forced labor.**	ESS2 ESS4	- Development and implementation of the Contractor's Labor Management Plan (LMP), including working conditions, fair treatment, non-discrimination, equal opportunity, vulnerable/disadvantaged individuals/workers, GBV, SEA/SH and the prevention of child and forced labor. - Development and implementation of the Contractor's LMP in accordance with the TIMPII LMP, covering working conditions, fair treatment, non-discrimination, equal opportunity, vulnerable/disadvantaged individuals/workers, GBV, SEA/SH and the prevention of child and forced labor. - Provision of written contracts for project workers detailing job	Throughout construction phase	Construction Contractor	-Signing of the Code of Conduct (CoC) by all personnel and subcontractors. -Provision of awareness and training sessions on SEA/SH and GBV for all employees. -Maintenance of grievance records / Grievance logs.	Before construction work begins and during the pre-construction phase weekly, monthly, and quarterly	Construction Contractor Supervision (DSİ Representative)	Included in the Project Budget

ID	Expected Environmental and Social Risks and Impacts	Related WB ESSs	Proposed Mitigation Measures	Impact Reduction		Impact/Effect Monitoring			Cost of Mitigation and Monitoring
				Time / Frequency	Responsibility	Monitoring Parameter	Frequency	Responsibility	
			descriptions, working hours, wages, rights and responsibilities, code of conduct and other relevant labor/operational procedures. - Information on GBV/SEA/SH service providers should be shared during public consultations. The sub-project GM should be designed to receive GBV/SEA/SH grievances anonymously and ensure they are addressed in a confidential and sensitive manner. Relevant sub-project staff should be trained in order to refer GBV survivors to existing identified service providers and ensure that they are provided services promptly. The Code of Conduct for workers will include the prohibition of GBV/SEA/SH. - All workers will be given training on avidance of discrimination and codes of conduct. The trainings given to the employees will be explanatory about the concepts of SEA/SH and GBV. At the same time, through the trainings, it will be ensured that workers learn the Grievance Mechanism of the sub-project and the steps to be followed in exercising their legal rights. Access to the Grievance Mechanism will be easy and effective. The grievance mechanism officer designated for the sub-project will be announced to all employees during the trainings to be given before starting work. There will be brochures and posters containing the grievance mechanism and the contact information of the authorized person in places such as the cafeteria, canteen and service areas used by the employees.						
Community Health and Safety									
CHS-C 001	**Risk of injury to third parties (farmers, local residents, children) due to open trenches along agricultural lands and access routes.** Impacts are	ESS4	- Installation of warning signage, barricades and safety tape along open trench sections and all over construction sites	Throughout excavation phase	Construction Contractor	-Presence and condition of barricades, warning signs and safety tape along open trench sections	-Daily inspection during active excavation works -End-of-day checks to confirm trench securing	Construction Contractor; Supervision (DSİ Representative)	Included in the Project Budget

ID	Expected Environmental and Social Risks and Impacts	Related WB ESSs	Proposed Mitigation Measures	Impact Reduction		Impact/Effect Monitoring			Cost of Mitigation and Monitoring
				Time / Frequency	Responsibility	Monitoring Parameter	Frequency	Responsibility	
	expected to be localized and temporary but may be significant if access control is inadequate.		- Securing trench sections at the end of each working day. - Provision of temporary crossing points for farmers and field access where necessary. - Public awareness notices in nearby settlements prior to works.			-Availability and condition of temporary crossing points for farmers and field access -Evidence that trenches are secured at the end of each working day -Records of community complaints related to access or safety	-Continuous monitoring in sections close to settlements or access routes -Incident-based inspection following complaints or safety observations		
CHS-C 002	**Temporary restriction of access to agricultural parcels**, potentially affecting farm operations and machinery movement. Risk is reduced in sections where works are limited to DSİ service road.	ESS4 ESS5 ESS10	- Prioritize use of DSİ canal service road corridor where feasible to minimize disruption of field access. - Maintain access routes to cultivated plots at all times. - Coordinate work schedule with landowners in advance. - Restore access immediately after pipe installation.	During trenching works	Construction Contractor in coordination with DSİ	-Availability and functionality of access routes to agricultural parcels -Evidence of coordination with farmers and landowners prior to works -Records of coordination meetings with DSİ and landowners -Farmer complaints related to restricted access or machinery movement	-Daily monitoring in active trenching sections -Periodic checks during works affecting agricultural access routes -Continuous monitoring until access routes are fully restored -Incident-based inspection following farmer complaints	Construction Contractor DSİ Representative	Included in the Project Budget
CHS-C 003	**Increased traffic risk due to movement of heavy construction vehicles on rural roads and agricultural tracks**, including potential collision with tractors, pedestrians or livestock.	ESS4	- Preparation and implementation of a Traffic Management Plan. - Use of DSİ service road for haulage where available to reduce interaction with public roads. - Installation of traffic warning signs at road crossings. - Enforcing speed limits (max. 30 km/h) on site/access roads. - Deployment of flagmen where required.	Throughout construction phase	Construction Contractor	-Presence and visibility of traffic warning signage at road crossings -Compliance with site speed limits (max. 30 km/h on access roads) -Implementation of the Traffic Management Plan -Records of traffic incidents, near-misses, or complaints from road users	-Daily supervision during construction works -Continuous monitoring in sections near public roads or agricultural tracks -Incident-based inspection and reporting -Periodic review of traffic safety compliance and records	Construction Contractor Supervision (DSİ Representative)	Included in the Project Budget
CHS-C 004	**Temporary increase in heavy vehicle movement through or near rural settlements**, potentially causing nuisance and safety concerns.	ESS4 ESS10	- Advance notification to village representatives (mukhtars) before works near settlements. - Avoidance of peak agricultural activity periods where practicable.	During works near settlements	Construction Contractor	-Records of advance notifications to village representatives (mukhtars) before works near settlements	-Monitoring during works near settlements -Periodic checks during material delivery activities	Construction Contractor DSİ Representative	Included in the Project Budget

ID	Expected Environmental and Social Risks and Impacts	Related WB ESSs	Proposed Mitigation Measures	Impact Reduction		Impact/Effect Monitoring			Cost of Mitigation and Monitoring
				Time / Frequency	Responsibility	Monitoring Parameter	Frequency	Responsibility	
			- Controlled scheduling of material deliveries.			-Delivery schedules for construction materials and equipment -Records of community complaints related to vehicle movement or nuisance -Communication logs with local stakeholders	-Incident-based inspection following complaints -Regular review of communication and delivery records		
CHS-C 005	**Dust and noise nuisance affecting nearby residents and farm workers**, particularly in sections without DSİ service road corridor.	ESS4 ESS10	- Implement previously defined dust and noise mitigation measures. - Increase watering frequency near sensitive receptors. - Restrict high-noise activities to daytime hours.	Throughout construction phase	Construction Contractor	-Records of community complaints related to dust or noise -Visible dust levels along construction corridor and near sensitive receptors -Compliance with working hours (daytime activities only) -Evidence of watering activities near settlements or sensitive receptors	-Daily inspection during construction works -Increased monitoring near settlements or sensitive receptors -Complaint-based inspection when grievances are received -Periodic review of dust suppression activities	Construction Contractor Supervision (DSİ Representative)	Included in the Project Budget
CHS-C 006	**Risk of damage to local roads or irrigation crossings due to heavy vehicle use.**	ESS4	- Pre-construction condition survey of critical access roads. - Repair of any damage caused by construction activities. - Use of designated access routes only.	Throughout construction phase	Construction Contractor	-Records of road condition surveys along access routes -Evidence of road damage caused by construction traffic -Records of repair or reinstatement works conducted by contractor -Compliance with use of designated access routes	-Periodic inspection during construction phase -Inspection prior to demobilization of construction activities -Additional inspection following heavy vehicle traffic or complaints -Incident-based inspection when road damage is reported	Construction Contractor Supervision (DSİ Representative)	Included in the Project Budget
CHS-C 007	GBV and SEA/SH risks due to labor influx	ESS2 ESS4	-Development and implementation of the Contractor's Labor Management Plan (LMP), including working conditions, fair treatment, non-discrimination, equal opportunity, vulnerable/disadvantaged individuals/workers, GBV, SEA/SH, and the prevention of child and forced labor.	Throughout construction phase	Construction Contractor	-Signing of the Code of Conduct (CoC) by all personnel and subcontractors. -Provision of awareness and training sessions on SEA/SH and GBV for all employees.	Before construction work begins and during the pre-construction phase weekly, monthly and quarterly	Construction Contractor Supervision (DSİ Representative)	Included in the Project Budget

ID	Expected Environmental and Social Risks and Impacts	Related WB ESSs	Proposed Mitigation Measures	Impact Reduction		Impact/Effect Monitoring			Cost of Mitigation and Monitoring
				Time / Frequency	Responsibility	Monitoring Parameter	Frequency	Responsibility	
			-Development and implementation of the Contractor's Labor Management Plan in accordance with the TIMPII LMP, covering working conditions, fair treatment, non-discrimination, equal opportunity, vulnerable/disadvantaged individuals/workers, GBV, SEA/SH, and the prevention of child and forced labor.			-Maintenance of grievance records / Grievance logs.			
CHS-C 008	Temporary Access Restrictions to Agricultural Parcels	ESS5	-Inform farmers and local mukhtars at least 15 days prior to any access restriction. -Provide temporary and safe access points/bypass roads for farming equipment. -Schedule heavy construction activities outside of peak harvesting periods.	Throughout construction phase	Construction Contractor	-Notification records (signed by mukhtars). -Visual check of bypass roads.	during the pre-construction phase weekly, monthly, quarterly	Construction Contractor Supervision (DSİ Representative)	Included in the Project Budget
CHS-C 009	Disruption of Irrigation Supply	ESS2 ESS4	-Installation of temporary bypass pipes. -24-hour rapid repair protocol	Throughout construction phase	Construction Contractor	-Continuous water flow status. -Number of accidental pipe damages and repair time.	during the pre-construction phase weekly, monthly, quarterly	Construction Contractor Supervision (DSİ Representative)	Included in the Project Budget
Stakeholder Engagement									
SE-C 001	**Shortcomings in communication processes with local communities, property owners, and relevant institutions may lead to mistrust of the project, misinformation, and social discontent. Failure to analyze stakeholder expectations, local needs, and social dynamics in the region has the potential to deepen social inequalities or lead to unforeseen negative consequences for affected communities.**	ESS10	-As part of process management, the Stakeholder Engagement Plan and Grievance Mechanism (GM) will be actively implemented. -Before field activities commence, local stakeholders will be provided with the necessary information regarding the work schedule and measures to be taken. -In this context, the contractor is responsible for appointing a liaison officer to facilitate dialogue with the public, managing potential conflicts between external personnel and the local community, and displaying signs containing contact information in visible areas. -Furthermore, compliance with international codes of conduct regarding employee relations with the local community will be strictly monitored, and deterrent sanctions, including dismissal, will be applied in case of violations.	Throughout construction phase	Construction Contractor	-Number of grievances -Number of incidents. -Near-miss records. -Informing local communities about activities. -Appropriateness and adequacy of warning signs.	Regular compliance reports	Contractor Supervision Consultant DSI PIU	Included in the Project Budget

ID	Expected Environmental and Social Risks and Impacts	Related WB ESSs	Proposed Mitigation Measures	Impact Reduction		Impact/Effect Monitoring			Cost of Mitigation and Monitoring
				Time / Frequency	Responsibility	Monitoring Parameter	Frequency	Responsibility	
Vulnerable and Disadvantaged Groups									
VDG-C 001	**Construction sites pose risks to both traffic safety and vehicle damage due to the presence of heavy machinery, loose ground materials, and uneven road surfaces. Temporary road closures during construction activities have the potential to restrict access to transportation networks for local communities and businesses. Furthermore, temporary disruptions arising from repair and maintenance processes may have an impact on public health. On a social level, ethical conduct rules and control mechanisms will be rigorously enforced to prevent risks such as sexual exploitation, abuse, or harassment (SEA/SH) in interactions between external personnel and the local population.**	ESS4 ESS10	-The use of access roads must be coordinated in a manner that does not jeopardize the safety of service vehicles in areas where transportation-based education is provided. -In this context, school administrations and local residents must be informed in advance regarding speed limits, warning signs, and heavy cargo shipments. -Any work that could obstruct access will be planned in advance; alternative routes and scheduling information will be provided to village heads. -Care will be taken to ensure that activities are carried out outside the irrigation season so as not to disrupt agricultural production; vehicle movements will be restricted to designated routes to protect vegetation. - Furthermore, to prevent noise pollution, working hours will be limited to 08:00-19:00, and a community liaison officer and complaint mechanism will be maintained for all stakeholders.	Throughout construction phase	Construction Contractor	-Number of grievances -Number of incidents. -Near-miss records. -Informing local communities about activities. -Appropriateness and adequacy of warning signs.	During the construction phase, weekly, monthly, and quarterly	Contractor Supervision Consultant DSI PIU	Included in the Project Budget
Land Acquisition									
LA-C 001	Construction activities are being carried out within an existing irrigation corridor and do not require large-scale land acquisition. However, temporary access restrictions to agricultural land may occur during trench excavation work.	ESS5 ESS10	Land acquisition must be completed before construction begins.	Throughout construction phase	Construction Contractor	-Number of participation activities. -Number of grievances. -Expropriation process update. -Number of ongoing and completed cases. -Number of lands acquired with consent. -Compensation payments. -Damage to assets and compensation/repair records.	During the construction phase, weekly, monthly, and quarterly	Contractor Supervision Consultant DSI PIU	Included in the Project Budget

IV.2 Operation Phase

During the operation phase, the Sub-project will function as a pressurized closed irrigation system replacing the existing open canal. Operational activities will primarily involve routine inspection, valve operation, periodic maintenance of pipeline sections and associated chambers, and monitoring of system performance.

Given the buried nature of the pipeline and the absence of continuous above-ground mechanical systems along most of the alignment, operational environmental impacts are expected to be minimal. No regular emissions to air, wastewater discharge, or routine solid waste generation are anticipated under normal operating conditions.

Noise generation will be limited to localized valve chambers and control structures, which are enclosed and situated away from dense residential areas. Occupational risks during operation are expected to be low and primarily associated with confined space entry, maintenance works, or emergency repairs in case of pipeline failure.

Overall, the operational impacts of the Sub-project are expected to be negligible to minor, localized and manageable through routine maintenance and adherence to standard safety procedures.

The operational phase Environmental and Social Management measures are summarized in the following Table 12.

Table 12. ESMP Matrix: Risks, Impacts, Mitigation, and Monitoring Table – Operation Phase

ID	Expected Environmental and Social Risks and Impacts	Related WB ESSs	Proposed Mitigation Measures	Impact Reduction		Impact/Effect Monitoring		
				Time / Frequency	Responsibility	Monitoring Parameter	Frequency	Responsibility
AQ-O 001	**No routine air emissions during normal operation.** Potential temporary dust emissions may occur only during maintenance or emergency repair works (e.g., pipe rupture).	ESS1 ESS3 ESS10	- Implement dust control measures during repair works (watering, controlled excavation). - Limit disturbed area during maintenance.	As required (maintenance or repair events)	DSİ / Irrigation Union	-Presence of dust during maintenance or repair activities -Implementation of dust suppression measures (watering, controlled excavation) -Complaint records from nearby land users or workers	-Event-based monitoring during maintenance works -Additional inspection if complaints are received	DSİ / Contractor (if engaged)
NL-O 001	**Localized and minor noise from valve chambers and control structures during operation**, particularly during opening/closing of valves. Valve rooms are enclosed and located away from dense settlements; therefore impacts are expected to be negligible.	ESS1 ESS4	- Maintain valve equipment in good mechanical condition. - Keep valve chambers closed during operation. - Restrict unauthorized access to operational facilities.	During routine operation	DSİ	-Equipment maintenance and inspection records -Condition of valve chambers and control structures -Community complaints related to operational noise	Periodic inspection during routine operation	DSİ
SO-O 001	**Risk of soil disturbance in case of pipeline leakage or rupture**, potentially affecting agricultural land. Impacts would be localized and temporary.	ESS1 ESS5	- Routine inspection and pressure monitoring to detect leaks early. - Immediate isolation of affected section in case of rupture. - Prompt repair and reinstatement of affected land.	Continuous monitoring; event-based repair	DSİ	-Leakage detection and system monitoring records -Response time to detected failures or leaks -Evidence of soil reinstatement and land restoration	-Continuous system monitoring -Event-based inspection following leak incidents	DSİ
WM-O 001	**Limited waste generation during maintenance activities**, including small quantities of scrap materials, replaced valves, gaskets or packaging.	ESS3	- Collection and proper disposal of maintenance waste. - Disposal via licensed waste contractors where required. - No disposal within agricultural fields.	As required (maintenance events)	DSİ	-Records of waste collection and disposal -Evidence of disposal through licensed waste contractors -Site cleanliness following maintenance activities	Event-based monitoring during maintenance works	DSİ
OHS-O 001	**Occupational health and safety risks during maintenance or confined space entry into valve chambers**, including slip, trip, electrical or confined space hazards.	ESS2	- Implementation of confined space entry procedures. - Use of appropriate PPE. - Lock-out/tag-out procedures during maintenance. - Adequate ventilation in enclosed chambers.	During maintenance activities	DSİ	-OHS procedure and confined space entry records -PPE compliance during maintenance works -Records of incidents, near misses, or safety observations	Monitoring during each maintenance activity	DSİ

ID	Expected Environmental and Social Risks and Impacts	Related WB ESSs	Proposed Mitigation Measures	Impact Reduction		Impact/Effect Monitoring		
				Time / Frequency	Responsibility	Monitoring Parameter	Frequency	Responsibility
CHS-O 001	**Community safety risks in case of uncontrolled leakage or sudden pipe burst**, potentially causing localized flooding of agricultural areas. Risk is expected to be low due to controlled pressurized system.	ESS4 ESS10	- Pressure monitoring and automatic shut-off mechanisms where applicable. - Rapid response and isolation of damaged sections. - Inform affected landowners promptly.	Continuous monitoring; event-based	DSİ	-System pressure monitoring records -Incident response and emergency intervention logs Records of communication with affected landowners	-Continuous monitoring of system pressure -Event-based review following incidents or failures	DSİ
GM-O 001	**Ineffectively operated Grievance mechanisms can trigger social unrest by leaving the concerns and demands of the local community unanswered. Unresolved feedback can undermine the bond of trust between project management and the community, paving the way for increased social tension and potential conflicts.**	ESS10	-A grievance mechanism covering Occupational Health and Safety and Public Health and Safety issues will be established during the operational period. -Up-to-date information about the grievance mechanism will be provided continuously.	Continuous monitoring; event-based	DSİ	-Grievance records -Information meetings and records	Continuous monitoring; event-based review	DSİ

CHAPTER V.
IMPLEMENTATION REGULATION, CAPACITY BUILDING, AND TRAINING

V.1 Roles and Responsibilities

The Project will be implemented by a Project Management Unit (PMU) within DSİ. To ensure effective E/S risk management in line with national regulatory and ESF requirements throughout the lifetime of the project, as per the Project's Environmental and Social Commitment Plan (ESCP), the PMU will include at least one qualified Environmental/OHS Specialist and one dedicated Social Specialist. Additionally, a Monitoring and Evaluation (M&E) Specialist will be assigned to track and report on overall project performance and compliance. DSI's existing staff from Department of Real Estate Expropriation and Investigation Planning and Allocation Department / Environment Branch Office will be assigned to the PMU as environmental, social and OHS specialists. If necessary, DSI will recruit E&S consultants. Additionally, under Türkiye Second Irrigation Modernization and Water Efficiency Project, DSI has started developing its own Institutional Environmental and Social Management System (I-ESMS). Once the I-ESMS is fully functional, the E&S risk management of the project will be implemented under the ESMS. The ESCP will include such provision of following the ESMS once it is fully functional.

Under the TIMPII Project, Construction Contractors will be required to strictly comply with the Project's E&S risk management plans and procedures, including simplified site-specific ESIAs (incorporating ESMPs), customized ESMPs and Labor Management Procedures (LMP). Additionally, Contractors shall ensure full compliance with the field-level requirements of the Stakeholder Engagement Plan (SEP), particularly regarding public announcements and the operationalization of the Grievance Redress Mechanism (GRM). To ensure overall alignment with the World Bank ESF and national legislation, these activities will be monitored by the PMU's dedicated Environmental/OHS and Social Specialists. They will be obliged to implement activities and measures as shown in ESMP that will be part of their construction contracts. Some of the the items to be included in the bidding documents will be including relevant ESF instruments, requirement of compliance with applicable national legislation and WBG standards and EHS guidelines, the list of Environmental, Social, Health and Safety documentation to be produced by the Contractor. This provision will be specified in the Construction Contractors' contracts. Construction Contractors will be expected to disseminate and create awareness within their workforce of E&S risk management compliance for their effective implementation.

Table 13 summarizes the roles and responsibilities regarding the implementation arrangements for E&S management.

Table 13. The Roles and Responsibilities Regarding the Implementation Arrangements for E&S Management

Level/ Responsible Party	Roles and Responsibilities
DSİ Project Management Unit (PMU)	• Provide support, supervision and quality control to E&S focal points and Construction Contractors. • Ensure that project activities do not fall within the WB Exclusion List. • Complete the Screening Forms for relevant sub-project activities. • Complete site-specific ESMPs for subproject activities, if applicable. • Coordinate the provision of technical assistance for the preparation of simplified site-specific ESIAs (including ESMPs) and other E&S assessment and management documents in accordance with World Bank ESG requirements. • Review and approve site-specific simplified ESIAs (including ESMPs) and other relevant E&S assessment and management documents. Keep documentation of all progress. • Oversee the overall implementation and monitoring of E&S mitigation activities, compile progress reports from subprojects and report to the World Bank on a quarterly basis. • Conduct training activities as indicated in Table 14. • Ensure that all tender and contract documents include all relevant E&S management provisions as per screening forms, customized ESMPs, simplified site-specific ESIA (including ESMPs) and other relevant E&S assessment and management documents. • Monitoring and visiting the construction sites of the projects below on a monthly/quarterly basis. • Monitor the implementation of the YYP by municipalities. • Prepare and implement the Project Operations Manual (POM). • To ensure the establishment and effective implementation of the complaint mechanism and to ensure coordination with Regional Directorates. • Notify the World Bank of any serious incident that may have significant adverse effects on the environment, affected communities, the public or workers within 48 hours of becoming aware of such incident and send the incident investigation report prepared by the construction contractor, together with the root cause analysis and corrective action plan, to the World Bank within 15 days. • After completion of subproject activities, it prepares the Subproject E&S Completion Report explaining the adequacy of E&S risk management measures and submits it to the World Bank.
Regional E&S Focal Points in DSI 5th Regional Directorates (Irrigation Associations)	• Oversee weekly implementation and report progress and performance to the EIS on a monthly basis. • Ensuring that Construction Contractors comply with the subproject's E&S risk management plans (ESMP, SEP, LMP and RP) and procedures as well as national legislation. • Monitor/assess whether the Construction Contractor's on-site E&S practices are in compliance with the E&S risk management tools prepared for the subproject. • Implement the SEP in coordination with the PMU. • To ensure the sustainability of the GM and, if possible, to receive, record and resolve complaints. • Educate communities on relevant E&S mitigation measures. • Promptly notify the EIS of any chance findings and any serious incidents that could have significant adverse effects on the environment, affected communities, the public or workers. • Be open and responsive to concerns raised by affected groups and local environmental authorities regarding the E&S aspects of subproject implementation. Consult with these groups during site visits as necessary.
Site Resettlement Focal Point of Municipalities / Institutions Appointed by Governorships	• Support the PMU in preparing resettlement plans. • Implement resettlement plans. • Coordinate with the PMU in conducting resettlement consultations. • Maintain records of resettlement-related complaints. • Prepare and submit quarterly resettlement plan progress reports.
Site Construction Contractors	• Comply with and implement the project's E&S mitigation measures as well as national legislation. • Take all necessary precautions to protect the health and safety of workers and community members and to prevent, minimize or reduce environmental damage resulting from subproject activities.

	• Monthly report on E&S performance to E&S Focal Points. • Prepare and implement Contractor Environmental and Social Management Plans (C-ESMPs) and other sub-management plans in accordance with E&S risk management tools prepared for sub-projects (customized ESMPs, simplified site-specific ESIAs (including ESMPs), etc.). • Prepare and implement site-specific LMP/Code of Conduct • To ensure that construction-related grievances are included in monthly implementation reports. • Monitor field activities daily as defined in the C-ESMP in accordance with the E&S risk management tools prepared for sub-projects. • Promptly notify the PMU and E&S Focal Points of any chance findings and serious incidents that may have significant adverse impacts on the environment, affected communities, the public or workers. Prepare an incident investigation report with root cause analysis and corrective action plan within 10 days and submit the report to the PMU.

World Bank, will conduct prior review of the ESIAs and ESMPs for all subprojects sub-projects and provide no objections to the E&S Screening Form set, customized ESMPs and site-specific simplified ESIAs (including ESMPs) to be prepared. The prior review of the subsequent E&S documents may be considered based on the adequacy of the documents of the first five sub-projects and/or complexity of a specific sub-project. The World Bank will review site-specific E&S compliance and monitoring reports. In case of non-compliances, complaints and incidents, the World Bank may require DSI to undertake additional screening, review and approval procedures.

V.2 Training and Capacity Development

The successful implementation of the project will depend on the effective implementation of the E&S risk management measures specified outlined in this ESMF. Training and capacity building for key stakeholders will be required to ensure effective implementation of the E&S assessment and management documents, including the ESMF, RF, LMP, SEP and site-specific E&S assessment and management documents. The initial training approach is outlined in Table 14 below. To the extent possible, E&S risk management training will be integrated into the project cycle and operational procedures. Given the need to raise awareness at multiple levels among project staff and stakeholders, a cascade model is recommended whereby knowledge is tracked from the national level to the site.

Table 14. Indicative Training and Capacity Building Approach

Level	Responsible Part	Audience	Topics / Themes that can be covered

National Level	Dsi E&S Team	PMU	• Requirements of WB ESF
			• ESMFand its approach: o Identifying and assessing E&S risks
			  ○ Selection and implementation of relevant E&S risk management measures/tools
			  ○ E&S monitoring and reporting

			○ Incident and accident reporting ○ Preparation, implementation and monitoring of the Resettlement Plan (RAP), Livelihoods Restoration Plan (LRP) and Ex-Post Social Audit (EPSA) ○ Handling of SEA/SH complaints
National Level	PMU	Other members of DSI-PUB	• OHS, including emergency preparedness, • Specific aspects of E&S assessment • Risk scanning and preparation of relevant E&S risk management measures/tools • Specific aspects of E&S risk management practice • Stakeholder engagement and grievance mechanism (GM) • Gender equality and gender-based violence • Handling of SEA/SH complaints • Code of Conduct (CDC) • E&S monitoring and reporting (including incident and accident reporting) • Preparation, implementation and monitoring of the Resettlement Plan (RAP), Livelihoods Restoration Plan (LRP) and Ex-post Social Audit(EPSA)
Local Level	PMU	E&S Focal Points E&S Construction Contractors Team	• World Bank ESF Requirements • ESMF and its approach: ○ Identifying and assessing E&S risks ○ Selection and implementation of relevant E&S risk management measures/tools ○ E&S monitoring and reporting ○ Incident and accident reporting • Implementation of the ESMP, including community health and safety • Implementation of the LMP including Code of Conduct, gender equality, OSH including SEA/SH and emergency preparedness and response, labor requirements for primary suppliers. • Preparation, implementation and monitoring of the Resettlement Plan (RAP), Livelihoods Restoration Plan (LRP) and Ex-Post Social Audit (EPSA) • Implementation of SEP and complaint/beneficiary feedback mechanism • Handling of SEA/SH complaints
Local Level	Social specialists of PMU	Resettlement focal point of the municipality/governorate responsible for land acquisition	• Preparation, implementation and monitoring of the Resettlement Plan (RAP), Livelihoods Restoration Plan (LRP) and Ex-post Social Audit (EPSA) • Implementation of the SEP and GM
Site Level	The contractor's E&S team	Sub-project workers	• Prevention of emergencies and arrangements for emergency preparedness and response, vehicle safety, safe use of vehicles, tools, machinery and equipment, OHS including working at heights, • Contractual E&S requirements (including GM) • Construction Contractor ESMP • Diverse and respectful workplaces, SEA/SH, Code of Conduct • Handling of SEA/SH complaints • Workers' Grievance Mechanism
Community Level	E&S Focal Points	Community members Persons whose land will be expropriated	• Community health and safety issues • SEA/SH issues, prevention, measures, handling of SEA/SH complaints • GM • Preparation, implementation and monitoring of the Resettlement Plan (RAP), Livelihoods Restoration Plan (LRP) and Ex-post Social Audit (EPSA)

CHAPTER VI.

STAKEHOLDER ENGAGEMENT

VI.1 Summary of Previous Stakeholder Engagement Activities

The first visit under the ESMP program took place on February 10, 2026 (Photograph 5), and the second field visit was conducted on February 14, 2026 (Photograph 6), during which meetings were held with neighborhood council members.. In this context, face-to-face meetings were held with 9 neighborhood mukhtars, and telephone interviews were held with 3 neighborhood mukhtars (Iymir, Cigir, Icoren) on February 16, 2026. Information about the Sub-project was provided, and thoughts on the baseline and potential impacts were gathered. The irrigation canal sub-project has been recorded as a positive development that has been long awaited by local residents. Each of the mukhtars had prior knowledge of the Sub-project.


Photograph 5. Site Visit on February 10, 2026


Photograph 6. Site Visit on February 14, 2026

VI.2 Sub-Project-Specific Stakeholder Mapping

Stakeholder mapping under the Kahramankazan Akıncı Irrigation Renovation Construction Sub-project has been conducted in line with the World Bank Environmental and Social Standards (particularly ESS10: Stakeholder Engagement

and Information Disclosure) and based on the sub-project-specific social risk and impact assessment. The purpose of the stakeholder mapping is to systematically identify individuals and institutions that may be directly or indirectly affected by the sub-project, to analyze their level of influence over the sub-project and the extent to which they may be affected, and to ensure that the stakeholder engagement program is structured on the basis of this analysis.

The following criteria were applied in the stakeholder identification process:

- Sub-project Area of Influence (AoI): Agricultural lands where irrigation rehabilitation works will be carried out and the associated settlements (Kahramankazan center and relevant neighborhoods).
- Level of Direct Impact: The extent of direct exposure to construction activities, temporary access restrictions, irrigation interruptions, or changes in land use.
- Level of Indirect Impact: Stakeholders who may be affected in the medium or long term by Sub-project outcomes (e.g., modernized irrigation system, increased productivity, water savings).
- Institutional Authority and Responsibility: Institutions and organizations with administrative, technical, or supervisory responsibilities in Sub-project implementation.
- Sensitivity and Vulnerability: Groups that may be disproportionately affected by the Sub-project due to their economic, social, or demographic characteristics.

Within this framework, stakeholders have been classified into three main groups:

- Parties directly or indirectly affected by the sub-project (e.g., farmers, landowners, irrigation association members),
- Other interested parties (e.g., public institutions, local administrations, professional chambers, NGOs),
- Disadvantaged or vulnerable individuals/groups (e.g., female heads of households, people with physical or mental disabilities, people over 65 living alone).

In conducting the stakeholder mapping, not only current users but also individuals and institutions with the potential to be affected during sub-project implementation (particularly during the construction phase) were included in the assessment. In addition, the impacts of structural changes resulting from the modernization of the

irrigation system (e.g., water distribution regime, operation model, maintenance responsibilities) on stakeholders were also analyzed.

Through this approach, the stakeholder engagement process has been designed not only for information disclosure purposes but also to enable early identification of risks, effective grievance management, and strengthening of social acceptance during sub-project implementation.

The Sub-Project's stakeholders are listed in Table 15.

Table 15. Sub-Project's Stakeholders

Stakeholders	Level of Interest	Level of Influence
Residents of nearest settlements (Emirgazi, Karalar, Kinik, Cimsit, Iymir, Yazıbeyli, Yassıoren, Orencik, Cigir, Gunbasi, Icoren, and Ucari)	High	Moderate
Vulnerable groups in nearest settlements	High	Low
Ankara Governorship	Moderate	Low
District Governor's Office of Kazan	Moderate	Low
Provincial Directorate of Disaster and Emergency	Moderate	Low
Provincial Directorate of Health	Moderate	Low
Provincial Directorate of Agriculture and Forestry	Moderate	Low
Provincial Directorate of Health	Moderate	Low
The Ministry of Environment, Urbanization and Climate Change	Moderate	Low
State Water Works 5th Regional Directorate	Moderate	Low
NGO's	Moderate	Low

VI.3 Stakeholder Engagement Programme

Within the scope of the Kahramankazan Akıncı Irrigation Renovation Construction Project, the Stakeholder Engagement Program has been prepared in line with the World Bank Environmental and Social Standards (particularly ESS10) to ensure a transparent, timely, inclusive, and continuous process of information disclosure and consultation throughout the Sub-project life cycle. The program aims to ensure that sub-project-affected parties (e.g., farmers, landowners/tenants, neighborhood residents) and other interested parties (e.g., public institutions, local administrations, irrigation associations/cooperatives) have access to sub-project-related information, are able to express their views and concerns, and that such feedback is systematically reflected in sub-project design and implementation decisions.

Stakeholder engagement is not considered as a one-off activity conducted solely during the ESMP preparation stage; rather, it is treated as a dynamic process to be sustained before construction, during construction, and throughout the operation phase, using different tools and levels of intensity. In this context, the Stakeholder

Engagement Program consists of the following components: disclosure and accessibility of information; structured consultation meetings and targeted interviews; regular collection of feedback and provision of responses; resolution through the grievance mechanism; and documentation and reporting of engagement activities. In implementing the program, communication practices specific to rural neighborhoods will be taken into account, and methods such as announcements through neighborhood units, face-to-face meetings, and one-on-one consultations where necessary will be prioritized.

The core principles of the program are early information disclosure, provision of clear and accurate information, non-discrimination, inclusion of vulnerable groups in the process, traceable recording of feedback, accountability, and continuous improvement. Within this framework, stakeholder engagement will be used as a key management tool to enable early identification and management of social risks that may arise under the sub-project, to strengthen social acceptance at the local level, and to ensure the effective implementation of the mitigation and monitoring measures set out in the ESMP.

TIMPII Stakeholder Engagement Plan (SEP) will be used for this sub-project, and all project parties (contractor, State Hydraulic Works (DSİ) PMT, DSİ PIU included) will be responsible for ensuring compliance with the TIMPII SEP. The Grievance Mechanism (GM) for the Kahramankazan Akıncı Irrigation Renovation Construction Project is designed in accordance with the Stakeholder Engagement Plan (SEP) of the Second Türkiye Irrigation Modernization and Water Efficiency Project (TIMPII). The project-based GM is described in detail in Section 6 of the TIMPII Stakeholder Engagement Plan .The steps completing the grievance mechanism and the description of this process are provided accordingly. There are specific steps comprising the complaint mechanism, and this process is detailed in Section VI.5.

VI.3.1 Purpose and Timing of the Stakeholder Engagement Program

The main goals of the stakeholder engagement program and the planned schedule for the various stakeholder engagement activities are to describe at what stages throughout the sub-project's life these activities will take place, and with what periodicity. Where decisions on public meetings, locations, and timing of meetings have not yet been made, information is provided on how people will be made aware of forthcoming opportunities to review information and provide their views.

The Stakeholder Engagement Program ensures preparation of an open profile of the stakeholders and clear sight of the relationships between the sub-project and the stakeholders. Meeting with all of the stakeholders listed in the matrixes on the underlined subject matters at the pre-determined timeline is crucially important. The frequency of the meetings can be increased when needed.

The following (see Table 16) stakeholder engagement plan represents key characteristics, preferred notification means and specific needs for stakeholder groups.

Table 16. Stakeholder Engagement Plan

Project Stage	Target Stakeholders[1]	Topic of Consultation / Message	Method Used	Responsibilities	Frequency / Timeline
Preparation	•Government authorities responsible for agricultural irrigation •Coordinating institutes responsible for agricultural irrigation •Universities and research institutes • NGOs at local or national level • Practitioners of the guidelines, manuals, standard operational procedures that will be prepared	• Scope of the Project • Anticipated E&S risks and impacts of the Project • Proposed mitigation measures	• Formal meetings • Correspondence by email	DSI	Before the appraisal of the Project
	• Farmers • Water User associations • Village cooperatives/associations • Mukhtars • NGOs at local or national level • Practitioners of the guidelines, manuals, standard operational procedures that will be prepared	• Scope of the subproject	• Focus group meetings • One-on-one interviews	DSI	During the design of the subprojects
	• Communities living within the area of irrigation facilities • Communities (and businesses) living within the area of impact of the rehabilitation of irrigation infrastructure • Farmers • Water User associations • Village cooperatives/associations • Mukhtars • NGOs at local or national level	• Anticipated E&S risks and impacts of the subproject • Proposed mitigation measures	• Public participation meeting	DSI	During the design of the subprojects
Implemetation	• Government authorities responsible for agricultural irrigation • Coordinating institutes responsible for agricultural irrigation • Universities and research institutes • NGOs at local or national level	• Progress of the Project • Main challenges encountered • Subprojects to be carried out next year	• Formal meetings	DSI	Annually
	• Media	• Outputs of the Project	• Press release • Website	DSI	Mid-term of the Project

VI.4 Resources and Responsibilities for the Implementation of Stakeholder Engagement Activities

In order to ensure the effective and sustainable implementation of the Stakeholder Engagement Program, institutional responsibilities have been clearly defined and the necessary administrative and financial resources have been integrated into the sub-project structure. This arrangement is intended to ensure that stakeholder engagement activities do not remain solely at the planning level, but are systematically incorporated into implementation, monitoring, and reporting processes.

The overall coordination of the program will be carried out by DSİ Project Management Unit (PMU). The PMU will be responsible for overseeing the implementation of the information disclosure, consultation, and feedback processes defined under the ESMP in compliance with the World Bank Environmental and Social Standards, and for ensuring that stakeholder engagement activities are included in periodic Environmental and Social (E&S) monitoring reports.

The DSİ 5th Regional Directorate will assume responsibility for field-level implementation. In this context, coordination with neighborhood units, organization of information meetings, maintenance of participation records, and assessment of feedback received will be carried out by the Regional Directorate. In addition, on-site review of grievances and provision of feedback to the relevant parties will also be undertaken within this scope.

The Construction Contractor will be responsible, in particular, for information disclosure activities related to the construction phase. Notification of the work schedule and temporary impacts, installation of information boards at the construction site, and operation of the worker grievance mechanism fall within the Contractor’s obligations. The Contractor will also regularly submit records of feedback and grievances received to DSİ.

During the operation phase, communication with irrigation system users will be conducted through the relevant irrigation association or user organization. Disclosure of the water distribution schedule, organization of seasonal information meetings, and recording of feedback related to the operation period will be key elements of this process.

Costs related to stakeholder engagement activities have been integrated into the project budget. Expenses associated with meeting organization, printed information materials, on-site information boards, and operation of the grievance mechanism will be covered under the Contractor's contract and the DSİ project budget. Human resource needs will be met through designated DSİ personnel and the Contractor's Environmental and Social (E&S) specialists.

Within this framework, the implementation of stakeholder engagement activities will be supported by a clear allocation of responsibilities, adequate resource allocation, and regular monitoring; and a transparent and accountable engagement process will be maintained throughout the project duration.

VI.5 Grievance Mechanism (GM)

In accordance with the international requirements, a grievance mechanism was established by DSI in order to receive, resolve and follow the concerns and complaints of the project affected communities. DSI PIU will be accessible for the stakeholders and respond to all grievances (complaints, requests, opinions, suggestions) at the earliest convenience. The most important point in the grievance mechanism is to ensure that all grievances are effectively received, recorded, resolved and responded to within a predetermined timeline and on the basis of their contents, by PIU and that the corrective/regulatory action to be taken is acceptable to both parties. Such responses to the grievances would be satisfactory for both parties and activities would be followed and the complainants would be informed on the outcomes of the corrective activities. Additionally, the mechanism should be designed to allow anonymous to be addressed and handled. In addition, the project GM will include a channel to receive and address confidential complaints related with Sexual Exploitation and Abuse/Sexual Harassment with special measures in place.

The GM official who will manage the Grievance Mechanism will be knowledgeable about the guidelines prepared by the World Bank to prevent sexual exploitation, abuse and harassment cases for the projects financed under construction works. Grievances of gender-based violence, exploitation and harassment can result in a culture of silence due to negative reactions from the community. For the avoidance of this, it is highly important that the stakeholders raise the grievances involving these issues about the sub-project anonymously. In addition, the authorities handling the grievances should

address such issues within confidence and by an unbiased approach . These grievances will be handled centrally at DSI, not only at the Contractor level. However, Contractor and DSI should still be trained and informed about the principles applicable to Sexual Exploitation and Abuse/Sexual Harassment (SEA/SH) and Gender Based Violence (GBV) cases.

In addition to DSI's communication tools, the following communication channels can be used to convey complaints.

- Points selected for grievance boxes (mainly for internal grievances) at the construction sites and for the mukhtars of the relevant neighbourhoods and/or grievance boxes,
- Direct contact with security guards and site managers at construction sites,
- Meetings and formal/informal consultations.

In the last 10 years Turkish citizens have adopted a centralized complaint system called Presidency's Communication Center (CIMER). People from all places and professions gained the habit of writing a letter of complaint by e-mail to CIMER. Therefore, it should be added to institutional grievance mechanisms. CIMER, which operates under Presidency's Directorate of Communications aim to strengthen the state-society relationship.

CIMER E Mail : www.cimer.gov.tr

CIMER Phone: Call Center 150 / +90 312 525 55 55

Foreigners Communication Center (YİMER)

YİMER has been providing a centralized complaint system for foreigners. YIMER will be available to Project stakeholders as an alternative and well-known channel for conveying their Project-related grievances and feedback directly to state authorities. Applications to YİMER can be made by the Internet (www.yimer.gov.tr), hotline (ALO 157), fax (+90 0312 920 0609), letter (Republic of Türkiye Directorate General of Migration Management, Çamlıca Mah. 122. Sok. No: 4 Yenimahalle/ANKARA) or personally at Republic of Türkiye Directorate General of Migration Management.The operational flow of Grievance Mechanism for the stakeholders is as follows:

1. Tools of information are prepared for grievance mechanism. Local people and stakeholders are informed. The tools are defined as follows:
    a. Web page

b. E-mail address
c. Brochure
d. Public meetings
e. Telephone
f. Frequently Asked Questions (Brochure, web page, bulletin, etc.)

2. There are multiple channels for submitting grievance and concerns. Grievances can be submitted by the following channels:
   a. Telephone (Call Center and units)
   b. Personal visit to DSI head office/branches
   c. Application through the grievance boxes (installed at the DSI Units)
   d. Through concerned public administrations (district governorship, municipality, muhtars)
   e. E-mail
   f. Meetings
   g. Through staff and local communication desk of DSI
   h. By written petition to DSI
   i. During site visits and miscellaneous
3. All the grievances received through the above channels are collected by Construction Contractor, GM Section.
4. The grievances received are recorded in the database and maintained.
5. Requests that require urgent remedy and/or support will be responded to and given support within the same day, and all outstanding grievances/requests will be recorded within 2 business days, reviewed and assessed within 10 business days, and concluded not later than 15 business days. Corrective actions will be taken to resolve the grievance.
6. Construction Contractor GM Officer prepares the draft response and submits it to the approval of Project Management.
7. A monitoring- evaluation system is established for grievances. Monitoring process of grievances is recorded in the monitoring and evaluation system.

The project will be implemented in accordance with the SEP prepared for the Turkey Second Irrigation Modernization And Water Efficiency Project (TIMPII).

Table 17. Grievance Mechanism Flow Chart

Step	Description of Process	Time Frame	Responsibility
Grievance uptake	Grievances can be submitted via the following channels:		Social specialist of the PMT

	E-mail Letter Telephone Complaint form to be lodged via any of the above channels Walk-ins may register a complaint in a grievance logbook at a facility or suggestion box		E&S Focal Points Social specialist of the Construction Contractor
Sorting, processing	Any complaint received is forwarded to Social specialist of the PMT / E&S Focal Points / Social specialist of the Construction Contractor / Resettlement Focal Point; logged in GM table; and categorized according to the following complaint types: Improper engineering application/design Disposal of hazardous waste Disposal of non-hazardous waste Dust/Mud Impacts on the habitat Noise Random spoil piles Illegal acquisition of land Impacts on the livelihood Community health and safety Damage to personal assets Disruption of public services Esthetics Inappropriate behavior of workers Occupational health and safety Working hours Other miscellaneous grievances	Upon receipt of complaint	Social specialist of the PMT Social specialist of the Construction Contractor
Acknowledgment and follow-up	Receipt of the grievance is acknowledged to the complainant by the channel preferred by the complainant	Within 7 received days of complaints	Social specialist of the PMT Social specialist of the Construction Contractor
Verification, investigation, action	Investigation of the complaint is led by the social specialist. A proposed resolution is formulated by Complaint Committee and communicated to the complainant by the channel preferred by the complainant. A grievance close-out form will be filled.	Within 10 working days	Complaint Committee composed of Project coordinator and grievance-related specialists of the PMT and/or the department
Monitoring and evaluation	Data on complaints are collected in Project GM and reported to the World Bank every six months together with the E&S monitoring reports	Every 6 months	Social specialist of the PMT
Provision of feedback	Feedback from complainants regarding their satisfaction with complaint resolution is collected with small surveys asking their satisfaction level and is logged in the Project GM. The details of this survey will be specified in the Project Operations Manual (POM).	Concurrently with the signing of the grievance close-out form by the complainant	Complaints related to construction works: Social specialist of the Construction Contractor Complaints related to Project design: Social specialist of the PMT
Training	The project workers will be trained on the Project GM so that they can direct the complainants, or they can convey the grievances to the social experts to be logged in the Project GM. Officials of the WUAs will also be trained. When necessary, specific trainings on how to handle SEA/SH complaints will be delivered to E&S focal points and social specialist of the PMT by a consultant.	Project workers: as part of initial job training Officials of the WUAs: prior to implementation	Project workers of contractors and subcontractors trained by the social expert of the contractor (monitored by social specialist of the PMT) Officials of WUAs trained by Social specialist of the PMT
Payment of reparations	Contractors will investigate and make the reparations	Variable according to type of damage	Social specialist of the Construction Contractor will monitor

ANNEX LIST