



*Yedikır Dam, Amasya*

*Photo: Kübra Özsoy, 2026*

# AMASYA SULUOVA RIGHT AND LEFT BANK IRRIGATION RENOVATION PROJECT

## ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

CNR-PLN-TIMPII-AMA-ESMP-001

**May 2026**  
**(Final Draft)**



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## LIST OF ABBREVIATIONS

<b>AADT</b>	Annual Average Daily Traffic
<b>ABPRS</b>	Address-Based Population Registration System
<b>Administration</b>	General Directorate of State Hydraulic Works (DSİ) – Department of Studies, Planning and Allocations
<b>AFAD</b>	Ministry of Interior Disaster and Emergency Management Presidency
<b>AKAB</b>	Amasya Solid Waste Union
<b>Aol</b>	Area of Influence
<b>BOTAŞ</b>	Pipeline Oil Transportation Corporation – Boru Hatları ile Petrol Taşıma Anonim Şirketi
<b>C-ESMP</b>	Contractor Environmental and Social Management Plan
<b>CFP</b>	Chance Find Procedure
<b>CHS</b>	Community Health and Safety
<b>CHSMP</b>	Community Health and Safety Management Plan
<b>ÇİMER</b>	Presidency Communications Center
<b>ÇINAR</b>	Çınar Engineering Consultancy Inc. / E&S Consultant
<b>C-LMP</b>	Contractor's Labor Management Plan
<b>CLO</b>	Community Liaison Officer
<b>CoC</b>	Code of Conduct
<b>CSMP</b>	Camp Site Management Plan
<b>CSO</b>	Civil Society Organizations
<b>DKMP</b>	General Directorate of Nature Conservation and National Parks
<b>DSİ/DSİ</b>	State Hydraulic Works
<b>DVIG</b>	Disadvantaged or vulnerable individuals or groups
<b>E&amp;S</b>	Environmental and Social
<b>EAP</b>	Emergency Action Plan
<b>EHS</b>	Environmental, Health, and Safety
<b>EIA</b>	Environmental Impact Assessment
<b>ELV</b>	End-of-Life
<b>EPRP</b>	Emergency Preparedness and Response Plan
<b>ESCP</b>	Environmental and Social Commitment Plan
<b>ESF</b>	Environmental and Social Framework
<b>ESHS</b>	Environmental, Social, Health and Safety
<b>ESMF</b>	Environmental and Social Management Framework
<b>ESMP</b>	Environmental and Social Management Plan
<b>ESMR</b>	Environmental and Social Monitoring Report
<b>ESF</b>	Environmental and Social Framework
<b>ESS</b>	Environmental and Social Standard
<b>GBV</b>	Gender-based violence
<b>GDoM</b>	General Directorate of Meteorology
<b>GHG</b>	Greenhouse Gas
<b>GM</b>	Grievance Mechanism
<b>GRM</b>	Grievance Redress Mechanism
<b>GSM</b>	Non-Sanitary Establishment
<b>IBA</b>	Important Bird Area



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<b>IPA</b>	Important Plant Area
<b>IT</b>	Information Technology
<b>KBA</b>	Key Biodiversity Area
<b>KGM</b>	General Directorate of Highways
<b>KML</b>	Keyhole Markup Language
<b>KPI</b>	Key Performance Indicator
<b>LMP</b>	Labor Management Procedure
<b>LRP</b>	Livelihood Restoration Plan
<b>LTV</b>	Long Term Value
<b>M&amp;E</b>	Monitoring and Evaluation
<b>MAPEG</b>	General Directorate of Mining and Petroleum Affairs
<b>MEDAS</b>	Municipal Water, Wastewater and Waste Statistics Database
<b>MoAF</b>	Ministry of Agriculture and Forestry
<b>MoEUCC</b>	Ministry of Environment, Urbanization and Climate Change
<b>MSDS</b>	Material Safety Data Sheet
<b>MTA</b>	General Directorate of Mineral Research and Exploration
<b>NA</b>	Not available
<b>NUTS</b>	Nomenclature of territorial units for statistics
<b>O&amp;M</b>	Operation and Maintenance
<b>OHS</b>	Occupational Health Safety
<b>OHSMP</b>	Occupational Health and Safety Management Plan
<b>OIP</b>	Other interested parties
<b>OIZ</b>	Organized Industrial Zone
<b>PAP</b>	Project-affected parties
<b>PDoEUCC</b>	Provincial Directorate of Environment, Urbanization, and Climate Change
<b>PGA</b>	Peak Ground Acceleration
<b>PMT</b>	Project Management Team
<b>PPE</b>	Personal Protective Equipment
<b>Project</b>	Amasya Suluova Right and Left Bank Irrigation Renovation Project
<b>RCIAP</b>	Regulation on Control of Industrial Air Pollution
<b>RF</b>	Resettlement Framework
<b>RP</b>	Resettlement Plan
<b>RPF</b>	Resettlement Plan Framework
<b>SEA</b>	Sexual Exploitation and Abuse
<b>SEA / SH</b>	Sexual Exploitation and Abuse/Sexual Harassment
<b>SEP</b>	Stakeholder Engagement Plan
<b>SH</b>	Sexual Harassment
<b>STV</b>	Short Term Value
<b>TCDD</b>	Turkish State Railways
<b>TEDAŞ</b>	Türkiye Electricity Distribution Corporation
<b>TEİAŞ</b>	Turkish Electricity Transmission Corporation Inc.
<b>TEM</b>	Trans-European Motorway
<b>TIMPİİ</b>	Türkiye Second Irrigation Modernization and Water Efficiency Project
<b>TMP</b>	Traffic Management Plan
<b>TurkStat</b>	Turkish Statistical Institute
<b>UK</b>	United Kingdom



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<b>UNESCO</b>	United Nations Educational, Scientific and Cultural Organization
<b>WAP</b>	Worker Accommodation Plan
<b>WB</b>	World Bank
<b>WBG</b>	World Bank Group
<b>WEEE</b>	Waste Electrical and Electronic Equipment
<b>WHO</b>	World Health Organization
<b>WMP</b>	Waste Management Plan
<b>WWTP</b>	Wastewater Treatment Plant
<b>YEDAŞ</b>	Yeşilirmak Electricity Distribution Company
<b>YİMER</b>	Foreigners Communication Center



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## EXECUTIVE SUMMARY

The Amasya Suluova Right and Left Bank Irrigation Renovation Project (“Project”) has been initiated by the General Directorate of State Hydraulic Works (DSİ) under the Ministry of Agriculture and Forestry to rehabilitate and modernize the existing irrigation infrastructure serving agricultural lands within the Suluova irrigation plain in Amasya Province. The Project is implemented under the Türkiye Second Irrigation Modernization and Water Efficiency Project (TIMP2), financed by the World Bank (WB) and executed by DSİ. The primary objective of the Project is to increase irrigation service reliability and water use efficiency by converting the existing open canal irrigation infrastructure into a closed pressurized pipeline system. This modernization will reduce water conveyance losses, improve operational efficiency, and enhance climate resilience in the Yeşilirmak Basin.

The existing irrigation system in the Suluova agricultural plain was constructed decades ago and primarily relies on open channel conveyance structures. Over time, these systems have experienced operational inefficiencies including seepage losses, evaporation, sedimentation, structural deterioration, and limited control over water distribution. These conditions have reduced the efficiency of irrigation services and increased pressure on regional water resources. In response to these challenges, the Project aims to replace the existing open canal network with a modern pressurized irrigation system, enabling more controlled and efficient irrigation practices such as sprinkler and drip irrigation where appropriate. The modernization is expected to significantly improve water management performance while supporting sustainable agricultural production in the region.

The Project area is located within the Yeşilirmak Basin in the Central Black Sea Region of Türkiye and covers agricultural lands within the districts of Suluova and Merzifon in Amasya Province as well as Havza District in Samsun Province. The irrigation command area covers approximately 15,304 hectares of gross agricultural land and 13,774 hectares of net irrigable area. The irrigation module has been designed as approximately 0.66 l/s/ha to ensure adequate water supply for agricultural activities. The irrigation area extends between Havza District in the north and Suluova District in the south, and all irrigation command areas are located within the boundaries of Amasya Province.

The Project includes the rehabilitation and modernization of several irrigation systems currently operating within the region. These include the Amasya Suluova Right Bank Irrigation System supplied by the Yedikır Dam, the Left Bank Irrigation System, the Right Bank Pumping Irrigation System (Eraslan), and the Saluca P1–P2 Pumping Irrigation System. The Yedikır Dam, located near Kapancı Ağılı Village in Suluova District, constitutes the primary water source of the irrigation scheme and will continue to operate without structural modification under the Project. In addition to the existing infrastructure, a new Havza Regulator will be constructed as part of the Project to supply additional irrigation water and improve water distribution efficiency within the scheme. Water will be transferred from the Havza Regulator to the existing Çeltek Regulator, which will continue to operate as part of the irrigation system.

In line with the World Bank Environmental and Social Framework (ESF), Yedikır Dam and associated diversion and regulation structures are considered Associated Facilities, as they are essential for the Project’s functionality. The details of the associated facilities and dam safety actions are given in Section 3.2 of the Project Description.

Within the scope of the Project, the irrigation system will be converted into a pressurized pipeline network consisting of S1, S2 and P1 main and backup pipeline systems. The total



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length of the pressurized pipeline network to be installed is approximately 437,800 meters. Pipe diameters will range between approximately Ø110 mm and Ø2700 mm depending on hydraulic design requirements. The pipeline system will replace the existing open canal conveyance structures and will significantly reduce water losses while improving flow control and operational efficiency across the irrigation network.

The Project is planned to be implemented during the period between 2026 and 2029 under the responsibility of the DSİ 7th Regional Directorate. Construction activities will primarily include trench excavation for pipeline installation, installation of hydraulic structures and irrigation infrastructure, and rehabilitation of associated facilities within the irrigation network. Construction activities will be conducted along narrow pipeline corridors within agricultural lands and existing irrigation alignments. Following pipeline installation, excavated materials will be reused for backfilling and site reinstatement wherever possible to minimize permanent land disturbance and maintain soil productivity.

Environmental and social risks associated with the Project have been assessed in accordance with the national legislation of Türkiye and the World Bank Environmental and Social Framework (ESF). Based on the Environmental and Social Screening conducted under the TIMPII Environmental and Social Management Framework (ESMF), the Project has been classified as having “Moderate Environmental and Social Risk”. This classification reflects the fact that the potential environmental and social impacts are expected to be largely temporary, localized, and reversible, and will occur primarily during the construction phase. These impacts may include temporary dust emissions, construction noise, soil disturbance associated with trench excavation, temporary disruption to agricultural activities, construction traffic, and limited risks of accidental spills from construction equipment.

In addition, potential biodiversity-related impacts are expected to be limited, localized, and temporary, primarily associated with construction activities within existing irrigation corridors. These may include minor habitat disturbance, temporary displacement of fauna species, and short-term disturbance to bird species associated with nearby habitats, including the Yedikır Wetland. However, given that the Project is located predominantly within modified agricultural habitats and does not involve significant habitat conversion or fragmentation, no significant adverse impacts on biodiversity are anticipated.

During the construction phase, the Project is expected to generate temporary and localized impacts associated with short-term disruptions to agricultural activities and changes in seasonal labor dynamics. Ensuring the effective participation of vulnerable groups, such as elderly individuals, female-headed households, persons with disabilities, individuals with limited literacy, seasonal agricultural workers, and non-Turkish speakers, in stakeholder engagement processes remains important. During the operation phase, the Project is expected to enhance irrigation efficiency, improve agricultural productivity, and strengthen the sustainability of livelihoods, thereby contributing to reduced rural out-migration and supporting long-term socio-economic stability.

Although the exact locations and extent of land acquisition have not yet been determined, land acquisition activities under the Project may result in certain temporary or permanent impacts. A Resettlement Plan (RP) will be prepared to identify and assess these impacts in line with the TIMPII Resettlement Framework (RF) and the requirements of Environmental and Social Standard 5 (ESS5). Within the framework of Project-specific RPs, all Project-Affected Parties (PAPs) will be identified regardless of their ownership status and measures will be taken to compensate all land users.



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During construction, excavation activities will be limited to narrow trench alignments required for pipeline installation. Topsoil stripping, temporary storage and reinstatement will be carried out in accordance with good construction practices to preserve soil quality and agricultural productivity. Construction traffic may result in temporary disturbances to nearby agricultural roads and access routes; however, these impacts will be managed through traffic management measures and coordination with local communities and irrigation users. Waste generated during construction will be managed in accordance with national waste management regulations and World Bank environmental guidelines.

The Project area is characterized primarily by agricultural land use and rural settlements. Construction activities will be conducted largely within existing irrigation corridors and agricultural lands, and no physical displacement of settlements is anticipated. Temporary disruptions to agricultural activities or access to farmland may occur during pipeline installation; however, these impacts will be managed through appropriate scheduling of construction activities and communication with local stakeholders. The Project is expected to generate significant long-term socio-economic benefits by improving irrigation reliability, increasing agricultural productivity, supporting climate-resilient farming practices, and strengthening water security for local communities.

Environmental and social risks during the construction phase will be managed through the implementation of mitigation measures defined in this Environmental and Social Management Plan (ESMP). The ESMP establishes the framework for identifying potential environmental and social impacts, defining mitigation and monitoring measures, and assigning institutional responsibilities for effective risk management throughout the Project lifecycle. The ESMP has been prepared in accordance with the requirements of the World Bank Environmental and Social Framework (ESF), the Environmental and Social Management Framework (ESMF) developed for TIMPİİ, and the applicable environmental and social legislation of Türkiye.

The ESMP includes mitigation measures addressing key environmental and social aspects such as occupational health and safety, community health and safety, waste management, pollution prevention, biodiversity protection, land use management, cultural heritage protection, and stakeholder engagement. Monitoring indicators and reporting procedures are also defined to ensure that mitigation measures are effectively implemented during construction and operation phases.

Institutional responsibilities for the implementation of environmental and social risk management measures are defined within the ESMP. The Project will be implemented by DSİ through the Project Management Team (PMT), which will be responsible for overseeing environmental and social performance throughout the Project lifecycle. The PMT will coordinate with contractors and relevant stakeholders to ensure that all mitigation and monitoring measures are properly implemented. Contractors engaged in construction activities will be responsible for implementing site-specific environmental and social management measures, including occupational health and safety procedures, waste management practices, and community health and safety measures.

During the operational phase, environmental and social risks are expected to be low and primarily related to routine inspection, maintenance, and repair activities associated with the irrigation system. The modern pressurized irrigation infrastructure will reduce water losses associated with open canal systems, minimize erosion risks, and support more efficient water use practices across the irrigation scheme. These improvements are expected to contribute to



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sustainable agricultural production and long-term resilience of water resources within the Yeşilirmak Basin.

Waste and wastewater generated during construction and operation will be managed in accordance with applicable national legislation. Domestic wastewater generated at temporary construction sites will be collected using impermeable septic tanks or mobile sanitary units equipped with self-contained wastewater collection reservoirs and transported by vacuum trucks to the licensed wastewater treatment plants (WWTP) (Suluova, Merzifon or Amasya). Solid and hazardous wastes will be properly segregated, temporarily stored, and transported to licensed waste management facilities.

The ESMP for the Project has been prepared by Çınar Engineering Consultancy Inc. (“ÇINAR” or “the Consultant”). The ESMP defines mitigation measures, monitoring requirements, and institutional responsibilities to ensure that environmental and social risks are effectively managed throughout the Project lifecycle.

The ESMP is supported by several appendices that provide detailed technical, environmental, and regulatory information relevant to the Project. Annex-1 presents the legal and institutional framework applicable to the Project, including relevant national legislation and international standards. Annex-2 includes official correspondence and institutional opinions obtained from relevant authorities, confirming the Project’s compliance with applicable regulatory and administrative requirements.

Annex-3 provides comprehensive environmental and social baseline information for the Project area and Aol. These baseline data establish the reference conditions for impact assessment and support the identification of appropriate mitigation and monitoring measures. Annex-4 presents the Waste Management Plan (WMP), which defines procedures for the proper handling, temporary storage, transportation, and disposal of waste generated during the construction and operation phases. Annex-5 outlines the Chance Find Procedure (CFP), which establishes measures to be followed in the event of encountering chance finds during construction, ensuring the protection of cultural heritage in accordance with national legislation.

Overall, the Amasya Suluova Right and Left Bank Irrigation Renovation Project represents an important investment in irrigation modernization and water efficiency in Türkiye. Through the implementation of the ESMP and the adoption of internationally recognized environmental and social standards, the Project aims to ensure that environmental and social risks are effectively managed while maximizing the long-term economic and environmental benefits for the region.



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## 1 INTRODUCTION

This Environmental and Social Management Plan (ESMP) has been prepared for the purpose of carrying out for Amasya Suluova Right and Left Bank Irrigation Renovation Project ("Project"), located within the boundaries of Amasya province, pursuant to the contract signed on 23.01.2026 between the General Directorate of State Hydraulic Works (DSİ) – Department of Studies, Planning and Allocations ("Administration") and Çınar Engineering Consultancy Inc. ("ÇİNAR" or "the E&S Consultant"), and the Commencement Protocol signed on 02.02.2026.

The ESMP provides a structured approach to identifying, assessing, and managing environmental and social risks and impacts throughout the project lifecycle, including design, pre-construction, construction and operation phases where applicable.

The preparation of this ESMP reflects Türkiye's commitment to ensuring that irrigation modernization investments are implemented in an environmentally sustainable and socially responsible manner, consistent with both national legislation and World Bank requirements.

### 1.1 Purpose and Scope

This ESMP has been prepared for the Amasya Suluova Right and Left Bank Irrigation Rehabilitation Project, which is implemented under Component 1 of the Second Irrigation Modernization and Water Efficiency Project (TIMPİİ) financed by the World Bank (WB) and executed by the General Directorate of State Hydraulic Works (DSİ).

The purpose of this ESMP is to ensure that all potential environmental and social (E&S) risks and impacts associated with the construction and operation phases of the Project are properly identified, assessed, mitigated, monitored, and managed in accordance with:

- the World Bank Environmental and Social Framework (ESF) and its Environmental and Social Standards (ESSs),
- the Environmental and Social Management Framework (ESMF) developed for the TIMPİİ, and
- the applicable national legislation of Türkiye.

The ESMP establishes the framework for implementing mitigation and monitoring measures that will minimize adverse environmental and social impacts and enhance positive outcomes throughout the Project lifecycle. It defines roles and responsibilities of relevant institutions, provides monitoring indicators, and outlines capacity-building requirements to ensure effective implementation.

The scope of this ESMP covers:

- assessment of baseline environmental and social conditions within the Project's area of influence,
- identification and evaluation of potential environmental and social (E&S) risks and impacts during pre-construction, construction, and operation phases,
- development of feasible mitigation and monitoring measures consistent with WB ESSs and national regulations,



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- establishment of mechanisms for occupational and community health and safety, waste and pollution control, biodiversity protection, land use and livelihood impacts, cultural heritage management, and stakeholder engagement,
- preparation of implementation and reporting arrangements, including grievance redress and monitoring mechanisms.

This ESMP is a site-specific management document that translates the principles and requirements defined in the TIMPII ESMF into actionable measures for the Amasya Suluova Project.

## 1.2 Background

### 1.2.1 Türkiye Second Irrigation Modernization and Water Efficiency Project (TIMPII)

The Türkiye Second Irrigation Modernization and Water Efficiency Project (TIMPII) is financed by the World Bank and implemented by the General Directorate of State Hydraulic Works (DSİ) under the Ministry of Agriculture and Forestry. TIMPII represents the continuation and scaling of Türkiye's long-term irrigation modernization agenda, aiming to address structural inefficiencies in aging irrigation infrastructure and to enhance climate-resilient water management practices.

The Project Development Objective of TIMPII is to improve irrigation service delivery and increase water use efficiency in selected irrigation schemes across Türkiye. Many of the irrigation systems targeted under TIMPII have been in operation for decades with limited rehabilitation investments and deferred maintenance. As a result, these systems have experienced physical deterioration, high conveyance losses, operational inefficiencies, and reduced reliability of water supply to farmers. In several schemes, declining service quality has negatively affected agricultural productivity and income stability.

TIMPII is designed to modernize existing irrigation networks rather than develop new irrigation areas. The Project focuses on reducing water losses (including seepage and evaporation), improving distribution efficiency, enhancing control and measurement systems, and increasing equity between upstream and downstream users. By enabling more efficient use of already allocated water resources, TIMPII supports increased agricultural productivity without creating additional pressure on basin-level water balances.

TIMPII consists of three main components:

- **Component 1 – Irrigation System Rehabilitation and Modernization:**

Finances the rehabilitation and modernization of selected irrigation schemes, including upgrading of transmission and distribution systems, conversion to pressurized systems where feasible, and improvement of operational infrastructure.

- **Component 2 – Institutional Support, Digital Irrigation and Smart Water Accounting:**



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Supports digital irrigation platforms, water accounting systems, and institutional capacity strengthening for DSI and irrigation unions. This component promotes data-driven irrigation management and improved governance in water allocation.

- **Component 3 – Project Management:**

Covers overall project coordination, procurement, financial management, environmental and social risk management, monitoring, and reporting in accordance with World Bank requirements.

In line with the World Bank Environmental and Social Framework (ESF), TIMPII integrates environmental and social risk management into all stages of project design and implementation. A Project-level Environmental and Social Management Framework (ESMF) has been prepared to establish procedures, institutional arrangements, and risk screening mechanisms applicable to all subprojects implemented under TIMPII.

Subprojects financed under TIMPII are therefore required to prepare site-specific environmental and social instruments—such as Environmental and Social Management Plans (ESMPs)—in alignment with the ESMF, national legislation, and relevant Environmental and Social Standards (ESSs).

Through infrastructure modernization, institutional strengthening, and digital transformation, TIMPII contributes to sustainable agricultural development, improved climate resilience, and long-term water security in Türkiye’s irrigation sector.



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## 2 LEGAL FRAMEWORK

The ESMP elaborates on the laws and regulations related to environmental, biodiversity and cultural heritage protection, pollution prevention, and both occupational and community health and safety, including traffic and transport.

National and international environmental and social legislation applicable to the Project, along with the identified differences or gaps between these frameworks, are presented in detail in Annex-1.

### 2.1 Major Gaps Between the Turkish EIA Regulation and WB ESSs

There are a number of differences or gaps between Turkish E&S and occupational health and safety (OHS) legislation and WB ESF and ESSs in impact assessment processes. Those differences or gaps and studies to fill the gaps have been summarized in Table 2-1 and Table 2-2.

*Table 2-1. Differences Between Turkish Legislation and WB Impact Assessment Process<sup>1</sup>*

Topic	WB ESF	Turkish Legislation
Project Categorization	Projects are classified into one of four classifications as High Risk, Substantial Risk, Moderate Risk or Low Risk taking into account relevant potential risks and impacts, such as the type, location, sensitivity and scale of the project; the nature and magnitude of the potential E&S risks and impacts; the capacity and commitment of the Borrower; and other areas of risks that may be relevant to the delivery of E&S mitigation measures and outcomes. Projects are screened on a case-by-case basis.	Projects are classified into two categories as Annex I and Annex II projects, which is mainly based on magnitude or capacity of planned investment, rather than associated risks and impacts. Projects are screened with respect to Annex I and Annex II of the Environmental Impact Assessment (EIA) Regulation. The Project is exempt from the EIA Regulation.
Scope of Assessment	Level of assessment varies with respect to significance of potential risks and impacts. All direct, indirect and cumulative environmental and social risks and impacts associated with project activities and associated facilities are assessed.	The assessment is made based on an outline of contents provided by Ministry of Environment, Urbanization and Climate Change (MoEUCC), which is comprised of estimation of mainly direct environmental impacts. Indirect and cumulative impacts are not taken into account in general. Level of detail on social baseline and assessment of social impacts is limited. There is usually limited focus on community health and safety and occupational health and safety and labor and working conditions. No concerns on disadvantaged or vulnerable and gender related issues.
Stakeholder Engagement	An integral part of E&S assessment is conducted in accordance with ESS10.	The Turkish EIA Regulation requires "pre-scoping" public consultation only for projects requiring an EIA (Annex-I), and only requires announcement of the

<sup>1</sup> The table has been formed by comparison of the Turkish Legislation and WBG ESF and ESSs.



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Topic	WB ESF	Turkish Legislation
	Continuous stakeholder engagement takes place throughout the life cycle of the project (proportionate to the nature, scale and impact magnitude of the project).	environmental assessment together with the justification.

*Table 2-2. Major Gaps Between ESSs and Turkish Legislation<sup>2</sup>*

ESSs	Gaps	Study to Fill the Gaps
ESS1	<ul style="list-style-type: none"> <li>▪ Social impact assessment is not completely integrated to the Turkish EIA and this results in the absence of proper social baseline, identification and assessment of the project induced social impacts including impacts on disadvantaged or vulnerable and gender related issues,</li> <li>▪ The absence of an executive summary and information on the legal and institutional framework in the Turkish EIA (Technical level of information in the non-technical summary required in the Turkish EIA may not meet WB requirements),</li> <li>▪ Limited or no requirement to cover cumulative impacts with other projects in the Turkish EIA,</li> <li>▪ Limited emphasis on the associated facilities,</li> <li>▪ Limited information regarding sub-management plans such as Water Quality Management Plan, Air Quality Management Plan, Noise Management Plan, Hazardous Waste Management Plan, Community Health and Safety Management Plan, etc.</li> </ul>	<p>Project specific environmental and social assessment studies (ESMP, SEP, RP, etc.) will be prepared in line with ESS1. In this respect, potential environmental and social impacts of the Project will be part of the assessment. The environmental and social assessment will include impacts of the associated facilities and potential cumulative impacts. Depending on the level of the impacts and proposed mitigation measures together with residual impact analysis, sub-management plans will be annexed to the ESMP.</p>
ESS2	<ul style="list-style-type: none"> <li>▪ In general, Turkish national laws and regulations regarding labor and working conditions satisfies ESS2 requirements.</li> <li>▪ Worker grievance mechanism is the main gap between national legislation and ESS2. Per the Turkish national legislation on labor and working conditions, there is no specific requirement related to grievance mechanism that allow workers to communicate their complaints to the employers.</li> </ul>	<p>Labor Management Procedure (LMP) is a component of the ESF instruments. LMP provides guidance on the required mitigation or management implementations such as workers' grievance mechanism (GM), code of conduct etc. stipulated by ESS2 and relevant WB EHS Guidelines. In line with the LMP developed for the Project, Project specific LMP will be developed by the Contractor, as relevant.</p>
ESS3	<ul style="list-style-type: none"> <li>▪ Most of the relevant national legislation regarding laws and regulations is in line with EU directives. There is no major gap between ESS3 and national legislative requirements. However, national EIA does not provide detailed management perspective on potential impacts, mitigation measures and residual impacts and monitoring. To restate, sub-management plans are not specifically defined in the national EIA process.</li> </ul>	<p>Sub-management plans will be developed as part of ESMP, for construction and operation phases of the project, if deemed necessary. These plans also provide requirement stipulated in relevant WB Environmental, Health and Safety (EHS) Guidelines.</p>

<sup>2</sup> The table has been formed with the help of previous table and TIMP11 ESMF.



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ESSs	Gaps	Study to Fill the Gaps
	<ul style="list-style-type: none"> <li>The specific studies regarding resource use and pollution prevention such as Water Source Vulnerability Analysis, Greenhouse Gas (GHG) estimations etc. are not included in national EIA process.</li> </ul>	
ESS4	<ul style="list-style-type: none"> <li>In general, there is no major gap in terms of policy level. Even so, project level management of specific risks such as labor influx, sexual exploitation and abuse and sexual harassment (SEA/SH) are the key gaps in terms of ESS4.</li> </ul>	<p>Management plans (such as Traffic Management Plan, Community Health and Safety Management Plan, Emergency Preparedness and Response Plan, etc.) will be prepared for the Project, as relevant and necessary, as a part of ESMP.</p> <p>The ESMP (and LMP) will include relevant provisions for SEA/SH risks and impacts.</p>
ESS5	<ul style="list-style-type: none"> <li>Turkish legislation on land acquisition mainly corresponds to requirements stipulated by ESS5. Yet, some differences include; preparation of a Resettlement Plan (RP), compensation at replacement costs, continuous consultation during RP implementation, impact assessment on informal land users, vulnerable groups and land-based livelihood restoration are the major gaps in terms of ESS5 requirements.</li> </ul>	<p>ESS5 will be applied fully into this Project in case a land acquisition process is necessary. In fact, a Resettlement Framework within the scope of the TIMP2 in line with the WB ESF has been prepared to provide a guidance to assess any risk of resettlement and to prepare Project specific RP in case a requirement.</p> <p>Project specific RP will be prepared in order to account for discrepancies with the national legislation. Particular concern will be given in the RP on vulnerable groups.</p> <p>Livelihood impacts of the Project on informal users will be assessed and Livelihood Restoration Plan (LRP) will be prepared as relevant to the Project.</p>
ESS6	<ul style="list-style-type: none"> <li>There is no gap in terms of policy level. Nevertheless, in some cases, the level of considerations of not legally protected sensitive ecological areas such as Key Biodiversity Areas in national EIA Process do not sustain the requirements in ESS6. On top of that, management and monitoring of potential impacts, mitigation measures and residual impacts are not detailed in general.</li> </ul>	<p>Within the scope of TIMP2, sub-projects which have significant impacts on biodiversity are considered ineligible. This Project does not have significant impacts on biodiversity since the Project area includes modified habitat consisting of agricultural lands and a Biodiversity Management and Action Plan is not required.</p>
ESS8	<ul style="list-style-type: none"> <li>Turkish national legislation on protection of cultural assets mainly satisfied the ESS8 for physical cultural heritage but fails to cover intangible cultural heritage.</li> </ul>	<p>A chance find procedure provided in Annex-5 will be followed during the construction phase of the Project.</p> <p>Project specific environmental and social assessment will take into consideration the significance of intangible cultural heritage that may be materially affected or put at risk as a result of the sub-project.</p>
ESS10	<ul style="list-style-type: none"> <li>Effective and transparent stakeholder engagement is the main gap in terms of ESS10. Within this scope, a Stakeholder Engagement Plan is required to identify the different stakeholders (project-affected parties and other interested parties including disadvantaged or vulnerable).</li> <li>Stakeholder engagement should be a continuous and well-documented process throughout project life cycle.</li> </ul>	<p>Stakeholder Engagement Plan (SEP) is in place as part of ESF documents. The Project SEP will apply to all subprojects implemented under TIMP2, ensuring a consistent framework for stakeholder engagement across the Project. For subprojects with higher or site-specific social risks and impacts, additional site-specific SEPs will be prepared and implemented as required.</p> <p>The SEP will remain operational throughout the implementation of the Project and will ensure timely disclosure of project-related information, inclusive stakeholder engagement, and the</p>



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ESSs	Gaps	Study to Fill the Gaps
		establishment and functioning of a project-level Grievance Redress Mechanism (GRM).

## 2.2 Summary of Official Permits, Opinions and Correspondence

The permits obtained, official opinions provided by institutions, and related correspondence for the Project are summarized in Table 2-3. The official letters are presented in Annex-2.

*Table 2-3. Summary of Official Permits, Opinions and Correspondence*

No	Institution	Date [dd/mm/yy]	Document No	Subject/Notes
1.	Amasya Provincial Directorate of Environment, Urbanization, and Climate Change (PDoEUCC)	10/05/2022	3573870	The Project was evaluated under the EIA Regulation and considered out of scope. No resettlement-related activity or Ministry-owned facility is involved. The Project received prior approval from the Samsun Commission for the Protection of Natural Assets (Decision dated 12.02.2020, No: 472). Compliance with applicable environmental legislation and necessary permits is required during implementation.
2.	Samsun Regional Council for the Protection of Cultural Assets	12/05/2022	2492742	Registered archaeological and cultural heritage sites (1st and 3rd degree) located within and in the vicinity of the Project area were identified through previous Regional Council decisions. Any intervention within these sites requires prior approval of the Regional Conservation Council, and chance find procedures in accordance with Law No. 2863 must be strictly applied during construction.
3.	Amasya Provincial Directorate of Culture and Tourism	27/04/2022	244993	It was confirmed that there are no existing or planned cultural or tourism-related facilities or projects within the Project area under the authority of the Provincial Directorate or the Museum Directorate.
4.	Amasya Museum Directorate	26/04/2022	2447995	In response to the request for an institutional opinion regarding the Amasya Suluova Right and Left Bank Irrigation Rehabilitation Project, the Museum Directorate stated that there are no existing or planned facilities or projects within the subject area under its authority. It was further indicated that the matter should be evaluated and responded to by the Provincial Directorate of Culture and Tourism.
5.	Amasya PDoEUCC	19/03/2020	E.4313	Regarding the Amasya Suluova Right and Left Bank Irrigation Rehabilitation Project, it was determined that the project does not fall within the scope of the Environmental Impact Assessment (EIA) Regulation (Official Gazette No. 29186, dated 25.11.2014) and is therefore considered "Out of Scope." It was further emphasized that all provisions of Environmental Law No. 2872 and related regulations must be complied with, and that necessary permits should be obtained in accordance with the applicable legislation. The decision of the Samsun Regional Commission



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No	Institution	Date [dd/mm/yy]	Document No	Subject/Notes
				for the Protection of Natural Assets (Decision No. 472, dated 12.02.2020) was attached.
6.	Amasya Provincial Directorate of Environment and Forestry (previous PDoEUCC)	25/06/2004	1592	Regarding the Amasya–Suluova Yüzbey Quarry, it was determined that the activity, which had commenced prior to the entry into force of the EIA Regulation dated 07.02.1993 and is integrated within the Amasya Central Yeşilirmak Rehabilitation Project, falls outside the scope of the EIA Regulation pursuant to the relevant provisions. Compliance with Environmental Law No. 2872 and all applicable regulations, as well as the implementation of necessary permits and environmental protection measures, was emphasized.
7.	Amasya Municipality – Directorate of Public Works	26/04/2022	2239433	In response to the request regarding the “Amasya Suluova Right and Left Bank Irrigation Rehabilitation Project,” it was stated that there are no existing municipal projects within the Project area under the responsibility of Amasya Municipality.
8.	Amasya Special Provincial Administration – Water and Sewerage Services Directorate	27/04/2022	20648	In response to the request regarding the Amasya Suluova Right and Left Bank Irrigation Rehabilitation Project, the existing facilities within the project boundaries under the authority of the Administration were digitally processed and shared as an annex. It was stated that the operation and maintenance of these facilities are carried out by the Ayrancı Group Villages Drinking Water Union, and coordination during the construction phase is required to ensure proper implementation.
9.	BOTAŞ – Natural Gas Operation and Market Transactions Regional Directorate	2022	E.2536404	Within the scope of the Amasya–Suluova Right and Left Bank Irrigation Rehabilitation Project, it was identified that the planned irrigation pipelines intersect at multiple points with existing BOTAŞ natural gas transmission pipelines (Vezirköprü–Bafra, Samsun–Ankara, and Amasya–Tokat lines) and are located in proximity to RMS/A and Take-Off facilities. It was stated that any works within the specified safety distances must comply with the BOTAŞ Technical Safety and Environmental Regulation (Official Gazette dated 13.08.2021, No. 31567), that prior approval must be obtained from BOTAŞ, and that crossing protocols must be signed and implemented under BOTAŞ supervision.
10.	DSI 7th Regional Directorate	08/03/2022	2094722	An official opinion was requested regarding the Amasya–Suluova Right and Left Bank Irrigation Rehabilitation Project to determine whether there are any existing or planned facilities within the Project area under the responsibility of relevant institutions. The request was addressed to Amasya Municipality, Samsun Metropolitan Municipality, Suluova Municipality, Havza Municipality, Ladik Municipality, General Directorate of Highways 7th Regional Directorate, Amasya Special Provincial Administration, Samsun Regional Council for



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				the Protection of Cultural Assets, Samsun Provincial Directorate of Culture and Tourism, TEİAŞ 4th Regional Directorate, Türkiye Electricity Distribution Corporation (TEDAŞ), and the General Directorate of Mining and Petroleum Affairs. Institutions were asked to review the attached project file (KML format) and provide their responses accordingly.
11.	Havza Municipality	22/03/2022	7139	In response to the request regarding the "Amasya-Suluova Right and Left Bank Irrigation Rehabilitation Project," it was stated that there are no existing or planned facilities within the Project area under the responsibility of Havza Municipality.
12.	General Directorate of Highways – 7th Regional Directorate	04/07/2022	868867	In response to the request concerning the Amasya-Suluova Right and Left Bank Irrigation Rehabilitation Project, it was stated that the Project area overlaps with several state road projects (Kavak-Havza Junction-Ladik State Road and Merzifon-Çorum Road and its connections to Amasya). Relevant digital project data and expropriation boundaries were shared as annexes.
13.	Ladik Municipality	08/04/2022	2332	In response to the request concerning the Amasya-Suluova Right and Left Bank Irrigation Rehabilitation Project, it was stated that there are no existing or planned facilities within the Project area under the responsibility of Ladik Municipality.
14.	General Directorate of Mining and Petroleum Affairs (MAPEG)	01/04/2022	2022101674	In response to the request regarding the Amasya-Suluova Right and Left Bank Irrigation Rehabilitation Project, spatial data of licensed mining areas intersecting with the Project boundaries were queried and shared in digital format (WGS84 datum, .shp and .kml). It was stated that the final opinion of the General Directorate will be provided following the finalization of the Project alignment.
15.	Ministry of National Defense – Fuel and NATO POL Facilities	2022	220260	In response to the request regarding the Amasya-Suluova Right and Left Bank Irrigation Rehabilitation Project, it was determined that the Project area falls within the impact zone of NATO fuel pipeline and facility infrastructure. It was requested that a site inspection be carried out in coordination with the relevant units (Sivas Construction and Real Estate Regional Directorate and ANT Suluova Operation Directorate) and that a technical report be prepared prior to implementation.
16.	Samsun PDoEUCC	2022	3158738	Within the scope of the Amasya-Suluova Right and Left Bank Irrigation Rehabilitation Project, it was stated that the Project is considered out of scope under the EIA Regulation (Official Gazette dated 25.11.2014, No. 29186). It was further indicated that the Project area includes the Yedikır Dam-Yedikugu Bird Paradise 1st Degree Natural Site (Decision dated 17.08.1989, No. 489) and also overlaps with the proposed Yedikır Dam Natural Site Area (No.



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				37) under the ETBAR study, for which registration procedures are ongoing. The necessary Project layout alignment has been performed accordingly. No interference will be made on the protected sensitive area.
17.	Samsun Governorate – Provincial Directorate of Agriculture and Forestry	2022	4817851	In response to the request concerning the Amasya–Suluova Right and Left Bank Irrigation Rehabilitation Project, it was stated that there are no existing or planned facilities within the Project area under the responsibility of the Provincial Directorate of Agriculture and Forestry
18.	Samsun Water and Sewerage Administration (SASKİ) – Wastewater Treatment Department	01/06/2022	36124	Within the scope of the Amasya–Suluova Right and Left Bank Irrigation Rehabilitation Project, it was stated that the Havza Wastewater Treatment Plant is located within the relevant area and has been operating since 2014. The facility holds a valid Environmental Permit issued by the MoEUCC and is monitored by the Ministry in terms of discharge criteria. The location of the facility was shared in KMZ format as an annex.
19.	Samsun Metropolitan Municipality – Department of Survey and Projects	31/03/2022	85011	Within the scope of the Amasya–Suluova Right and Left Bank Irrigation Rehabilitation Project, it was stated that a bridge project over the Tersakan Stream in Havza District had previously been completed and delivered to the 7th Regional Directorate of Highways. It was further noted that revisions are planned to certain hydraulic structures (weirs and canal walls) to accommodate flood discharge capacity. Additionally, the opinion of the Department of Agricultural Services (Letter dated 15.03.2022, No. E-64689463-804.01-81410) was attached.
20.	Samsun Metropolitan Municipality – Department of Agricultural Services	15/03/2022	81410	Within the scope of the Amasya–Suluova Right and Left Bank Irrigation Rehabilitation Project, it was identified that the Samsun Havza Mismilağaç Irrigation Facility (commissioned in 1987 and registered in the municipal inventory) is located within the Project area. The location plan, pump house, and related structures were shared in KMZ format as annexes.
21.	Suluova Municipality	17/03/2022	6229	In response to the request regarding the Amasya–Suluova Right and Left Bank Irrigation Rehabilitation Project, it was stated that the entire planned Project area is located within Suluova Agricultural Land. It was further indicated that there are no existing or planned projects within the Project boundaries under the responsibility of Suluova Municipality.
22.	Ministry of Agriculture and Forestry – 11th Regional Directorate	2022	4809787	Within the scope of the Amasya–Suluova Right and Left Bank Irrigation Rehabilitation Project, it was identified that the Yedikir Visitor Center and Bird Observation House, located at Yedikir Dam Lake, fall within the Project area. The relevant facilities were shared in KMZ format as annexes. It was further stated that there are no additional existing or planned facilities under



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No	Institution	Date [dd/mm/yy]	Document No	Subject/Notes
				the responsibility of the Directorate within the Project boundaries. The necessary Project layout alignment has been performed accordingly. No interference will be made on the protected sensitive area.
23.	Turkish State Railways (TCDD) – 4th Regional Directorate	23/03/2022	95524	Within the scope of the Amasya–Suluova Right and Left Bank Irrigation Rehabilitation Project, it was stated that the Project intersects with existing railway infrastructure. It was emphasized that all works must avoid damage to railway superstructure and infrastructure systems, ensure operational and structural safety, and comply with relevant standards and General Orders. Any underpass, overpass, or crossing (including pipelines and energy lines) requires prior approval from the Regional Directorate. It was further noted that the area overlaps with the “Samsun–Kalin Railway Project” and the “Suluova–Mis Flour Factory Junction Line Project,” and that railway corridor safety distances and relevant technical standards must be strictly observed. The necessary Project layout alignment has been performed accordingly. No interference will be made on the abovementioned structures and safety distances, and technical standards will be obeyed.
24.	Turkish Electricity Distribution Corporation (TEDAŞ) – 21st Regional Directorate (Samsun)	09/03/2022	321085	In response to the request concerning the Amasya–Suluova Right and Left Bank Irrigation Rehabilitation Project, it was stated that if there are any existing or planned electricity distribution facilities within the Project area under the investment program of the relevant distribution company, such information and related documents should be processed digitally (KMZ format) and submitted to DSI 7th Regional Directorate. The relevant units were notified for coordination.
25.	Yeşilirmak Electricity Distribution Company (YEDAŞ)	01/04/2022	94366	Within the scope of the Amasya–Suluova Right and Left Bank Irrigation Rehabilitation Project, it was stated that existing energy transmission and distribution lines and related facilities of the Company are located within the Project area and must be protected during implementation. Spatial data regarding existing and planned facilities were shared as annexes. Coordination with DSI 7th Regional Directorate was requested for any activities that may affect the electricity infrastructure.

There is no further correspondence with the institutions. The feedback received from these correspondences was deemed sufficient, and the Project layout and borders have been revised accordingly. The Project does not include any sensitive areas or archaeological sites.



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### 3 PROJECT DESCRIPTION

Amasya Suluova Right and Left Bank Irrigation Renovation Project refers to the renovation of the existing Amasya Suluova Right Bank Irrigation System (Yedikır Dam), the Amasya Suluova Left Bank Irrigation System, the Amasya Suluova Right Bank Pumped Irrigation System (Eraslan), and the Suluova Saluca P1-P2 Pumped Irrigation System.

As part of the Project, water will be transferred from the Havza Regulator in the Havza district to the Çeltek Regulator. The Havza Regulator will be newly constructed as part of this Project. The Çeltek Regulator already exists and will not be constructed.

Left and right bank irrigation will be carried out via two main pipelines, S1 and S2, from the Çeltek Regulator. In addition, pumped irrigation will be carried out via the P1 main pipeline from the Yedikır Dam. The Yedikır Dam is an existing dam located near the village of Kapancı Ağıllı, which is part of the Suluova district of Amasya province.

In the Amasya Suluova Irrigation area, all agricultural lands between the Havza district in the north and the Suluova district and Boğazköy settlement in the south will be irrigated. The entire irrigation area is within the borders of Amasya province. The total irrigation area is 15,304 ha gross and 13,774 ha net.

#### 3.1 Amasya Suluova Right and Left Bank Irrigation Renovation Project

One of the sub-projects to be implemented by the General Directorate of State Hydraulic Works (DSİ) under Component 1 of the Türkiye Second Irrigation Modernization and Water Efficiency Project (TIMPII) is the Amasya Suluova Right and Left Bank Irrigation Renovation Project. The Project is located in Suluova District of Amasya Province and falls under the responsibility of the DSİ 7th Regional Directorate.<sup>3</sup> The planned implementation period is 2026–2029.

The main objective of the Project is to modernize the existing open canal irrigation infrastructure serving the Suluova agricultural plain and convert it into a closed pressurized pipe system. This transformation is intended to reduce water conveyance losses, improve distribution efficiency, enhance operational performance and strengthen climate resilience within the Yeşilirmak Basin.<sup>4</sup> The modernization will also allow a transition from less controlled irrigation practices to a pressurized system enabling sprinkler and drip irrigation methods in suitable areas.

The region is characterized by transitional climatic conditions between Central Anatolia and the Black Sea climate. Summers are warm and relatively dry, while winters are cold and may include snowfall. These climatic conditions influence both agricultural production patterns and construction scheduling.

The Project area is located within the Yeşilirmak Basin in the Central Black Sea Region of Türkiye. The irrigation command area covers agricultural lands within Suluova (Amasya), Merzifon (Amasya) and Havza (Samsun) districts. It covers a total gross irrigation area of

<sup>3</sup> DSİ 7th Regional Directorate, Environmental and Social Screening Form – “Suluova Right and Left Bank Irrigation Renewal Project”, signed 05.11.2025.

<sup>4</sup> Amasya Suluova Irrigation Technical Report, April 2019.



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15,304 hectares and a net irrigation area of 13,774 hectares.<sup>3</sup> The irrigation module is designed as 0.66 l/s/ha. The irrigation area extends between Havza District in the north and Suluova District in the south, with all command areas located within Amasya Province.

The renovation works include the modernization of the Amasya Suluova Right Bank Irrigation System supplied by Yedikır Dam, the Left Bank Irrigation System, the Right Bank Pumping Irrigation System (Eraslan), and the Saluca P1–P2 Pumping Irrigation System.<sup>3</sup> The existing irrigation infrastructure consists primarily of open canal systems constructed decades ago, which currently experience conveyance losses and operational inefficiencies.<sup>4</sup> The renovation will replace these systems with a pressurized pipeline network.

The Yedikır Dam, which forms the primary water source of the irrigation scheme (also known as right bank), is an existing zoned earth fill dam located near Kapancı Ağılı Village in Suluova District. The dam has a height of 25 m above talweg and a maximum reservoir volume of 63.44 hm<sup>3</sup>. The irrigation outflow capacity is 8,844 l/s and the dam supplies a gross irrigation command area of 12,194 hectares.

Water diversion is also supported by the existing Çeltek Regulator, a fixed concrete structure with a drainage area of 720.80 km<sup>2</sup> and a channel capacity of 8 m<sup>3</sup>/s.<sup>3</sup> The diversion channel from the regulator to Yedikır Dam has a length of 12,730 m and is currently an open channel system. Improvement and rehabilitation works may be undertaken; however, no new regulator structure is planned.

In addition, a new Havza Regulator will be constructed within the scope of the Project.<sup>3</sup> This structure will supply 2,385 l/s of irrigation water and serve a gross irrigation area of 3,110 hectares (2,799 hectares net). The Havza Regulator also enables partial transition from pumped irrigation to gravity irrigation (as left bank) in certain sub-areas, thereby increasing energy efficiency and operational sustainability.

The pressurized pipeline network to be constructed under the Project consists of S1, S2 and P1 main and backup lines. The information regarding the pipes are summarized in Table 3-1. The total length of the pressurized pipeline network to be installed within the scope of the Project is approximately 437,800 m. Pipe diameters range between approximately  $\Phi$ 2700 and  $\Phi$ 110 depending on hydraulic design requirements.<sup>3</sup>

*Table 3-1. Lengths and Diameters of the Pipelines<sup>3</sup>*

Line	Main Pipe Length (m)	Backup / Spare Pipe Length (m)	Total Length (m)	Diameter Range
S1	26,700	268,300	295,000	$\Phi$ 2700 – $\Phi$ 110
S2	39,700	66,100	105,800	$\Phi$ 2700 – $\Phi$ 110
P1	11,750	25,250	37,000	$\Phi$ 900 (forced steel line)
<b>Total</b>	<b>78,150</b>	<b>359,650</b>	<b>437,800</b>	—

The P1 Pump Station will operate using water from Yedikır Dam and serve approximately 1,550 hectares of gross irrigation area. The station includes four pumps with a design flow rate of 1,041 l/s and an efficiency of 0.80. The forced pipe length is 850 m with a diameter of 900 mm (steel).<sup>3</sup>



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Construction activities will mainly involve trench excavation along pipeline routes, pipe laying, backfilling, concrete works for hydraulic structures, and mechanical and electrical installation at pumping stations. Excavation will be limited to pipeline corridors and, following installation, the land will be restored to its original condition. The construction duration is planned as approximately four (4) years.<sup>5</sup> The peak workforce during construction is expected to be approximately 200 personnel.<sup>5</sup> The operational life of the renovated irrigation infrastructure is expected to be approximately 40–50 years. The system is expected to be operated by the relevant Irrigation Union (Yedikır Dam Irrigation Union) under the supervision of DSI following completion of the renovation works.

Within the scope of the Project, one permeable/semi-permeable material area and one rock material area licensed by DSI have been identified to supply aggregate materials.<sup>3</sup> The rock material area covers approximately 138,000 m<sup>2</sup> with an estimated extractable volume of 1,380,000 m<sup>3</sup>. Step blasting methods will be applied with delayed capsules to control vibration and environmental impacts. Alternatively, materials may be procured from licensed quarries holding valid environmental permits and EIA decisions. These quarries are available to be used for the Project. However, the decision of using depends on the Construction Contractor. The Contractor may use/procure these quarries or other quarries which have necessary EIA certificates and Environmental Permits (if applicable).

The Contractor will establish a temporary construction site within or immediately adjacent to the irrigation command area, using rented land or available unused public parcels depending on local conditions. Temporary pipe storage areas will be identified within the irrigation project area, primarily on suitable treasury lands or, where not available, on privately rented parcels. In the event that treasury lands are used for temporary pipe storage areas or construction site, any formal or informal land users will be identified in advance, and no physical or economic displacement will take place unless livelihood impacts are duly assessed and appropriate compensation and/or assistance measures are provided in accordance with ESS5 requirements of the WB. All formal and informal right holders and / or users in the relevant areas will be informed in advance about their eligibility and entitlements, including vulnerable groups defined in line with land acquisition. Although the exact locations and extent of land acquisition have not yet been determined, land acquisition activities under the Project may result in certain temporary or permanent impacts. A Resettlement Plan (RP) will be prepared to identify and assess these impacts in line with the TIMPII Resettlement Framework (RF) and the requirements of ESS5. Within the framework of Project-specific RPs, all PAPs will be identified regardless of their ownership status and measures will be taken to compensate all land users.

In addition to the requirements related to land access and livelihood impacts under ESS5, all temporary construction sites and storage areas will also be subject to the environmental and community health and safety management provisions defined in this ESMP.

Prior to the establishment and use of any temporary construction site, the Contractor will ensure that potential environmental and social risks are identified and managed in line with ESS1, ESS3 and ESS4, including waste and wastewater management, prevention of soil and water contamination, dust and noise control, traffic and access management, and protection of community health and safety. These measures will be implemented through the Contractor's site-specific management plans/procedures and monitored by DSI

<sup>5</sup> DSI 7th Regional Directorate, Irrigation Branch Directorate – Technical Information Note provided for ESMP preparation (Amasya Suluova Irrigation Renovation Project), February 2026.



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Regional Directorate. The Contractor shall also be responsible for ensuring that all temporary construction sites and material storage areas are managed in accordance with the environmental and social requirements defined in this ESMP.

Essential facilities within the construction site will include the personnel rest and dining areas, site offices, machinery parking, workshops, material storage areas, and general utilities. Due to the proximity of the project to district centers of Suluova, Merzifon of Amasya Province and Havza of Samsun province and surrounding settlements, worker accommodation is not expected to be required, and personnel are anticipated to commute from nearby residential areas. However, if accommodation facilities are deemed necessary by the Contractor, a small-scale temporary lodging area may be established within the site, subject to compliance with national regulations and World Bank ESS2 requirements. The exact layout and size of the construction site will be finalized by the Contractor prior to mobilization, ensuring minimal land disturbance and efficient integration with existing access routes. Electricity required for construction site including office operations, lighting and workshop equipment might be supplied from the existing regional electrical distribution network serving the surrounding settlements.

Worker accommodation, if required during the construction phase, will be planned and managed in accordance with international good practice, including the guidance provided in “Workers’ Accommodation: Processes and Standards” (IFC and EBRD, 2009) as well as the WB ESS2 requirements. In line with the ILO Workers’ Housing Recommendation, any worker housing facilities will ensure safe, hygienic, and adequately sized living spaces equipped with appropriate water supply, sanitation infrastructure, and waste management systems. Accommodation facilities will be designed and operated to protect residents from environmental and health risks, provide essential amenities necessary for daily living, maintain adequate levels of privacy, and ensure that human living areas are appropriately separated from animal quarters. These requirements will apply to all types of worker accommodation that may be utilized under the Project, including temporary construction camps as well as shared accommodation facilities such as hotels, apartments, or hostels, where applicable.

Depending on the spatial needs of the construction schedule, multiple storage areas may be used simultaneously. Transportation of pipes and construction materials will be carried out via existing state roads and local access routes, with final delivery organized according to the sequencing of works. Construction logistics will rely on the regional road network connecting the project area to Amasya city and neighboring settlements. Materials, equipment and pipes will be transported along state highways and local access roads.

The sub-project may involve involuntary land acquisition. A Resettlement Plan (RP) will be prepared in line with the Project-level Resettlement Framework (TIMPII RF) and implemented prior to the commencement of construction activities. Tree clearing along irrigation routes will be conducted only after compensation payments are made to rightful owners.

According to the Environmental and Social Screening Form, the subproject (Amasya Suluova Right and Left Bank Irrigation Renovation Project) has been classified as Moderate Risk.<sup>3</sup> This classification reflects the limited and reversible nature of construction impacts, the absence of significant irreversible environmental effects, and manageable land acquisition and cultural heritage considerations. Sub-project specific ESMP, RP, SEP and



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LMP will be prepared and implemented in accordance with the TIMPII Environmental and Social Management Framework. However, this classification and risk rating might change during the project implementation. In accordance with the impact assessment of the subproject within this ESMP, it is concluded that the subproject's risk rating is Moderate.

### 3.2 Associated Facilities

The World Bank's Environmental and Social Framework (ESF) requires that the Environmental and Social Standards (ESSs) be applied, to the extent possible, to Associated Facilities. The Borrower is required to assess and demonstrate the extent of its control or influence over such facilities, taking into account legal, regulatory, and institutional considerations.

For the purpose of the ESF, Associated Facilities are defined as 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 the context of the Amasya Suluova Irrigation Renovation Project, existing upstream water infrastructure, including Yedikır Dam as well as associated diversion and regulation structures (such as Çeltek Regulator and other relevant hydraulic structures) are considered Associated Facilities. These structures are directly and significantly related to the Project and are essential for the viability of the irrigation system, as they provide the primary water source required for its operation.

These facilities are pre-existing infrastructure developed and operated by DSI and are not financed under the Project. Accordingly, the Project has limited direct control or influence over their design, operation, and maintenance.

The Yedikır Dam constitutes the primary water storage structure supplying the Project's right bank. The key technical characteristics of the dam and associated irrigation system are summarized in Table 3-2.

*Table 3-2. Technical Characteristics of Yedikır Dam and Associated Irrigation System*

Parameter	Description / Value
Dam Type	Zoned earthfill dam
Location	Kapancı Ağılı Village, Suluova District, Amasya
Height (from talweg)	25 m
Maximum Reservoir Elevation	517.55 m
Maximum Reservoir Volume	63.44 hm <sup>3</sup>
Irrigation Outflow Capacity	8,844 l/s
Gross Irrigation Area Supplied	12,194 ha
Irrigation Module	0.66 l/s/ha
Diversion Structure	Çeltek Regulator (existing)
Diversion Channel Length	12,730 m (open channel)



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<b>Parameter</b>	<b>Description / Value</b>
Structural Modification Planned	No structural modification foreseen within renovation scope. However, this will be confirmed following the dam safety assessment.
Dam Safety Assessment	Independent dam safety expert(s) to be engaged under ESF requirements

In line with the requirements of the ESF, dam safety due diligence will be undertaken for the relevant structures. One or more qualified Dam Safety Expert(s) will be engaged to assess the safety status of the dam, including review of available documentation, operational procedures, and inspection records. The findings of these assessments will be shared with the World Bank for review. DSİ will undertake all necessary actions in line with the World Bank Group (WBG) Dam Safety requirements following the dam safety assessment process. Based on the outcome of this process, any additional measures required to ensure dam safety and compliance with Good International Industry Practice (GIIP) will be identified and implemented, as necessary, in coordination with the responsible DSİ units.

At this stage, no structural modification of the dam body is foreseen within the scope of the Project. However, the detailed scope of potential dam safety measures, including any rehabilitation or additional interventions, will be determined following completion of the dam safety assessments and subsequent review by the World Bank.



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## 4 ENVIRONMENTAL AND SOCIAL BASELINE

In this chapter, environmental and social existing baseline conditions are summarized for the Project area and its Area of Influence (AoI), which will potentially be affected by the Project's construction and/or operation activities.

The details regarding the environmental and social baseline conditions are given in Annex-3 of this ESMP.

### 4.1 Environmental Baseline

#### 4.1.1 Geographical Location

The Project area is located in the Yeşilırmak Basin of the Central Black Sea Region, approximately 10 km northeast of the Amasya provincial center and 60 km southeast of Samsun provincial center. It is located within the boundaries of Suluova and Merzifon districts of Amasya province and Havza district of Samsun province. The geographical location map of the Project area is shown in Figure 4-1.



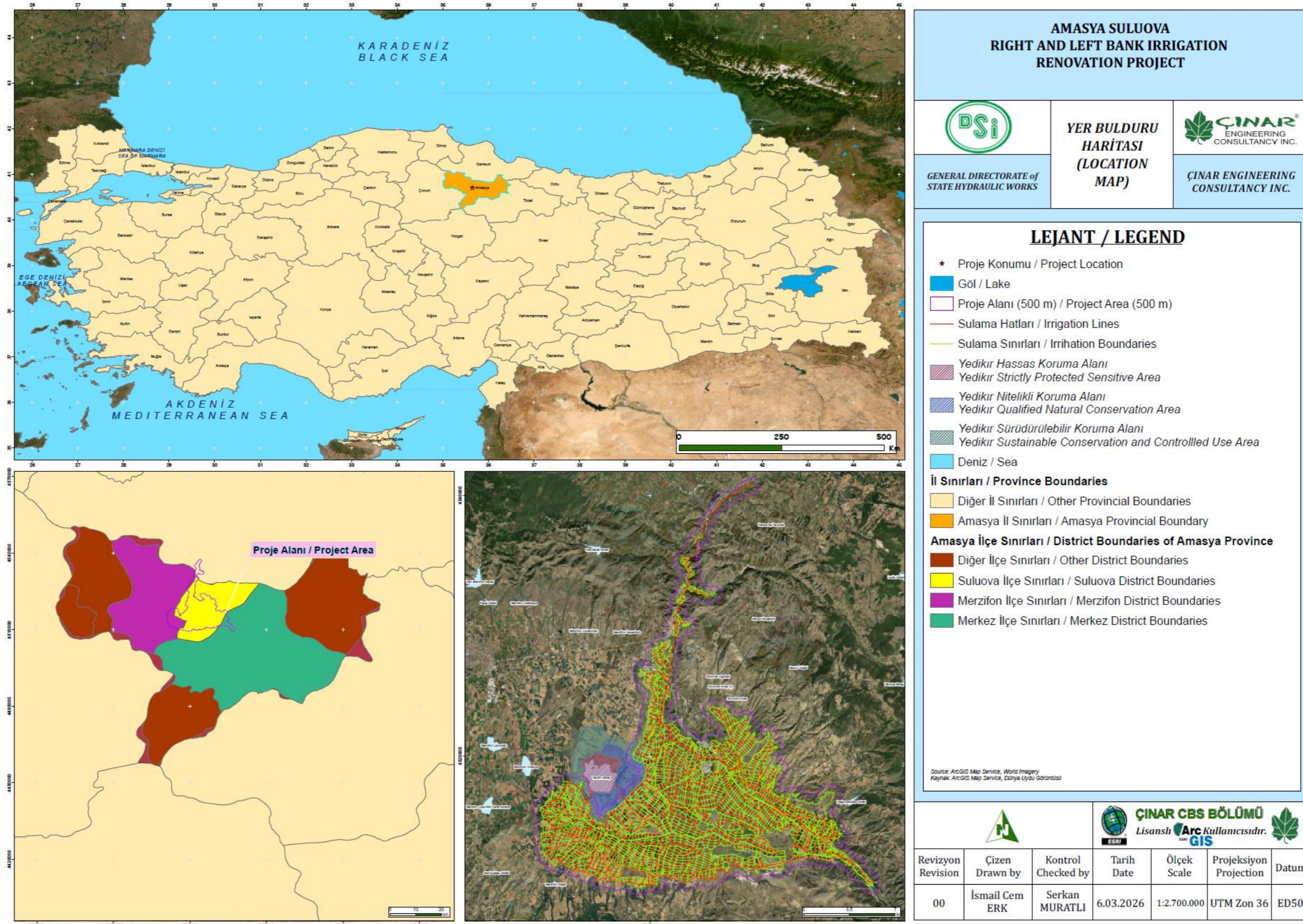


Figure 4-1. Geographical Location of the Project

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## 4.1.2 Geological and Hydrogeological Characteristics

### 4.1.2.1 Geological Characteristics

The geological characteristics of the Project area were assessed based on available literature and technical studies prepared by the General Directorate of Mineral Research and Exploration (MTA) and the General Directorate of State Hydraulic Works (DSİ).

The geology of the Project area reflects a complex stratigraphic succession ranging from the Paleozoic to the Quaternary. The oldest units consist of metamorphic rocks of the Tokat Metamorphics, including schist, phyllite, marble and metavolcanic rocks forming the regional basement. These units are overlain by younger sedimentary and volcano-sedimentary sequences including Jurassic neritic limestones and Eocene clastic formations composed of sandstone, marl, mudstone and conglomerate.

Upper stratigraphic levels are represented by Plio–Pleistocene continental deposits such as conglomerate, sandstone and mudstone, while Quaternary deposits consisting of slope debris and alluvial materials are widely distributed along river valleys and floodplains. In the Project area, unconsolidated alluvial deposits transported by the Tersakan Stream and its tributaries constitute the dominant surface geological unit.

Tectonically, the Project area lies within the Alpine–Himalayan seismic belt and is influenced by several regional fault systems. The Merzifon Fault, a segment of the Esençay–Merzifon fault system, passes directly through the Project area and represents the main structural feature controlling the local geological framework. According to the Türkiye Earthquake Hazard Map (2018), the area is located within a seismically active region with a peak ground acceleration value of approximately 0.450 g for a 475-year return period. Therefore, all structures to be constructed within the Project will comply with the Turkish Building Earthquake Regulation (2018).

The details and relevant maps are given in the Annex-3 of this ESMP.

### 4.1.2.2 Hydrogeological Characteristics

Hydrogeologically, the Project area is located within the Suluova Plain sub-basin of the Yeşilirmak Basin. Alluvial deposits along stream valleys constitute the main groundwater reservoirs in the region due to their relatively high porosity and permeability.

The hydrogeological conditions are largely controlled by the lithological properties of the geological units. Claystone- and marl-dominated formations such as the Tersakan and Yoncalı formations generally exhibit low permeability and behave as aquitards that restrict groundwater circulation. In contrast, fractured and locally carstified limestone units, particularly the Bilecik Limestone Formation, have higher permeability and function as aquifers with groundwater storage and transmission potential.

Quaternary alluvial deposits and slope debris are also permeable and therefore represent the main aquifer units within the Project area. Groundwater occurrence is primarily associated with these alluvial units and is hydraulically connected with nearby surface water systems.



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Field investigations conducted along the planned pipeline routes indicated that groundwater was not encountered in test pits excavated during preliminary surveys. However, groundwater inflow may occur locally where excavation depths fall below streambed levels. In such cases, appropriate drainage or pumping measures may be required during construction activities. Groundwater protection measures under the Project will comply with the Turkish Groundwater Law (Law No. 167) and the Regulation on the Protection of Groundwater Against Pollution and Degradation.

The details and relevant maps are given in the Annex-3 of this ESMP.

#### 4.1.3 Meteorological and Climatic Characteristics

The Köppen-Geiger map is globally used in climate studies. Amasya Province exhibits a transitional climate regime between the humid Black Sea (Cfa/Cfb) and the Mediterranean climate (Csa), with the central valley areas demonstrating hot and dry summer characteristics consistent with Csa classification<sup>6</sup>.

Moreover; Amasya Province 2024 Environmental Status Report<sup>7</sup> states that due to its geographical location in the Central Black Sea Region, Amasya experiences a transitional climate between the Black Sea climate and the continental climate. Summers are neither as dry as those of a typical continental climate nor as rainy as those of the Black Sea climate. Similarly, winters are not as mild as in the Black Sea climate, nor as harsh as in the continental climate. Overall, the province exhibits a transitional climatic regime between continental and Black Sea climatic characteristics.

According to General Directorate of Meteorology (GDoM)<sup>8</sup> Formal Climate Statistics, Between 1961 and 2025, Amasya recorded an average annual temperature of 13.7°C. The hottest month on average is July (23.9°C), closely followed by August (23.9°C), while the coldest month is January (2.7°C). The highest monthly average maximum temperature occurs in August (31.6°C), whereas the lowest average minimum temperature is observed in January (-0.7°C). The driest month is August (9.8 mm), followed by July (16.9 mm), indicating a pronounced summer dry period. The wettest month is December (54.2 mm), and the average annual total precipitation amounts to 461.9 mm. Overall, the data indicate a climate characterized by hot, relatively dry summers and cooler, wetter winters, reflecting transitional features between continental and maritime influences.

<sup>6</sup> Source: GDoM, Climate of Türkiye According to Köppen Climate Classification, January 2016 [https://www.mgm.gov.tr/FILES/iklim/iklim\\_siniflandirmalari/koppen.pdf](https://www.mgm.gov.tr/FILES/iklim/iklim_siniflandirmalari/koppen.pdf)

<sup>7</sup> Source: Republic of Türkiye, Amasya Governorship, Provincial Directorate of Environment, Urbanization and Climate Change. (2024). Amasya Province 2024 Environmental Status Report. [https://webdosya.csb.gov.tr/db/ced/icerikler/amasya\\_-cdr2024-20251118121746.pdf](https://webdosya.csb.gov.tr/db/ced/icerikler/amasya_-cdr2024-20251118121746.pdf)

<sup>8</sup> Source: GDoM, Formal Climate Statistics, Climate of Amasya <https://www.mgm.gov.tr/veridegerlendirme/il-ve-ilceler-istatistik.aspx?k=&m=AMASYA>



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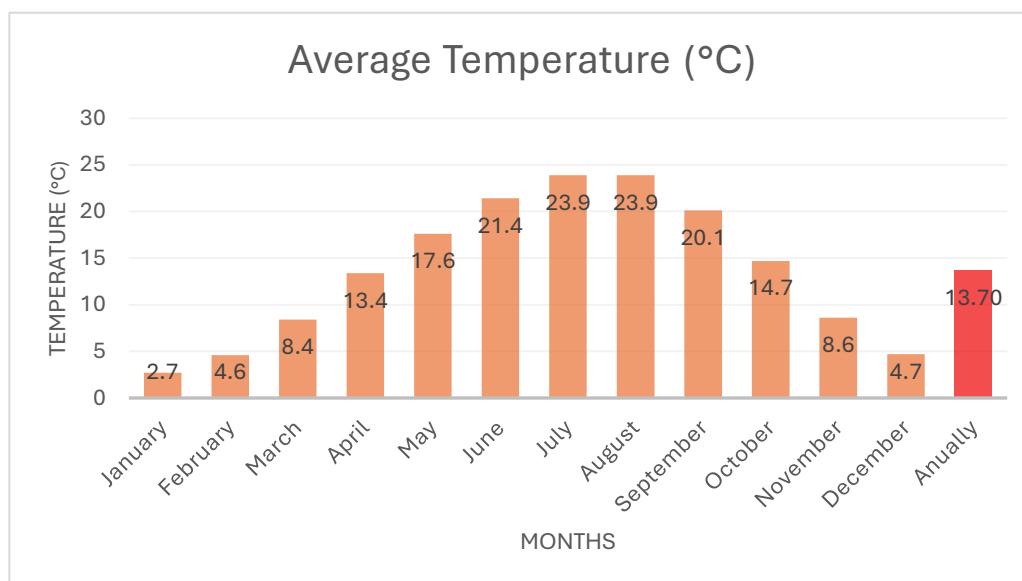


Figure 4-2. Monthly Average Temperature (°C) (1961-2025)

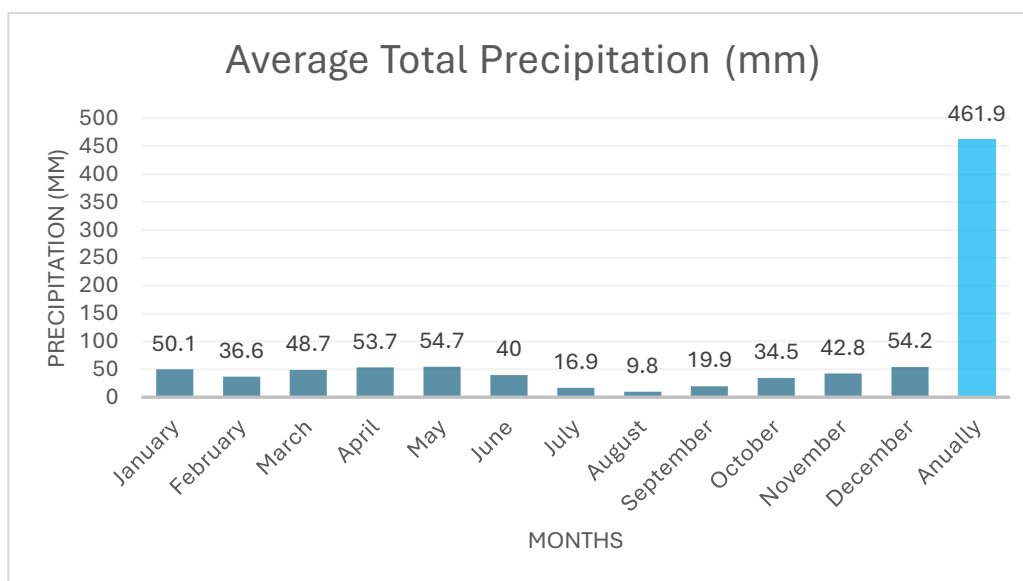


Figure 4-3. Total Precipitation (mm) (1961-2025)

Regarding wind conditions, the prevailing wind direction across Amasya Province is from the northeast (Poyraz). However, due to the topographic characteristics of the provincial center, the primary dominant wind direction is from the northwest (NW). The long-term average wind speed<sup>9</sup> is relatively low at 1.8 m/s, indicating generally calm wind conditions. On average, the province experiences 65 strong wind days per year and approximately 12 stormy days annually. Overall, the relatively low mean wind speed suggests limited natural

<sup>9</sup> Source: Amasya Provincial Directorate of Culture and Tourism. (n.d.). *Home Page*. Retrieved February 25, 2026, from: <https://amasya.ktb.gov.tr/TR-59460/iklim.html>

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dispersion potential under normal conditions, although occasional strong wind events may contribute to short-term increases in dust transport and dispersion.

#### 4.1.4 Existing Water Resources and Hydrological Characteristics

The Project area is located within the Yeşilırmak Basin, which constitutes the main surface water system of Amasya Province. The Yeşilırmak River is the principal river of the region and flows into the Black Sea after receiving several tributaries, including the Çekerek, Tersakan and Gümüşsuyu streams. These rivers play an important role in regional irrigation and water supply systems.

Within the Project area, the Gümüşsuyu Stream represents one of the main local tributaries of the Tersakan Stream and contributes to irrigation activities in the Gümüşhacıköy and Merzifon plains. Surface water resources in the region therefore consist mainly of river systems and irrigation infrastructure developed along these streams.

Natural lakes in Amasya are limited, with Boraboy Lake being the only significant natural lake in the province. However, numerous artificial ponds constructed by the DSİ provide irrigation and flood control functions. One of the most relevant water structures for the Project area is the Değirmendere Pond, located near the site, which has a storage capacity of approximately 5.5 million m<sup>3</sup> and supports irrigation and domestic water supply in Suluova.

The most important hydraulic structure associated with the Project is the Yedikır Dam, located approximately 10 km from Suluova. The dam was constructed primarily for irrigation purposes and provides water for agricultural lands in the Suluova Plain. Water diverted from the Tersakan Stream via the Çeltek Regulator is stored in the reservoir for right-bank irrigation, while irrigation on the left bank utilizes water originating from Ladik Lake. In addition to irrigation, the reservoir also serves ecological functions as a habitat for migratory birds and has been designated as a 1st Degree Natural Protected Area.

Groundwater resources in the region are mainly associated with alluvial deposits within river valleys, which form the principal aquifer units due to their relatively high porosity and permeability. Karstic limestone formations present in limited areas also exhibit aquifer potential. In parts of the Merzifon–Gümüşhacıköy Plain, intensive groundwater abstraction has resulted in groundwater level declines of approximately 50–80 m over the past decades. As a result, new groundwater wells in this area are currently permitted only for drinking and domestic water supply purposes.

Overall, the hydrological system of the Project area is characterized by the combined presence of surface water resources, including rivers, streams, reservoirs and irrigation ponds, together with groundwater resources hosted primarily in alluvial aquifers. These resources support agricultural irrigation and domestic water supply across the Suluova Plain and surrounding areas.

The details and relevant maps are given in the Annex-3 of this ESMP.



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#### 4.1.5 Land Use, Topography, Vegetation and Soil Properties

Amasya Province is located within a transitional climatic zone between the Black Sea and Central Anatolian climate regimes, resulting in a mixture of forest, steppe, and agricultural vegetation types. In the mountainous areas surrounding the Suluova Plain, natural vegetation is mainly composed of forest ecosystems dominated by species such as pine (*Pinus* spp.), oak (*Quercus* spp.), juniper (*Juniperus* spp.), hornbeam (*Carpinus* spp.), and aspen (*Populus tremula*). Within the Suluova Plain, natural vegetation has largely been replaced by agricultural landscapes due to long-term cultivation activities. Agricultural fields, orchards and crop production areas constitute the dominant land cover, while riparian vegetation is present along river corridors and irrigation channels.

Land use within Amasya Province is strongly dominated by agricultural and natural areas. Approximately half of the provincial territory consists of agricultural land, highlighting the importance of irrigated agriculture for the regional economy. Land classification studies conducted within the scope of the Project indicate that a large proportion of the project area consists of agricultural soils suitable for irrigation.

Topographically, the Project area is primarily located within the Suluova Plain and is characterized by flat to gently sloping terrain. The majority of the land has slopes between 0–2%, with elevations ranging approximately between 430 m and 560 m above sea level. These conditions are generally suitable for irrigation infrastructure and large-scale agricultural production.

The dominant soil groups in the project area consist mainly of alluvial and brown soils, which are generally deep and suitable for agricultural use. In some localized areas, gravel or coarse sand layers may occur within the soil profile; however, these do not significantly limit the overall irrigation potential of the area.

Detailed information on land use patterns, vegetation types, topography, and soil characteristics of the Project area is provided in Annex-3.

#### 4.1.6 Existing Air Quality

In order to identify the air quality monitoring stations closest to the Project area, data from the Continuous Monitoring Center Air Quality Monitoring Network operated by the Ministry of Environment, Urbanization and Climate Change (MoEUCC) were used<sup>10</sup>.

Amasya Merzifon Air Quality Monitoring Station (13 km), Amasya Suluova Air Quality Monitoring Station (within the Project Area), Amasya Şehzade Air Quality Monitoring Station (14 km), Amasya Air Quality Monitoring Station (15 km) selected as the nearest air quality monitoring station to the Project area. The selected air quality monitoring stations in Amasya, has recorded various air quality parameters over a one-year monitoring period. The annual average concentrations of the monitored parameters, together with their assessment against applicable national and international limit values, are provided in Table 4-1.

<sup>10</sup> Source: Ulusal Hava Kalitesi İzleme Ağı <https://sim.csb.gov.tr/services/airquality>



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*Table 4-1. Average Air Quality Values of Amasya Monitoring Station (26 February 2025-26 February 2026).*

Parameter	Unit	Amasya Merzifon	Amasya Suluova	Amasya Şehzade	Amasya	National Limit Values**	WHO Environmental Air Quality Guidelines Recommended Limit Values (2021)	Project Limit Values***
PM <sub>10</sub>	µg/m <sup>3</sup>	35.63	39.13	49.14	33,25	40	15	15
PM <sub>2.5</sub>	µg/m <sup>3</sup>	-	-	25.75	-	-*	5	5
SO <sub>2</sub>	µg/m <sup>3</sup>	7.80	9.86	-	8,68	40 (24 hour)	40 (24 hour)	40 (24 hour)
CO	mg/m <sup>3</sup>	-	-	616.17	-	10 (8-hour max)	4 (24 hour)	4 (24 hour)
NO <sub>2</sub>	µg/m <sup>3</sup>	28.82	24.83	59.65	-	40	10	10
NO <sub>x</sub>	µg/m <sup>3</sup>	37.35	35.11	89.17	-	-	-	-
NO	µg/m <sup>3</sup>	9.08	10.28	29.52	-	-	-	-
O <sub>3</sub>	µg/m <sup>3</sup>	-	-	31.54	-	-	-	-

\* No data available for the limit value.

\*\* Limit values in Table 2.2 of Control of Industrial Air Pollution Regulation Annex-2.

\*\*\* These limit values are considered according to the strictest limit values provided in both national and international limit values.

Air quality data obtained from the Monitoring Stations indicate that particulate matter concentrations represent the most critical parameter in the regional baseline conditions. Baseline air quality data indicate that particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>) concentrations in the region exceed World Health Organization (WHO) 2021 guideline values and, in the case of PM<sub>10</sub> and NO<sub>2</sub> at Şehzade Station, occasionally exceed national limit values. SO<sub>2</sub> and CO concentrations remain well below regulatory thresholds. The baseline profile suggests a moderate urban/traffic-influenced pollution pattern, with fine particulate matter representing the most sensitive parameter. Accordingly, effective dust suppression and emission control measures will be essential during the construction phase to prevent cumulative impacts and ensure compliance with project-specific air quality targets.

## 4.1.7 Existing Environmental Infrastructure

### 4.1.7.1 Wastewater Treatment Plants

During the construction phase, domestic wastewater is expected to be generated from workforce-related sanitary use within temporary site facilities. Domestic wastewater is expected to be collected in sealed and impermeable septic tanks established within the site boundaries. Collected wastewater is anticipated to be periodically transported by licensed vacuum trucks to authorized municipal wastewater treatment plants (WWTPs), subject to formal acceptance procedures of the receiving facility. Potential receiving facilities within the wider region include municipal WWTPs are Merzifon Municipality WWTP (approximately 12 km to the Project area), Amasya Suluova WWTP (within the Project area) and Amasya WWTP (approximately 12 km to the Project area). According to the Provincial



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Environmental Status Report<sup>7</sup>, WWTPs within Amasya Organized Industrial Zone (OIZ), Suluova OIZ and Taşova OIZ are currently at the project stage, whereas an active and operational WWTP is available in Merzifon OIZ.

#### 4.1.7.2 Waste Recovery, Recycle and Disposal Sites

Waste generated during project activities will be sent to licensed waste management facilities authorized by MoEUCC and holding valid Environmental Permits and Licenses within Amasya Province. The management of excavation materials within Amasya Province will be coordinated by the relevant Municipality. Surplus excavation materials that cannot be reused within the Project Area are required to be transported to officially designated disposal sites approved by Amasya Municipality.

According to the Amasya Provincial Environmental Status Report<sup>7</sup>, there is one sanitary landfill facility operating within the province. The facility is located in Bağlarüstü Mevkii in the Central District and occupies an area of approximately 67 hectares. This sanitary landfill serves member municipalities under the Amasya Solid Waste Union (AKAB). The municipalities of Amasya, Merzifon, Suluova, Gümüşhacıköy and Ziyaret are members of AKAB and transport their municipal solid waste to the AKAB sanitary landfill facility. The environmental permit of the AKAB landfill facility has expired. Renewal has not yet been granted by the Ministry due to the absence of a mechanical separation unit within the facility. A contract has been signed with İlbank for the installation of a mechanical separation unit, and the process is ongoing.

Within Amasya Province, the following licensed waste management facilities are operational:

- 1 Class II Sanitary Landfill Facility
- 1 Medical Waste Sterilization Facility
- 2 Waste Electrical and Electronic Equipment (WEEE) Processing Facilities
- 2 Hazardous Waste Recovery Facilities
- 2 Packaging Waste Collection and Sorting Facilities
- 2 End-of-Life Vehicle (ELV) Temporary Storage Areas
- 1 Non-Hazardous Waste Recovery Facility

In addition, there are four former excavation disposal sites and one newly active site located in Fındıklı Neighborhood. Each district municipality also has one excavation disposal area within its administrative boundaries, and one additional site is located within Ziyaret Municipality.

#### 4.1.7.3 Quarries

Within the scope of the Project, one permeable, semi-permeable material area and one rock material quarry (licensed by the General Directorate of State Hydraulic Works – DSİ 7th Regional Directorate, License No: 05/2005-18, Access No: 3076915, including its extension area) have been identified to supply bedding (cushion), filter (jacket), and concrete aggregate materials required for construction works. The permeable, semi-permeable material area consists of deposits associated with the Tersakan Stream, located to the west of Çeltekk Village. The distance between this material area and the main project site is approximately 63 km, while the distance to the irrigation area boundary is 36 km. The DSİ licensed rock material quarry is located to the south of Suluova and is accessible via



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stabilized and asphalt roads. The quarry is situated approximately 27 km from the Çeltek regulator structure and only 0.55 km from the irrigation area boundary, providing a more favorable logistical alternative in terms of proximity and transport conditions. Due to the relatively long distance of the permeable, semi-permeable material area from the project site, it has been assessed that the required bedding sand and jacket gravel cannot be economically supplied from this source; therefore, the use of the DSİ-licensed rock quarry has been proposed during the implementation phase.

The designated rock material area covers approximately 138,000 m<sup>2</sup> and, with an average operational depth of 10 m, has an estimated total reserve of 1,380,000 m<sup>3</sup>. In accordance with Circular No. 865659 dated 12.12.2017, the rock material area is considered suitable for producing bedding sand and jacket gravel through crushing.

Quarry operations will be conducted exclusively using the bench blasting method, with blasting faces oriented towards the side valley and northwest direction. Delayed detonators will be used to control vibration, fly rock, and potential environmental impacts. Where required, "EIA Not Required" decisions will be obtained for the relevant material sites. In addition, procurement from nearby quarries holding valid EIA approvals may also be preferred if deemed necessary. In addition, the Contractor may prefer to use any quarries holding necessary environmental permits and EIA decisions in line with the national legislation.

#### 4.1.8 Biodiversity and Protected Areas

Within the scope of the Amasya Suluova Right and Left Bank Irrigation Renovation Project, GIS-based spatial analyses were conducted to assess the relationship between the Project Area of Influence (AoI) and legally designated protected areas as well as internationally recognised biodiversity priority areas. These desktop findings were further supported by site visits and field observations carried out during baseline studies, which confirmed the predominantly agricultural land use, the presence of irrigation and drainage canals, and the absence of natural or semi-natural habitats within the immediate Project footprint. In addition, no critical biodiversity features or sensitive habitats were directly observed within the construction corridors during field verification.

The analysis indicates that the Project AoI does not overlap with any National Parks, Nature Parks, Wildlife Development Areas or Ramsar Sites. However, official information obtained from the Provincial Directorate of Environment, Urbanization and Climate Change confirms that approximately 2,845 m of the S1 main pipeline intersects with the Yedikır Dam Natural Protected Area, which is designated as a 1st Degree Natural Site Area. According to the decision of the Samsun Natural Assets Protection Regional Commission (Decision No. 472, dated 12 February 2020), the project may proceed provided that the pipeline is installed as a buried closed system, thereby minimizing potential impacts on the protected area.

The review of biodiversity databases indicates that the Project Area partially overlaps with the Yedikır Wetland Important Bird Area (IBA). In addition, several Key Biodiversity Areas (KBAs), including Akdağ KBA (2.33 km) and Kelkit Valley KBA (23.62 km), are located within the wider regional landscape.

The Project Area is situated within the Suluova Plain in the Yeşilirmak Basin, which is characterized by intensively cultivated agricultural lands, irrigation canals and drainage



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systems. As the Project involves the rehabilitation of existing irrigation infrastructure, the majority of the Project footprint is classified as Modified Habitat.

Potential biodiversity risks associated with the Project are mainly related to:

- temporary disturbance to bird species associated with the Yedikır Wetland IBA,
- localized habitat disturbance during construction activities,
- temporary disturbance to fauna inhabiting agricultural and canal-edge habitats.

The Project will apply the mitigation hierarchy to minimize potential impacts. Key measures include restricting works to existing irrigation corridors, installing pipelines as buried closed systems within protected areas, implementing erosion and sediment control measures, and conducting pre-construction ecological surveys and biodiversity monitoring where necessary.

## 4.2 Social Baseline

The General Directorate of State Hydraulic Works (DSİ), under the Ministry of Agriculture and Forestry (MoAF), is involved in the implementation of the Türkiye Second Irrigation Modernization and Water Efficiency Project (TIMPII), which is financed by the World Bank (WB).

A Stakeholder Engagement Plan (SEP) has been developed for the Project to outline the methods for the project team to communicate with stakeholders. The relevant SEP includes a mechanism through which people can voice their concerns, provide feedback, or lodge complaints regarding the project and any project-related activities. This plan is published in both Turkish<sup>11</sup> and English<sup>12</sup> on the official website of the DSİ.

Environmental and Social Standard (ESS) 10 under WB Environmental and Social Framework (ESF) is prepared to enable Stakeholder Engagement, being an integral part of the Environmental and Social Management Framework<sup>13</sup> (ESMF) of the Project.

For the purpose of ESS10, “stakeholder” refers to individuals or groups who:

**Project-affected parties (PAP)** are affected or likely to be affected by the project.

**Other interested parties (OIP)** may have an interest in the project.

**Disadvantaged or vulnerable individuals or groups (DVIG)** refers to those who may be more likely to be adversely affected by the project impacts and/or more limited than others in their ability to take advantage of a project’s benefits. Such an individual/group is also more likely to be excluded from/unable to participate fully in the mainstream consultation process and as such may require specific measures and/or assistance to do so. This will take into account considerations relating to age, including the elderly and minors, and

<sup>11</sup> TIMPII Stakeholder Engagement Plan (Turkish).

[https://cdniys.tarimorman.gov.tr/api/File/GetGaleriFile/425/DosyaGaleri/7572/timp2\\_paydas\\_katilim\\_plani.pdf](https://cdniys.tarimorman.gov.tr/api/File/GetGaleriFile/425/DosyaGaleri/7572/timp2_paydas_katilim_plani.pdf). Access Date: February 2026.

<sup>12</sup> TIMPII Stakeholder Engagement Plan (English).

[https://cdniys.tarimorman.gov.tr/api/File/GetGaleriFile/425/DosyaGaleri/7572/timp\\_2\\_draft\\_stakeholder\\_engagement\\_plan\\_febbruary\\_2025.pdf](https://cdniys.tarimorman.gov.tr/api/File/GetGaleriFile/425/DosyaGaleri/7572/timp_2_draft_stakeholder_engagement_plan_febbruary_2025.pdf). Access Date: February 2026.

<sup>13</sup> TIMPII Environmental and Social Management Framework.

[https://cdniys.tarimorman.gov.tr/api/File/GetGaleriFile/425/DosyaGaleri/7572/timp\\_2\\_environmental\\_and\\_social\\_management\\_framework.pdf](https://cdniys.tarimorman.gov.tr/api/File/GetGaleriFile/425/DosyaGaleri/7572/timp_2_environmental_and_social_management_framework.pdf). Access Date: February 2026.



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including in circumstances where they may be separated from their family, the community, or other individuals upon which they depend.

Within the scope of the Project, Aol has been defined as the 500 m perimeter of the Project irrigation boundary. All settlements intersecting with the irrigation boundary are considered to be within the Aol. The local population and local authorities in these settlements are regarded as PAP. PAP include local residents and local representatives of settlements within the Aol.

OIP in the Project primarily include cooperatives, associations, and chambers related to irrigation and agriculture. In addition, local government units, development agencies, media, and civil society organizations (CSO) fall under the OIP category.

DVIG categories for this Project is listed as below;

- Elderlies,
- Female household heads,
- Illiterates,
- Disabled individuals and care-dependent individuals, and
- Non-Turkish speakers.

In line with the identified stakeholder groups, social baseline data collection tools have been implemented as following Table 4-2.



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Table 4-2. Stakeholder interviews and participants

Identification of stakeholder	Type of stakeholder	Name of stakeholder	Date	Type of interview	Participant Information			
					Number of participant(s)	Position / Assignment	Tenure	Gender
Other Interested Parties	Local Cooperative	The Salucu Agricultural Development Cooperative	25.02.2026	Face to face in-depth interview	1	Member	1 year	Male
Other Interested Parties	Local Institution related to Water Management	The Yedikır Dam Irrigation Union	25.02.2026	Face to face in-depth interview	1	Chairperson	1 year	Male
Other Interested Parties	Local Governmental Institution	Suluova Municipality	25.02.2026	Face to face in-depth interview	1	Acting Director of Urban Planning and Zoning	12 years	Male
Other Interested Parties	Local Cooperative	The Üreten Eller Women's Cooperative	25.02.2026	Face to face in-depth interview	1	Chairperson	5 years	Female
Other Interested Parties	Local Press	The Suluova Yeni Haber Newspaper	25.02.2026	Face to face in-depth interview	1	Reporter	13 years	Male
Other Interested Parties	Local Institution related to Husbandry	The Amasya Cattle Breeders Association	04.03.2026	Phone-based in-depth interview	1	Chairperson	4 years	Male
Project-Affected Parties	Local representatives	Aktarla Settlement	04.03.2026	Phone interview, Mukhtar questionnaire	1	Mukhtar	7 years	Male
Project-Affected Parties	Local representatives	Yalnız Settlement	25.02.2026	Face to face interview, Mukhtar questionnaire	1	Mukhtar	7 years	Male
Project-Affected Parties	Local representatives	Yenice Settlement	04.03.2026	Phone interview, Mukhtar questionnaire	1	Mukhtar	7 years	Male
Project-Affected Parties	Local representatives	Armutlu Settlement	04.03.2026	Face to face interview, Mukhtar questionnaire	1	Mukhtar	12 years	Male
Project-Affected Parties	Local representatives	Aşağı Karasu Settlement	04.03.2026	Phone interview, Mukhtar questionnaire	1	Mukhtar	12 years	Male
Project-Affected Parties	Local representatives	Ayrancı Settlement	04.03.2026	Phone interview, Mukhtar questionnaire	1	Mukhtar	7 years	Male
Project-Affected Parties	Local representatives	Cürlü Settlement	26.02.2026	Phone interview, Mukhtar questionnaire	1	Mukhtar	2 years	Male
Project-Affected Parties	Local representatives	Çayüstü Settlement	25.02.2026	Face to face in-depth interview	1	Mukhtar	2 years	Male
Project-Affected Parties	Local representatives	Çeltekmadeni Settlement	27.02.2026	Phone interview, Mukhtar questionnaire	1	Mukhtar	22 years	Male
Project-Affected Parties	Local representatives	Deveci Settlement	27.02.2026	Phone interview, Mukhtar questionnaire	1	Mukhtar	22 years	Male
Project-Affected Parties	Local representatives	Erarslan Settlement	25.02.2026	Face to face in-depth interview	1	Mukhtar	2 years	Male
Project-Affected Parties	Local representatives	Eymir Settlement	27.02.2026	Phone interview, Mukhtar questionnaire	1	Mukhtar	2 years	Male
Project-Affected Parties	Local representatives	Hacıhayta Settlement	27.02.2026	Phone interview, Mukhtar questionnaire	1	Mukhtar	2 years	Male
Project-Affected Parties	Local representatives	Harmanağılı Settlement	02.03.2026	Phone interview, Mukhtar questionnaire	1	Mukhtar	2 years	Male
Project-Affected Parties	Local representatives	Kapancı Settlement	25.02.2026	Face to face in-depth interview	1	Mukhtar	7 years	Male
Project-Affected Parties	Local representatives	Kerimoğlu Settlement	02.03.2026	Phone interview, Mukhtar questionnaire	1	Mukhtar	7 years	Male
Project-Affected Parties	Local representatives	Kılıçarslan Settlement	25.02.2026	Face to face in-depth interview	1	Mukhtar	2 years	Male
Project-Affected Parties	Local representatives	Kulu Settlement	04.03.2026	Phone interview, Mukhtar questionnaire	1	Mukhtar	17 years	Male
Project-Affected Parties	Local representatives	Kurnaz Settlement	04.03.2026	Phone interview, Mukhtar questionnaire	1	Mukhtar	7 years	Male
Project-Affected Parties	Local representatives	Küpelı Settlement	04.03.2026	Phone interview, Mukhtar questionnaire	1	Mukhtar	N/A	Male
Project-Affected Parties	Local representatives	Ortayazı Settlement	25.02.2026	Face to face in-depth interview	1	Mukhtar	7 years	Male
Project-Affected Parties	Local representatives	Saluca Settlement	25.02.2026	Face to face in-depth interview	1	Mukhtar	2 years	Male

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Identification of stakeholder	Type of stakeholder	Name of stakeholder	Date	Type of interview	Participant Information			
					Number of participant(s)	Position / Assignment	Tenure	Gender
Project-Affected Parties	Local representatives	Saygılı Settlement	04.03.2026	Phone interview, Mukhtar questionnaire	1	Mukhtar	2 years	Male
Project-Affected Parties	Local representatives	Uzunoba Settlement	04.03.2026	Phone interview, Mukhtar questionnaire	1	Mukhtar	2 years	Male
Project-Affected Parties	Local representatives	Yolpınar Settlement	04.03.2026	Phone interview, Mukhtar questionnaire	1	Mukhtar	2 years	Male
Project-Affected Parties	Local representatives	Boğazköy Settlement	25.02.2026	Face to face in-depth interview	1	Mukhtar	12 years	Male



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#### 4.2.1 Socio-Economy

The details regarding the social baseline conditions are given in Annex-3 of this ESMP.

Current population information of the Aol is given in Table 4-3.

*Table 4-3 Population information, 2025, TurkStat*

NUTS Level	Unit	Total
Province Level	Amasya Province	342,242
Province Level	Samsun Province	759,595
Sub province Level, District of Amasya	Amasya Central	151,433
Sub province Level, District of Amasya	Merzifon	77,077
Sub province Level, District of Amasya	Suluova	46,928
Sub province Level, District of Samsun	Havza	38,103
Village of Merzifon District	Aktarla	112
Village of Merzifon District	Yalnız	141
Village of Suluova District	Yenice	54
Village of Suluova District	Armutlu	456
Village of Suluova District	Aşağı Karasu	79
Village of Suluova District	Ayrancı	150
Village of Suluova District	Cürlü	244
Village of Suluova District	Çayüstü	169
Neighborhood of Suluova District	Çeltekmeden	318
Village of Suluova District	Deveci	169
Village of Suluova District	Erarslan	663
Neighborhood of Suluova District	Eymir	327
Neighborhood of Suluova District	Hacıhayta	1077
Village of Suluova District	Harmanağılı	150
Village of Suluova District	Kapancı	262
Village of Suluova District	Kazanlı	78
Village of Suluova District	Kerimoğlu	185
Village of Suluova District	Kılıçarslan	158
Village of Suluova District	Kulu	91
Village of Suluova District	Kurnaz	37
Village of Suluova District	Küveli	342
Village of Suluova District	Ortayazı	154
Village of Suluova District	Saluca	332
Village of Suluova District	Saygılı	136
Village of Suluova District	Uzunoba	294
Neighborhood of Suluova District	Yeni	9,441
Village of Suluova District	Yolpınar	181
Village of Suluova District	Yüzbeyi	192
Neighborhood of Amasya Central District	Boğazköy	597
Neighborhood of Amasya Central District	Fındıklı	418



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<b>NUTS Level</b>	<b>Unit</b>	<b>Total</b>
Neighborhood of Havza District	Çeltek	88
Neighborhood of Havza District	Gelincik	20

The average household size in the district to which the settlements are affiliated is 2.74 for Merzifon District, 2.92 for Amasya Central District, and 3.02 for Suluova District.

During the consultations, information was gathered regarding the gender distribution of the village populations, and it was reported that in almost all settlements the numbers of women and men are approximately equal.

Analysis of the responses provided by the local representatives indicates that the population structure of the settlements varies across age groups, although middle-aged individuals generally constitute the largest age group. Examination of the population change data indicates that a declining trend has been predominant over the past ten years, particularly in rural settlements. Mukhtar interviews also indicate that out-migration has been common in many settlements, mainly due to employment, education, and declining agricultural viability. In some villages, younger individuals reside in nearby district centers while continuing agricultural activities in their villages during the day.

Seasonal population fluctuations were also observed in several settlements. Based on information obtained during mukhtar interviews, population levels tend to increase during the summer months due to seasonal agricultural activities and temporary return migration, while winter populations are generally lower in some settlements.

The educational status in the settlements was also examined. It was generally found that education levels are predominantly at the primary and secondary school levels, and illiteracy is generally very limited and mostly confined to a few elderly individuals.

Conditions related to vulnerability were also assessed. Female-headed households represent a relatively small proportion of total households in most settlements. According to mukhtar statements, the number of female-headed households varies across settlements and is generally limited to a few cases. However, in certain settlements such as Eymir and Boğazköy settlements the number of female-headed households is relatively higher compared to other settlements.

The lowest satisfaction levels on public services were recorded for internet infrastructure and mobile phone coverage, while the highest satisfaction levels were reported for electricity supply, waste collection, and sewerage services. Electricity service is reported as good in almost all settlements, indicating a relatively reliable electricity infrastructure across the area. Similarly, waste collection and sewerage services are generally evaluated positively.

Diabetes, hypertension, heart disease, and cancer were mentioned only in a limited number of settlements. Conditions such as disability and being care-dependent represent a small proportion of the total population in the settlements. in most settlements.



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The lowest satisfaction levels on public services were recorded for internet infrastructure, mobile phone coverage, and irrigation water supply, while the highest satisfaction levels were reported for electricity service, waste collection service, and sewerage service. In most settlements, areas for village mosques, village halls, school buildings, mukhtars' offices, and similar common gathering places are available.

Many local representatives emphasized the importance of direct communication methods, particularly face-to-face meetings organized at village level, for informing local communities about project activities. It was also noted that local communication channels such as village announcements, mukhtars, and community gathering places play an important role in information dissemination.

Interviews conducted with the representatives of the settlements provided information on the main sources of livelihood in each settlement. These interviews revealed that agriculture and livestock breeding predominantly rank as the primary livelihood sources across the settlements. The most cultivated crops include barley, wheat, sunflower, maize, and sugar beet, while both cattle breeding and small ruminant livestock activities are present in several settlements.

It was generally stated that unemployment is not perceived as a major structural problem in settlements where agriculture and livestock remain active, but it was emphasized that young people who do not wish to engage in agriculture and livestock, including some university graduates, may remain unemployed or seek employment in factories, organized industrial zones, or urban labor markets.

Information was collected about individuals who have no source of livelihood and are entirely dependent on government assistance. In many settlements, no households were identified that rely solely on social assistance, and the proportion of such households within the total population of their respective settlements appears to be low.

The main sources of income in the project area are the production of cereals, onion, potato, sugar beet, sunflower, maize, fruit, and vegetables. Along with agriculture, livestock farming is one of the main sources of livelihood in the area. Both cattle and small ruminant farming are widespread, although the scale varies from settlement to settlement. There are also settlements where livestock breeding constitutes a major complementary income source, and in some locations commercial fattening activities are also practiced.

In some settlements within the AoI, beekeeping is practiced as a livelihood activity. However, this activity is generally limited in scale and is mostly carried out for household consumption rather than as a major commercial activity.

Women's employment in the settlements is mainly concentrated in textile factories, agricultural work, dairy-related activities, and other low-skilled jobs. In several settlements, women were also reported to be engaged in cooperative-based production, local market sales, and home-based income-generating activities. Overall, women's participation in the labour force is present but remains largely limited to low-skilled, agriculture-related, or informal forms of employment.



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No established ethnic or linguistic minority community other than Turkish speakers was identified in the settlements. However, in several settlements, individuals of Afghan and Syrian origin were reported to be present, mainly working as shepherds and, in some cases, as seasonal agricultural workers. These groups are relevant both in terms of seasonal and external labour and as individuals whose native language differs from Turkish. For this reason, they may face disadvantages in project-related announcements, information disclosure, and stakeholder engagement activities due to language barriers.

Seasonal and daily labor plays an important role in agricultural activities in the area. The number of seasonal agricultural workers varies by settlement, but seasonal workers were reported in only some settlements rather than throughout the entire project area. Seasonal agricultural workers, primarily coming from Şanlıurfa, were mentioned in some settlements. It was stated that these workers may speak Kurdish and/or Arabic, which could create a language barrier for announcements and information dissemination. In many settlements, Afghan and Syrian shepherds are involved in cattle and small ruminant farming.

During the meetings with stakeholders, their perceptions regarding the existing irrigation system were compiled. It was frequently emphasized that the current irrigation channels are old, inefficient, and affected by water loss, pollution, slope problems, and unequal water distribution. In several settlements, stakeholders also stressed that being at the end of the irrigation line reduces access to water. Nearly all stakeholders who evaluated the Project positively believe that a closed irrigation system will prevent such losses. Reducing losses would not only help conserve existing resources, but also decrease the financial burden associated with inefficient water use and low productivity.

The diversification of the cropping pattern was viewed by many stakeholders as an advantage for the empowerment of women farmers. The availability of irrigation-enabled horticulture, fruit production, and value-added agricultural activities would be expected to draw women more directly into agricultural value chains.

Some stakeholders indicated that improvements in irrigation conditions could contribute to slowing down rural out-migration and, in certain cases, may even encourage the return of people who previously left the villages. It was also emphasized that the current agricultural workforce is largely composed of middle-aged and older individuals, while younger generations often prefer employment opportunities in factories, urban labour markets, or the public sector instead of engaging in farming or livestock activities. Stakeholders expressed the view that improved irrigation opportunities and increased agricultural productivity could make agricultural activities more attractive for younger people.

Considering these dynamics together, it is expected that the project may help maintain the existing agricultural and livestock workforce in the region and potentially create conditions that encourage return migration or attract new investments in agricultural production.

A series of questions accompany the concerns expressed by farmers. The key questions raised by stakeholders include the following:

1. *When will the Project start and how long will construction take?*



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2. *How will irrigation be charged under the closed system and what will the payment system look like?*
3. *Will water interruptions occur during construction, and if so, how will agricultural activities continue?*
4. *Will slope, elevation, and parcel-specific conditions be taken into account in the technical design?*
5. *Will land consolidation be implemented fairly, and will farmers be consulted during this process?*
6. *Will end-of-line settlements continue to face water access problems under the new system?*
7. *Will valves, outlets, hydrants, and related infrastructure be located at practical and accessible distances for farmers?*

Some recommendations provided in response to the questions raised by farmers were also communicated. Farmers proposed the following measures to ensure that the activities would be beneficial to them:

1. *Conduct village-based information meetings rather than large joint meetings.*
2. *Ensure timely and transparent information sharing before construction starts.*
3. *Avoid interrupting irrigation during critical planting and harvesting periods.*
4. *Carry out detailed field inspections and incorporate local topography, parcel conditions, and slope differences into the design.*
5. *Consult mukhtars and farmers directly during planning, construction, and land consolidation processes.*
6. *Implement the works gradually and avoid affecting all areas simultaneously.*
7. *Provide irrigation training so that farmers can use the new system efficiently and avoid excessive costs.*

Stakeholder consultations also revealed concerns regarding land consolidation, parcel fragmentation, property rights, and the protection of existing infrastructure. Local representatives emphasized that roads, village access routes, private land use patterns, and existing agricultural layouts should be protected during construction activities. In addition, some settlements raised concerns that construction traffic and external workers could create local disturbances, and that workers should act in a manner respectful to local social conditions.

Stakeholder consultations revealed that different institutions and community representatives proposed specific tools and approaches for stakeholder engagement. Meetings, announcements through mukhtars, village-level consultations, and telephone communication were the most frequently proposed methods. In several settlements, local representatives emphasized that village-level meetings held in village halls, mosques, mukhtar offices, or school buildings would be more effective than centralized meetings. It was also stated that clear information on timing, technical implications, and possible costs should be provided in advance so that affected people can make informed decisions.



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## 4.2.2 Traffic and Transportation

D795 and the D100 are the State Roads that pass within / near the Project area. According to the Traffic Volume Maps published by the General Directorate of Highways (KGM), 7th Regional Directorate (Samsun), the Annual Average Daily Traffic (AADT) on the D795 State Road is 2,883 vehicles per day. The traffic composition consists of 2,100 passenger cars, 280 medium commercial vehicles, 5 buses, 162 trucks and 336 trucks with trailer / tractor with semi-trailer units. The D795 functions as a regional state road accommodating mixed passenger and freight traffic. Based on the same official source, the D100 State Road carries an AADT of 24,911 vehicles per day. The traffic composition includes 18,090 passenger cars, 1,174 medium commercial vehicles, 513 buses, 946 trucks and 4,188 trucks with trailer / tractor with semi-trailer units. The D100 represents a major intercity transportation corridor and accommodates a substantially higher traffic volume compared to D795. Overall, both D795 and D100 exhibit relatively high traffic volumes within the regional road network, particularly D100, which carries a significant share of heavy vehicles. The European Route E80 (Trans-European Motorway – TEM) passes through Amasya Province and constitutes one of the major international transportation corridors in the region.

The E80 is part of the International E-road Network and extends approximately 5,600 km (3,500 miles) in a west–east direction, starting from Lisbon (Portugal) and ending at the Gürbulak Border Gate at the Turkish Iranian border. Within Türkiye, the E80 corridor corresponds largely to the TEM Motorway, which serves as a key east–west transport axis facilitating both national and international freight and passenger transport. A total of approximately 229 km of the E80 route passes through Amasya Province, and approximately 28 km of this corridor lies within the Project's area of influence.

See Annex-3 for detailed information and related traffic volume and state roads maps.

## 4.2.3 Cultural Heritage

The Project area is located within the Suluova Plain of Amasya Province, in the Yeşilirmak Basin of northern Türkiye. The Yeşilirmak Valley has historically functioned as an important settlement corridor connecting the interior regions of Anatolia with the Black Sea coast. Due to its fertile agricultural lands and water resources, the region has supported continuous human settlement since ancient times and contains cultural heritage elements associated with multiple historical periods.

Consultations with relevant authorities were undertaken to identify registered cultural heritage assets within the Project area. According to official responses from the Amasya Provincial Directorate of Culture and Tourism and the Amasya Museum Directorate, there are no ongoing archaeological excavations or cultural heritage projects within the Project footprint.

Information provided by the Samsun Regional Council for the Protection of Cultural Heritage indicates that several registered archaeological sites are located within the Suluova District and its surroundings. These include archaeological mounds (höyük), tumulus and necropolis areas registered with different protection degrees. A total of 30 archaeological sites were identified within or near the Project impact area.



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The identified cultural heritage assets and their distances to the nearest project component are summarized in Table 4-4. Detailed information regarding cultural heritage baseline conditions, including institutional consultations and regional cultural context, is provided in Annex-3.

Following detailed correspondence and technical consultations with the DSI, it has been confirmed that the Project design will be revised to avoid any interaction with identified cultural heritage assets. In this context, the pipeline alignments will be reconfigured to exclude areas located within or in close proximity to registered or potential cultural heritage features.

This design-based avoidance approach is considered the primary mitigation measure in line with Good International Industry Practice and national legislation on the protection of cultural assets. Accordingly, potential impacts on cultural heritage are expected to be prevented at source.

Following the finalization of the revised design, the updated project layout will be submitted to the relevant Regional Conservation Board for review and approval, in accordance with national regulatory requirements.

Moreover, the Chance Find Procedure, as defined under the Project's ESMP and in line with the applicable national legislation and the Project's ESMF, will be implemented throughout the construction phase to manage any unforeseen discoveries.



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*Table 4-4. Recognized National Tangible Cultural Heritage Assets*

No	Province	District	Location / Site Name	Cultural Heritage Type	Protection Degree	Decision Date	Decision No	Relation to Project	Distance to the closest Project Component
1	Amasya	Merkez	Değirmendere Village	Necropolis	I Degree Archaeological Site	25.06.2021	7821	Near Project Area	653 m
2	Amasya	Merkez	Duruca Village	Necropolis	III Degree Archaeological Site	28.08.2020	7216	Near Project Area	363 m
3	Amasya	Merzifon	Aktarla Village	Tumulus – Necropolis	I Degree Archaeological Site	22.05.2013	1036	Within Project Area	45 m
4	Amasya	Merzifon	Alışar Village – Ablakyeri (1–2)	Necropolis	III Degree Archaeological Site	22.11.2017	4841	Adjacent to Project Area	5 m
5	Amasya	Merzifon	Alışar Village – Pancaryeri	Roman Necropolis	III Degree Archaeological Site	28.03.2018	5154	Within Project Area	147 m
6	Amasya	Merzifon	Alışar Village – Roma necropolis	Roman Necropolis	III Degree Archaeological Site	22.03.2013	901	Within Project Area	47 m
7	Amasya	Merzifon	Alışar Village – Kırlar – East Roman	East Roman Necropolis	III Degree Archaeological Site	22.11.2017	4844	Within Project Area	773 m
8	Amasya	Merzifon	Karşiyaka Village – Yüktepe	Necropolis	I Degree Archaeological Site	22.03.2013	907	Adjacent to Project Area	63 m
9	Amasya	Merzifon	Kayadüzü Village – Hatuntepe höyük	Mound and Necropolis	I and III Degree Archaeological Site	31.03.2016	3349	Adjacent to Project Area	5 m
10	Amasya	Merzifon	Yenice Village – Tepecik Höyük	Mound	I Degree Archaeological Site	13.02.2015	2364	Adjacent to Project Area	9 m
11	Amasya	Suluova	Eraslan Village – Tumulus 1	Tumulus	I Degree Archaeological Site	22.05.2013	1020	Within Project Area	52 m
	Amasya	Suluova	Eraslan Village – Tumulus 2	Tumulus	I Degree Archaeological Site	22.05.2013	1020	Within Project Area	5 m
	Amasya	Suluova	Eraslan Village – Tumulus 3	Tumulus	I Degree Archaeological Site	22.05.2013	1020	Within Project Area	158 m
12	Amasya	Suluova	Eraslan Village – Gökdere	Roman Necropolis	III Degree Archaeological Site	27.08.2014	2033	Adjacent to Project Area	5 m
13	Amasya	Suluova	Deveci Village – Kızlartepesi	Necropolis	I Degree Archaeological Site	22.05.2013	1022	Within Project Area	20 m
14	Amasya	Suluova	Eraslan Village – Yoğurtçubaba	Mound and Necropolis	I Degree Archaeological Site	22.05.2013	1021	Within Project Area	78 m



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No	Province	District	Location / Site Name	Cultural Heritage Type	Protection Degree	Decision Date	Decision No	Relation to Project	Distance to the closest Project Component
15	Amasya	Suluova	Eraslan Village – Parcel 72	Registered Cemetery	Cultural Property	09.10.2009	2282	Within Project Area	14 m
16	Amasya	Suluova	Eraslan Village – İshaktepe Settlement	Archaeological Site	I Degree Archaeological Site	20.03.2014	1674	Near Project Area	330 m
	Amasya	Suluova	Eraslan Village – İshaktepe Tumulus	Tumulus	I Degree Archaeological Site	20.03.2014	1674	Near Project Area	685 m
	Amasya	Suluova	Eraslan Village – Ciheles Tumulus	Tumulus	I Degree Archaeological Site	20.03.2014	1674	Near Project Area	1,465 m
17	Amasya	Suluova	Yüzbeyi Village – Dereağıl Höyük	Mound	I-III Degree Archaeological Site	21.05.2010	2609	Adjacent to Project Area	5 m
	Amasya	Suluova	Yüzbeyi Village – Tumulus 1	Tumulus	I Degree Archaeological Site	21.05.2010	2609	Adjacent to Project Area	202 m
	Amasya	Suluova	Yüzbeyi Village – Tumulus 2	Tumulus	I Degree Archaeological Site	21.05.2010	2609	Adjacent to Project Area	136 m
18	Amasya	Suluova	Yüzbeyi Village – Roman Grave	Archaeological Site	I Degree Archaeological Site	16.03.2011	3028	Adjacent to Project Area	53 m
19	Amasya	Suluova	Yüzbeyi Village – Acı Tepesi Höyük	Mound	I Degree Archaeological Site	27.06.2014	1944	Near Project Area	859 m
20	Amasya	Suluova	Saygılı Village – Söbe Dede Area	Iron Age Cemetery	III Degree Archaeological Site	13.02.2015	2369	Within Project Area	40 m
21	Amasya	Suluova	Yolpınar (Hakala) Village	Necropolis	III Degree Archaeological Site	25.06.2021	7833	Near Project Area	213 m
22	Amasya	Suluova	Uzunoba Village – Kilistepe	Mound and Necropolis	III Degree Archaeological Site	03.09.2015	2876	Within Project Area	40 m
23	Amasya	Suluova	Kanatpınar Village – Akseki	Çeştepe Tumulus	I Degree Archaeological Site	26.02.2015	2415	Near Project Area	231 m
24	Amasya	Suluova	Kanatpınar Village – Devret Höyük	Mound	I Degree Archaeological Site	26.10.2017	4808	Near Project Area	602 m
25	Amasya	Suluova	Kanatpınar Village – Devret Tumulus	Tumulus	I Degree Archaeological Site	27.06.2013	1144	Near Project Area	1,217 m
26	Amasya	Suluova	Kanatpınar Village – Akseki	Necropolis	I Degree Archaeological Site	21.07.2017	4621	Near Project Area	95 m
27	Amasya	Suluova	Kurnaz Village – Cilbiye Tepesi	Mound	I Degree Archaeological Site	01.10.2021	8018	Adjacent to Project Area	19 m



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No	Province	District	Location / Site Name	Cultural Heritage Type	Protection Degree	Decision Date	Decision No	Relation to Project	Distance to the closest Project Component
28	Amasya	Suluova	Kutlu Village	Necropolis	I Degree Archaeological Site	14.07.2010	2677	Within Project Area	413 m
29	Amasya	Suluova	Hacıhayta Neighborhood – Kümbettepe Höyük	Mound	I and III Degree Archaeological Site	13.01.1978	A-927	Adjacent to Project Area	502 m
30	Amasya	Suluova	Eymir Village – Old settlement	Archaeological Site	III Degree Archaeological Site	23.05.2018	5302	Within Project Area	2 m



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Intangible cultural heritage in the region is mainly associated with traditional rural lifestyles, agricultural practices and community-based cultural expressions. Several cultural practices from Türkiye have been inscribed on the United Nations Educational, Scientific and Cultural Organization (UNESCO) Representative List of the Intangible Cultural Heritage of Humanity, including the âşıklık (minstrelsy) tradition, ceremonial keşkek preparation and the spring celebration of Hidrellez. These practices represent cultural expressions that are widely observed across Anatolia and may also be present in the broader cultural context of the Project area.

At the regional level, local communities maintain traditions related to folk poetry, wedding customs, seasonal celebrations, culinary traditions and agricultural practices, which form part of the living cultural heritage of the Amasya region.

Since the Project primarily involves the rehabilitation of existing irrigation infrastructure, project activities are not expected to interact directly with these cultural practices. Further information on regional intangible cultural heritage elements is provided in Annex-3.



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## 5 ENVIRONMENTAL AND SOCIAL RISKS AND IMPACTS

### 5.1 Area of Influence (Aoi)

Within the scope of the Project, the Area of Influence (Aoi) has been defined as the 500 m perimeter of the Project irrigation boundary (see Figure 5-1). A total of 32 neighborhoods has been identified within the Aoi, and the list of nearest sensitive receptors is provided in Table 5-1. Accordingly, it can be seen that the most sensitive receptors will be the neighborhoods'/villages' residents.

Table 5-1. Nearest Sensitive Receptors

No	Province	District	Settlement	Nearest Unit	Distance (m)	Note	
1.	Amasya	Merzifon	Aktarla	S-1 Main Pipeline	128	Right Bank	
2.			Yalnız	S1-1 Pipeline	128	Right Bank	
3.			Yenice	S1-1-6 Pipeline	73	Right Bank	
4.		Suluova	Armutlu	H-8 Pipeline	122	Left Bank	
5.			Aşağı Karasu	S2-17 Pipeline	55	Right Bank	
6.			Ayrancı	S2-7 Pipeline	15	Right Bank	
7.			Cürlü (Gürlü)	S2-1 Pipeline	35	Right Bank	
8.			Çayüstü	S2-1-3-6 Pipeline	12	Right Bank	
9.			Çeltekmadeni (Eskiçeltek)	H (Havza) Main Pipeline	137	Left Bank	
10.			Deveci	S1-5-2-6 Pipeline	65	Right Bank	
11.			Eraslan	S-1 Main Pipeline	8	Right Bank	
12.			Eymir	H (Havza) Main Pipeline	84	Left Bank	
13.			Hacıhayta	H15-4 Pipeline	120	Left Bank	
14.			Harmanağılı	S-1 Main Pipeline	133	Right Bank	
15.			Kapancı Ağıllı	S-1 Main Pipeline	198	Right Bank	
16.			Kazanlı	H13-1 Pipeline	100	Left Bank	
17.			Kerimoğlu	H14-4 Pipeline	33	Left Bank	
18.			Kılıçaslan	H14-8 Pipeline	80	Left Bank	
19.			Kulu	S-2 Main Pipeline	105	Right Bank	
20.			Kurnaz	S-1 Main Pipeline	147	Right Bank	
21.			Küpelı	S2-7-14 Pipeline	34	Right Bank	
22.			Ortayazı	S2-7-7 Pipeline	19	Right Bank	
23.			Saluca	H-14 Pipeline	8	Left Bank	
24.			Saygılı	S-1 Main Pipeline	84	Right Bank	
25.			Uzunoba	S-1 Main Pipeline	226	Right Bank	
26.			Yeni	H-15 Pipeline	450	Left Bank	
27.			Yüzbeyi	S1-19 Pipeline	182	Right Bank	
28.			Yolpınar	H-29 Pipeline	28	Left Bank	
29.			Merkez (Center)	Boğazköy	S1-40 Pipeline	5	Right Bank
30.				Fındıklı	S1-40 Pipeline	287	Right Bank



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No	Province	District	Settlement	Nearest Unit	Distance (m)	Note
31.	Samsun	Havza	Çeltek	H (Havza) Main Pipeline	103	Left Bank
32.			Gelincik	H-4 Pipeline	9	Left Bank



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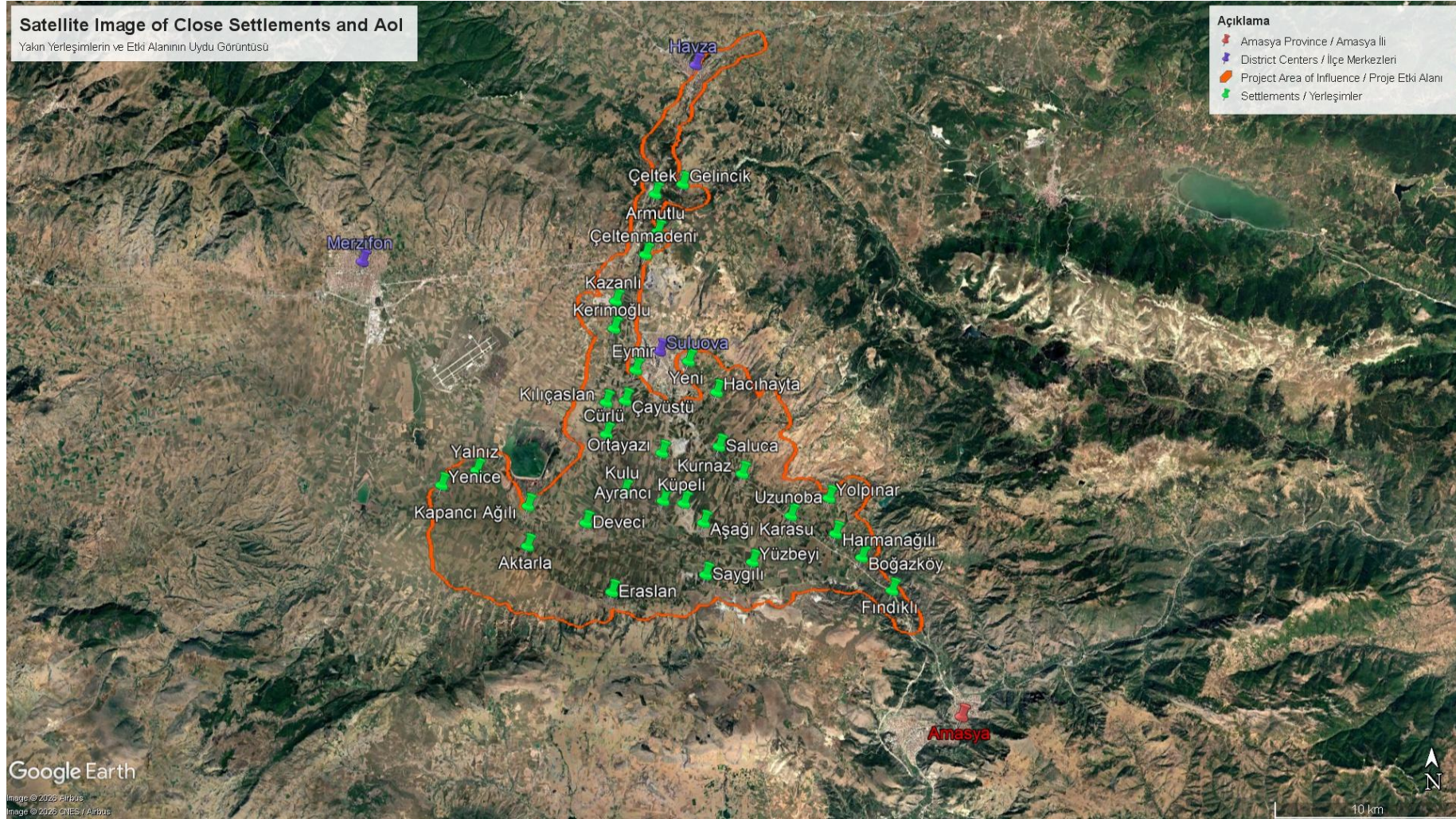


Figure 5-1. Project Area of Influence



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## 5.2 Impact Assessment Methodology

According to the Environmental and Social Screening Form prepared by DSI experts and approved by the WB, the Project is designed based on a closed irrigation system, and the water for the irrigation project will be supplied from the existing reservoir and directed to the currently cultivated lands. Only limited excavation will be carried out for the pipes to be laid underground within the scope of the Project, and the excavated materials will be reused to restore the project area to its original state. As stated in the Form, the impacts that may arise during the construction phase are expected to be low to moderate, mostly short-term and reversible, and the impact area is expected to be limited to the Project site and its immediate surroundings.

In a similar manner, potential impacts during the operation phase are expected to be low to moderate in magnitude and largely associated with routine operation and periodic maintenance of the closed irrigation system. Operational activities, including inspection, minor repairs and replacement of system components, may involve small-scale, localized interventions and short-term disturbances within agricultural areas. These impacts are anticipated to be temporary, reversible and spatially limited, with no expansion of the project footprint or intervention in sensitive or archaeological areas.

Overall, considering that there will be no intervention in the Sensitive Areas and Archaeological Sites located within the project boundaries, the environmental risk level of the project has been classified as "Moderate."

According to the information provided in the Screening Form, the environmental impacts anticipated within the scope of the Project are expected to be limited in scale, short-term, and largely reversible. The Project primarily involves the rehabilitation and modernization of existing irrigation infrastructure rather than the development of entirely new systems, which significantly reduces the likelihood of major or irreversible environmental impacts. Construction-related activities may cause temporary disturbances such as localized noise, dust, traffic, and limited land disturbance; however, these impacts are expected to remain confined to the project site and its immediate surroundings. In addition, where protected cultural or natural heritage areas may be present, appropriate preventive and mitigation measures will be implemented to ensure their protection during construction activities. Potential public safety risks arising from construction works will also be managed through precautionary measures such as site fencing, access control, and appropriate safety signage.

During the construction phase, the Project is expected to generate temporary and localized impacts associated with short-term disruptions to agricultural activities and changes in seasonal labor dynamics. Ensuring the effective participation of vulnerable groups, such as elderly individuals, female-headed households, persons with disabilities, individuals with limited literacy, seasonal agricultural workers, and non-Turkish speakers, in stakeholder engagement processes remains important. During the operation phase, the Project is expected to enhance irrigation efficiency, improve agricultural productivity, and strengthen the sustainability of livelihoods, thereby contributing to reduced rural out-migration and supporting long-term socio-economic stability.

In order to manage these potential environmental and social impacts effectively, project-specific environmental and social management instruments will be prepared and implemented in line with the Türkiye Second Irrigation Modernization Project (TIMPII) Environmental and



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Social Management Framework (ESMF). These instruments will include, among others, the Environmental and Social Management Plan (ESMP), Stakeholder Engagement Plan (SEP), Labor Management Plan (LMP), and where relevant, Resettlement Plans (RP). Furthermore, once construction activities commence, the Contractor will prepare a Construction Environmental and Social Management Plan (C-ESMP) based on these project-level documents to ensure that mitigation measures are implemented in practice. Considering that the expected impacts are manageable through standard mitigation measures, largely temporary and reversible in nature, and limited to the construction phase and immediate project area, the overall environmental and social risk level of the Project has been assessed as “Moderate”.

Construction-related impacts mainly concern air and noise emissions, non-hazardous waste generation, community health and safety (including risks related to traffic management and gender-based violence (GBV) risks), occupational health and safety risks, labor influx, land acquisition, etc.

At this stage, although there is no clear information yet on the exact locations, detailed designs, and sources of construction materials for the proposed project, it is anticipated that the proposed sub-project and its impacts will not be complex.

The methodology to be used to identify the environmental and social impacts/risks arising from the implementation of the Project has been developed based on the methodologies described in the WB ESF and the TIMP2 ESMF.

The methodology for identifying environmental and social impacts that may arise from the implementation of the Project has been developed based on methodologies found in internationally recognized official publications on environmental impact assessment.<sup>14</sup> Each risk or impact identified within the scope of the Project has been assessed according to the methodology described in this section.

In line with best practices, the significance of impacts is determined by a comprehensive assessment of the sensitivity of the receiving environment/sensitive component and the magnitude of the Project's impact on that component. Impact magnitude is assessed using quantitative methods to the extent possible; when this is not possible, qualitative methods based on professional judgment are used. Environmental and/or social impacts can be positive or negative. The sensitivity/vulnerability of the receiving environment is determined by taking into account existing information (public interest, legal status of the area, design and sustainability issues, acceptability, etc.) and consultations with affected communities.

The overall magnitude of the impacts is assessed based on the following components:

- Geographical scope (broad, local, or limited)
- Reversibility (reversible/irreversible in the long term, reversible in the medium term, or reversible in the short term)
- Duration (long, medium, or short)
- Frequency (continuous/frequently recurring, intermittent, or one-time/rare)
- Severity (low, moderate, significant)

<sup>14</sup> For example: Institute of Environmental Management and Assessment-IEMA, 2011: The State of Environmental Impact Assessment Practice in the UK; Scottish Natural Heritage, 2013: Handbook on Environmental Impact Assessment; Canter, 1993; and Standards Association of Australia, 1999, among other guidance documents.



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Criteria for impact magnitude factors are provided in Table 5-2.

*Table 5-2. Impact Magnitude Assessment Criteria*

Magnitude Criteria	Impact Levels		
	High	Medium	Low
Geographic scope	<b>Wide</b>	<b>Local</b>	<b>Restricted</b>
	Beyond the area of influence	Within the area of influence	Within the project area
Reversibility	<b>Irreversible / Reversible in the Long Term</b>	<b>Medium-term reversible</b>	<b>Short-term reversible</b>
	Reversible or irreversible in the long term after the operational phase	Reversible during the operational phase	Reversible during the construction phase or after a one-year construction period
Duration	<b>Long</b>	<b>Medium</b>	<b>Short</b>
	Long term after the operational phase	After transitioning to the operational phase	During the construction phase
Frequency	<b>Continuous/Frequent</b>	<b>Intermittent</b>	<b>One-time/Rare</b>
	Ongoing or occurring regularly; occurring frequently or continuously	Occurring at irregular intervals; or occurring at long intervals	Rare or only once; very low probability of recurrence
Intensity	<b>Significant</b>	<b>Moderate</b>	<b>Low</b>
	Significant potential change/damage; when there are limited or no feasible mitigation measures available	Moderate potential change/damage; and/or costly or ineffective mitigation measures	Minimal potential change/damage; effective and applicable mitigation measures

The magnitude criteria parameters are defined for each potential impact based on the descriptions of the relevant impact levels. The combined result of these parameters determines the overall impact magnitude. This magnitude is then evaluated together with the sensitivity of the receptor in order to determine the significance of the impact. The identified significance levels are directly reflected in the “before mitigation” and “after mitigation” columns of the mitigation measures tables presented in Chapter 6.

General criteria to be considered in determining the sensitivity of the receiving environment and the overall impact magnitude are presented in Table 5-3. Specific assessments for each environmental and/or social component and any methodological differences are provided in the relevant environmental and social assessment and management documents.

*Table 5-3. General Criteria for Determining Receptor Sensitivity and Impact Magnitude Levels*

Level	Receptor Sensitivity	Overall Impact Magnitude	
		Negative	Positive
High	Extremely important (national and international importance scale), high rarity, very limited substitution potential	Loss of quality and integrity of the resource and/or resources; serious damage to fundamental characteristics, features, or elements.	Large-scale or significant improvement in resource quality; comprehensive restoration or improvement; significant improvement in qualitative quality.



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Level	Receptor Sensitivity	Overall Impact Magnitude	
		Negative	Positive
Medium	Moderately important (regional importance scale) and moderately rare, with limited substitution potential	Loss of resources, but without adversely affecting integrity; partial loss/damage to fundamental characteristics, qualities, and elements.	Benefit to or addition of fundamental features, qualities, or elements; improvement in quality.
Low	Low importance (local importance scale), not rare	Measurable change in qualities, quality, or sensitivity; minor loss or change in one (perhaps more) fundamental characteristic, quality, or element	A small benefit or addition to one (or possibly more) fundamental characteristic, feature, or element; some beneficial effects on the quality or a reduced risk of adverse effects.
Negligible	No or very low importance and rarity	No loss or very little loss or minimally harmful change in one or more features, qualities, or elements	No or very little benefit or positive contribution to one or more features, qualities, or elements

After determining the sensitivity of the receptor and the overall magnitude of the impact on a specific receptor, the importance of the impact is determined by using a standard matrix-style approach consisting of a 4x4 matrix. General descriptions of the matrix and each significance level defined in the matrix are provided in Table 5-4. Once the impact significance is determined, the necessary impact mitigation measures are identified to reduce these impacts to more acceptable levels.

*Table 5-4. Impact Significance Matrix*

		Receptor Sensitivity			
Impact Significance	Impact Magnitude	High	Medium	Low	Negligible
	High	High	High	Moderate	Low
	Medium	High	Moderate	Low	Negligible
	Low	Moderate	Low	Low	Negligible
	Negligible	Low	Negligible	Negligible	Negligible
<b>High</b>	The impacts are considered very significant and are likely to be decisive in decision-making processes. These impacts may be associated with areas or elements that are important at the international, national, or regional level, or with features that are important at the local level and may undergo significant change. Mitigation measures must be implemented to reduce the significance of the impacts to lower levels; these measures must be taken before the project is implemented.				
<b>Moderate</b>	It is unlikely that these impacts will be among the key decision-making factors. However, the cumulative effects of such factors may influence the decision-making process, particularly if they lead to an increase in the total negative impact on a specific recipient. Where possible, the significance of the impact should be reduced to lower levels through mitigation measures; otherwise, acceptance of the associated risks is necessary for the project to proceed.				
<b>Low</b>	Impacts can be considered as factors that are not expected to be critical in the decision-making process and are more local in scale. However, they may be important in terms of making improvements in the subsequent design of the project. Compliance with standards and safety criteria is considered sufficient for project implementation.				



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<b>Negligible</b>	There are no impacts, or the impacts are below detectable levels and are acceptable within normal operating procedures.
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**Source:** Adapted from: IEMA, 2011; UK HA 205/08 Volume 11, Section 2; Canter, L., 1993; and other impact assessment methodology guidance/handbooks.

## 5.3 Potential Environmental Risk and Impacts

Potential environmental risk and impacts identified for the Project construction and operation phases are presented in this Section, and relevant mitigation measures and monitoring activities are given in the following Chapters.

The construction phase of the Project is expected to last 4 years, with a peak/maximum workforce of 200 people during the construction period. Additionally, the Project's operational life is expected to be approximately 50 years. During this period, the operational workforce is estimated to consist of 20 employees, representing the staff of the Irrigation Union for operating the system.

### 5.3.1 Water Resources and Use

#### 5.3.1.1 Construction Phase

Bottled drinking water will be provided for workers under the Project. All neighborhoods located near the city center have access to the municipal water supply network. Once the construction site is established, the necessary connections can be made to utilize the municipal water supply, if available. The Contractor will apply for water allocation and obtain the required allocation permit or subscription, completing all official procedures accordingly. If the municipal water supply is not available, utility water will be transported to the construction site by tankers by obtaining the necessary permits for the water source.

According to TurkStat data for the year 2022, the daily water withdrawal per capita in Amasya province is 275 L/person-day<sup>15</sup> and the daily water use requirement for a maximum of 200 personnel to be employed during the construction phase is as calculated below.

$$\begin{aligned}
 \text{Total Amount of Water Requirement} &= \text{Number of Personnel} \times \text{Daily Water Withdrawal per Capita} \\
 &= 200 \text{ -person} \times 275 \text{ L /person-day} \\
 &= 55,000 \text{ L/day} = 55 \text{ m}^3\text{/day}
 \end{aligned}$$

The water needed for the construction work in addition to the drinking and utility water is the water to be used dust suppression. 20 m<sup>3</sup>/day is envisaged for the water to be used for dust suppression which will be applied by water sprinkler truck.

Including the 20 m<sup>3</sup>/day water for dust suppression, it is estimated that the daily water use amount for the Project's construction phase will be 75 m<sup>3</sup>/day.

<sup>15</sup> Turkish Statistical Institute (TurkStat). Municipal Water, Wastewater and Waste Statistics Database (MEDAS). Available at: <https://biruni.tuik.gov.tr/medas/>



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In addition to water usage, Project activities may affect the surface and groundwater quality leading to contamination due to the chemicals and wastes or accidental spills. Loose surface material in excavated areas can be carried by rainfall, depositing sediment loads in stream beds or field drainage channels.

With the mitigation measures included in Chapter 6, the significance of above-mentioned risks and impacts will be considered minor.

### 5.3.1.2 Operation Phase

During the operation phase, the Project will be operated by approximately 25 personnel, representing the staff of the Irrigation Union for managing the irrigation system.

According to TurkStat data for the year 2022, the daily water withdrawal per capita in Amasya province is 275 L/person-day<sup>16</sup> and the daily water use requirement for a maximum of 25 personnel to be employed during the operation phase is as calculated below.

$$\begin{aligned}
 \text{Total Amount of Water Requirement} &= \text{Number of Personnel} \times \text{Daily Water Withdrawal per Capita} \\
 &= 25 \text{ -person} \times 275 \text{ L /person-day} \\
 &= 6,875 \text{ L/day} = 6.87 \text{ m}^3/\text{day}
 \end{aligned}$$

Since the Project is a pressurized closed irrigation system, no process water is required for the normal operation of the system. Water use during the operation will therefore be limited to drinking, utility, cleaning and basic facility needs of the irrigation union staff.

Routine maintenance activities (e.g., valve inspections, flushing, chamber cleaning) may require small amounts of water; however, these quantities are considered negligible and do not significantly alter the daily operational water demand.

In the operational phase, potential impacts on water resources primarily relate to:

- localized waterlogging in the event of pipeline leaks or valve malfunctions,
- contamination risks associated with accidental spills during maintenance activities,
- sediment transport or erosion around malfunction points or drainage discharge locations,
- agricultural return flows containing nutrients or agrochemicals, which may indirectly affect surface water quality.

With the mitigation measures outlined in Chapter 6, including proper system monitoring, rapid leak detection, controlled maintenance procedures, and safe handling of chemicals and wastes, and awareness training to the farmers regarding the pesticide control and use, the significance of these impacts is expected to remain minor.

<sup>16</sup> Turkish Statistical Institute (TurkStat). Municipal Water, Wastewater and Waste Statistics Database (MEDAS). Available at: <https://biruni.tuik.gov.tr/medas/>

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## 5.3.2 Soil Management

### 5.3.2.1 Construction Phase

During the construction phase of the Project, soil-related impacts primarily arise from the excavation of trenches for the 437.8 km pipeline network, the handling of excavated soils, the removal of existing concrete-lined channels in certain sections, and the movement of heavy machinery across agricultural lands.

The project area is predominantly characterized by deep alluvial and brown soils that are widely used for irrigated agriculture. Land classification studies indicate that a significant portion of the area consists of Class I, II and III irrigable agricultural lands, which are considered productive soils with high agricultural value. Consequently, construction activities such as excavation, trenching, and movement of heavy machinery may temporarily disturb the soil structure and reduce soil productivity if topsoil stripping, storage and reinstatement are not properly managed.

During the ESMP site visit undertaken for the environmental baseline assessment, no indications of existing soil contamination were identified within the Project area. However, should accidental spills of fuel, lubricants, or other hazardous substances occur during construction, immediate response actions will be undertaken. Spill kits will be deployed to contain and remove the spilled materials. Contaminated soil will be promptly collected, securely stored in sealed containers or bags, and transported to licensed disposal facilities in compliance with applicable national waste management regulations. In addition, any materials from spill response kits that become contaminated during clean-up activities will be handled as hazardous waste and disposed of through licensed facilities, thereby preventing secondary impacts on soil and groundwater.

Excavation works along pipeline routes within alluvial plain areas may also increase localized erosion and sediment displacement, particularly during rainfall events when exposed soils remain uncovered. Although the overall topography of the project area is relatively flat and erosion risk is generally low, temporary soil instability may occur during construction if appropriate erosion and sediment control measures are not implemented.

In addition, the presence of alluvial deposits and localized coarse material layers within the soil profile may influence excavation conditions. In areas where excavation depths fall below streambed levels, temporary groundwater inflow into trenches may occur, potentially affecting drainage conditions and requiring pumping or temporary drainage measures during construction activities.

Construction also poses risks of soil compaction due to machinery movement, which may impair infiltration rates and root development in cultivated areas. While no existing soil contamination has been recorded, accidental spills of fuel and oil from machinery and field repairs remain possible without proper control measures. In sections where existing open channels will be replaced with buried pipelines, concrete linings will be broken and removed from the corridor; if not managed appropriately, these materials may cause temporary soil disturbance or interfere with nearby drainage lines. Furthermore, unprotected stockpiles of excavated material may block irrigation ditches or natural surface drainage patterns, contributing to localized sedimentation.



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Construction works will generate significant volumes of soil. A total of approximately 113,766 tons ( $\approx 75,844 \text{ m}^3$ ) of topsoil will be stripped and stored separately from subsoil to prevent mixing. Temporary storage will occur for about one week at controlled stockpile locations along the corridor, after which 100% of the stripped topsoil will be reinstated to restore soil productivity. Excavation activities are expected to produce 2,379,648 tons ( $\approx 1,487,280 \text{ m}^3$ ) of soil. The excavated soil will be reused as much as possible for backfilling and surface restoration. The excess unused excavated soil will be disposed of at the officially designated and permitted excavation disposal sites identified by the Amasya Municipality and Suluova Municipality. In areas where pipelines will be installed within the alignment of existing open channels, excavation will focus on the removal of concrete casings, which will be transported to licensed waste facilities in accordance with national regulations.

Trench dimensions will vary depending on pipe diameter, which ranges between 110 mm and 2700 mm, and excavation depths will therefore differ along the route. In many areas, the route follows existing farm access roads or canal banks, minimizing the extent of new disturbance.

Soil contamination risks will be minimized through the use of drip pans under stationary machinery, readily available spill kits, and proper secondary containment for hazardous materials and any temporary fuel storage units. Waste oils and contaminated soils will be transported to licensed facilities. In erosion-prone areas, additional sediment barriers such as silt fences or straw bales will be installed to prevent sediment transport during rainfall events.

Overall, the significance of soil-related impacts during the construction phase is assessed as Moderate before mitigation. To reduce these impacts, appropriate topsoil management, controlled excavation practices, erosion-prevention measures in sensitive zones, stabilization of stockpiles, and strict contamination-prevention procedures will be implemented throughout the construction corridor. Detailed mitigation requirements are provided in Table 6-2.

### 5.3.2.2 Operation Phase

During the operation phase, soil-related risks are expected to remain minimal, as the upgraded closed pressurized irrigation system has been designed to prevent erosion, uncontrolled runoff and water losses typically associated with open-channel schemes. Most soil-related risks during operation are limited to routine maintenance and repair works carried out along pipeline routes and system components.

Maintenance vehicles accessing valve chambers, control units and buried pipeline corridors may cause localized and temporary soil disturbance or minor compaction. These impacts are short-term, small-scale and reversible, as works are performed within narrow and predefined access strips and do not involve large-area excavation.

In addition, diffuse soil impacts may arise from improper pesticide or agro-chemical use by farmers during routine agricultural activities. While DSI does not intervene directly in on-farm chemical management, this risk will be addressed through awareness-raising activities and user information sessions carried out under the Project's stakeholder engagement framework. These activities will focus on preventing excessive chemical use, reducing runoff to irrigation channels and supporting good agricultural practices.

No long-term or large-scale soil degradation is expected during the operation phase, as the irrigation design inherently minimizes soil erosion and waterlogging risks. With regular maintenance of the system and continued user guidance, operation-phase soil impacts are



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anticipated to remain low and localized. Detailed mitigation requirements for the operation phase are presented in Table 6-3.

### 5.3.3 Air Quality

#### 5.3.3.1 Construction Phase

During the construction phase of the Project, dust emissions from excavation works and exhaust emissions from the construction equipment used for the project are expected to occur. In this section, possible dust emissions and exhaust emissions that may occur during the construction phase are calculated, and the impact of the project activities on the baseline air pollution level is evaluated.

Excavation works will be conducted on the pipeline route, and dust and exhaust gas emissions will occur from construction machinery/equipment to be used in construction works.

In terms of air quality, the Project is subject to both national legislation and the World Bank Group (WBG) General Environmental, Health, and Safety (EHS) Guidelines. The relevant regulations and international reference documents that define the Project Standards for air quality are listed below:

- Regulation on Industrial Air Pollution Control
- Regulation on the Assessment and Management of Air Quality
- World Health Organization (WHO) Ambient Air Quality Guidelines

The limit values specified in Regulation on Control of Industrial Air Pollution (RCIAP) (Table 2.2 Air Quality Limit Values in the Facility Impact Area of the Regulation Annex-2<sup>17</sup>) are given in Table 5-5.

*Table 5-5. Air Quality Limit Values in the Facility Impact Area (RCIAP)*

Parameter	Period	Unit	Limit Value
SO <sub>2</sub>	Hourly (It is not exceeded more than 24 times in a year.)	µg/m <sup>3</sup>	350
	24-hour		125
	LTV**		60
	Annual and winter period (1 October-31 March)		20
NO <sub>2</sub>	Hourly (It is not exceeded more than 18 times a year.)	µg/m <sup>3</sup>	200
	Year		40
PM <sub>10</sub>	24-hour (It is not exceeded more than 35 times a year.)	µg/m <sup>3</sup>	50
	Year		40
Pb	Year	µg/m <sup>3</sup>	0.5
CO	Maximum daily 8-hour average	mg/m <sup>3</sup>	10
Cd	LTV	µg/m <sup>3</sup>	0.02
HCl	STV**	µg/m <sup>3</sup>	150
	LTV		60

<sup>17</sup>Source: Legislation Information System,  
<https://www.mevzuat.gov.tr/mevzuat?MevzuatNo=13184&MevzuatTur=7&MevzuatTertip=5>

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Parameter	Period	Unit	Limit Value
HF	Hour	$\mu\text{g}/\text{m}^3$	30
	STV		5
H <sub>2</sub> S	Hour	$\mu\text{g}/\text{m}^3$	100
	STV		20
TOC*	Hour	$\mu\text{g}/\text{m}^3$	280
	STV		70
Settled Dust	STV	$\text{mg}/\text{m}^2\text{day}$	390
	LTV		210

\* TOC: Total Organic Compounds, in terms of carbon

\*\* LTV: Long Term Value, STV: Short Term Value, PM: Particulate Matter

WBG refers to WHO Environmental Air Quality Guides Limit Values according to General EHS Guidelines - 1. Environment - 1.1: Air Emissions and Ambient Air Quality. These limit values that must be considered during the project phases are provided in Table 5-6.

*Table 5-6. WHO Environmental Air Quality Guides Limit Values (within the WBG EHS Guidelines)*

Parameter	Averaging Period	Guideline Value ( $\mu\text{g}/\text{m}^3$ )
SO <sub>2</sub>	10 minutes	500
	24-hour	20
NO <sub>2</sub>	1 hour	200
	1 year	40
PM <sub>10</sub>	24-hour	50
	1 year	20
PM <sub>2.5</sub>	24-hour	25
	1 year	10
O <sub>3</sub>	8-hour daily maximum	100

In addition, new air quality standards were recommended by the WHO in 2021<sup>18</sup>; however, the WB EHS Guidelines mentioned above have not yet been updated accordingly. The recommended limit values are presented in Table 5-7.

*Table 5-7. WHO Recommended Environmental Air Quality Guideline Limit Values (2021)*

Parameter	Averaging Period	Limit Value ( $\mu\text{g}/\text{m}^3$ )
SO <sub>2</sub>	10 minutes	500
	24-hour	40
NO <sub>2</sub>	1 hour	200
	1 year	10
PM <sub>10</sub>	24-hour	45
	1 year	15
PM <sub>2.5</sub>	24-hour	15
	1 year	5
O <sub>3</sub>	8-hour daily maximum	100
CO	24-hour	4
	8-hour	10

<sup>18</sup> Source: <https://iris.who.int/bitstream/handle/10665/345329/9789240034228-eng.pdf>



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When comparing the limit values in national and international parameters, the strictest limit value has been taken as the Project Standard. Consequently, the air quality parameters and their corresponding limit values applicable to the Project are presented in Table 5-8.

*Table 5-8. Project Standards and Limit Values for Air Quality*

Parameter	Period	Unit	Project Standards
SO <sub>2</sub>	Hourly (It is not exceeded more than 24 times in a year.)	µg/m <sup>3</sup>	350
	24-hour		40
	Long Term Value (LTV)		60
	Annual and winter period (1 October-31 March)		20
NO <sub>2</sub>	Hourly (It is not exceeded more than 18 times a year.)	µg/m <sup>3</sup>	200
	1 Year		10
PM <sub>10</sub>	24-hour	µg/m <sup>3</sup>	45
	1 Year		15
PM <sub>2.5</sub>	24-hour	µg/m <sup>3</sup>	15
	1 year		5
Pb	Year	µg/m <sup>3</sup>	0.5
CO	8-hour	mg/m <sup>3</sup>	10
	24-hour	µg/m <sup>3</sup>	4
Cd	LTV	µg/m <sup>3</sup>	0.02
HCl	Short Term Value (STV)	µg/m <sup>3</sup>	150
	LTV		60
HF	Hour	µg/m <sup>3</sup>	30
	STV		5
H <sub>2</sub> S	Hour	µg/m <sup>3</sup>	100
	STV		20
Total Organic Compounds (In terms of carbon)	Hour	µg/m <sup>3</sup>	280
	STV		70
Settled Dust	STV	mg/m <sup>2</sup> day	390
	LTV		210
O <sub>3</sub>	8-hour daily maximum	µg/m <sup>3</sup>	100

### 5.3.3.1.1 Dust Emissions During Construction Phase

For the excavation works to be carried out within the scope of the Project, the topsoil on the surface will be stripped. Topsoil that will be stripped from the surface during excavation will be collected separately from the excavation material at the channel sides to be used in landscaping works. Following the construction works are completed, the topsoil will be used as surface covering for landscaping works.

Construction activities will mainly involve trench excavation along pipeline routes, pipe laying, backfilling, concrete works for hydraulic structures, and mechanical and electrical installation at pumping stations. Excavation will be limited to pipeline corridors and, following installation, the land will be restored to its original condition. For the excavation works to be carried out



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within the scope of the Project, the topsoil on the surface will be stripped. Topsoil that will be stripped from the surface during excavation will be collected separately from the excavation material at the channel sides to be used in landscaping works. Following the construction works are completed, the topsoil will be used as surface covering for landscaping works. The construction duration is planned as approximately four (4) years.<sup>19</sup>

A total of 437.80 km of pipelines with different diameters (see Table 3-1) will be installed within the scope of the Project during excavation activities. The excavated soil will be temporarily stored adjacent to the excavation areas along the pipeline route. As stated in the Technical Report<sup>4</sup>, it is assumed that all excavation material will be used for backfilling purposes to cover the pipelines. The excavation material and topsoil will not be transported off site and will only be temporarily stored within the immediate vicinity of the excavation areas. As a result, transportation of excavated material and topsoil outside the project area will not be required, thus emissions associated with material transportation and long-term storage have not been considered within the scope of the emission calculations. Also Screening Report supports that assumptions because it states that following the excavation along the pipeline route; the pipeline will be laid, and the area will be covered, converted to its original state. Therefore, the amount of excavation and earth movement will be minimal.

Within the scope of the excavation calculations, the excavation width was determined by adding an assumed safety margin of 0.30 m to the average pipe diameter. Similarly, the excavation height was calculated by adding an assumed allowance of 0.50 m to the average pipe diameter. The density of the excavated material was assumed as 1.6 ton/m<sup>3</sup>, while the topsoil density was considered as 1.5 ton/m<sup>3</sup>. Based on these assumptions, both the excavation volumes (m<sup>3</sup>) and the corresponding weights (tons) of the excavated material and topsoil were calculated. For the estimation of flow rates, it was assumed that construction activities would be carried out 365 days per year with a daily working schedule of 12 hours. Accordingly, the emission factors related to stripping, loading, and unloading activities, together with the calculation results, are presented in the following section. are given in Table 5-9.

*Table 5-9. Dust Emission Calculation Results*

Emission Sources	Excavation Emissions (kg/h)		Topsoil Emissions (kg/h)		TOTAL EMISSIONS (kg/h)	
	Uncontrolled	Controlled	Uncontrolled	Controlled	Uncontrolled	Controlled
Stripping	3.3956	1.6978	0.1623	0.0812	3.55795	1.77898
Loading	1.3582	0.6791	0.0649	0.0325	1.42318	0.71159
Unloading	1.3582	0.6791	0.0649	0.0325	1.42318	0.71159
<b>Total</b>	<b>6.1121</b>	<b>3.0561</b>	<b>0.2922</b>	<b>0.1461</b>	<b>6.40432</b>	<b>3.20216</b>

### 5.3.3.1.2 Exhaust Gas Emissions During Construction Phase

The land preparation and construction phase is expected to last 4 years<sup>19</sup>. The list of machinery/equipment used for the construction phase is given in Table 5-10.

<sup>19</sup> DSİ 7th Regional Directorate, Irrigation Branch Directorate – Technical Information Note provided for ESMP preparation (Amasya Suluova Irrigation Renovation Project), February 2026.



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Scope 1 emissions have been estimated based on assumption of fuel consumption data and number of machinery-equipment data that are assumed according to parallel to another similar projects.

*Table 5-10. Construction Machinery/Equipment to be Used in a Single Working Area*

Machinery-Equipment	Number	Diesel Fuel Consumption (L/h)
Excavator	8	20
Loader	9	
Truck	15	
Pick-up Truck	9	
Passenger Vehicle	7	
Minibus (for personnel service)	5	
Water Sprinkler (Water Truck)	2	
Roller	1	
Grader	1	
Bulldozer	1	
Diesel Tanker	1	
Maintenance Vehicle	1	
<b>TOTAL</b>	60	

Within the scope of the planned Project, it is assumed that the quantity of diesel consumed by the construction vehicles used on the site during the land preparation and construction phases will be 20 liters per hour on average, and it is assumed that an expected operating schedule of 12 hours per day and 365 days per year.

Following the determination of diesel consumption for the construction phase, CO<sub>2</sub>e emissions were calculated using the United Kingdom (UK) Government Greenhouse Gas (GHG) Conversion Factors for Company Reporting (DEFRA & DESN, 2025), applying gas-specific factors for CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O.<sup>20</sup>

Total GHG emissions from construction machinery/equipment activities during construction phase for per year are summarized in Table 5-11 in terms of CO<sub>2</sub>e. These calculations were made according to total diesel consumption per year.

*Table 5-11. Emission Factors (EF) and Annual Emission Quantities from Machinery/Equipment*

Emissions	Default Emission Factor (kg CO <sub>2</sub> e)	Yearly Diesel Fuel Consumption (L)	Density of Diesel Fuel (kg/L)	Yearly Emission (ton CO <sub>2</sub> e/year)
Carbon dioxide	2.62	5,080,800	0.830	11.430
Methane	0.00029			1.265
Nitrous oxide	0.033			1.446
<b>TOTAL</b>				<b>13.140</b>

For the Project, the emission calculations were carried out based on a conservative, worst-case scenario assuming that all construction vehicles and machinery would operate simultaneously. In practice, however, such a situation is unlikely, as construction activities will progress along different sections of the irrigation line, and equipment will be distributed across

<sup>20</sup> Source : Government GHG Conversion Factors for Company Reporting, 2025.



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separate work areas and time periods. Therefore, the cumulative emission load will be lower than the calculated values.

Although a large portion of the Project area is located within rural and agricultural zones, certain sections of the construction corridor are situated in close proximity to a state highway, where traffic density and background emissions are higher compared to purely agricultural areas. Therefore, temporary increases in dust and exhaust emissions may occur locally, especially near the road corridor and during periods of intensive material transport.

Nevertheless, considering that construction activities will be short-term and progressive along the pipeline route, and that standard mitigation measures such as regular watering of roads, proper vehicle maintenance, and optimized scheduling will be implemented, no significant deterioration in local air quality is anticipated.

### 5.3.3.2 Operation Phase

During the operation phase of the Project, no regular vehicle activity is foreseen apart from the occasional use of maintenance and repair machinery. Therefore, no significant air quality impacts are expected, other than minor and short-term local emissions that may occur during maintenance and repair works.

Moreover, vehicle use will be limited to occasional maintenance and repair work. Other than short-term and localized exhaust emissions from maintenance vehicles, no significant impact on air quality is anticipated throughout the operation of the closed pipe irrigation system.

## 5.3.4 Noise and Vibration

### 5.3.4.1 Construction Phase

During the construction phase, noise emissions will arise mainly from the operation of vehicles, machinery, and equipment. Details on the types and the total quantities of machinery expected to be utilized in construction activities are provided in Table 5-12. It is anticipated that no more than ten (10) vehicles will be operating simultaneously within the same work area during pipeline construction.

*Table 5-12. Total Numbers and Noise Levels of the Vehicles and Machinery*

Machinery-Equipment	Number	Expected Noise Level (dBA) <sup>21</sup>
Excavator	8	105
Loader	9	104
Truck	15	102
Pick-up Truck	9	90
Passenger Vehicle	7	85
Minibus (for personnel service)	5	90
Water Sprinkler (Water Truck)	2	95
Roller	1	106
Grader	1	110

<sup>21</sup> U.S. Environmental Protection Agency (EPA), *Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances*, NTID 300.1, Washington, D.C., 1971.



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Machinery-Equipment	Number	Expected Noise Level (dBA) <sup>21</sup>
Bulldozer	1	112
Diesel Tanker	1	92
Maintenance Vehicle	1	90

The national and international limit values for noise are given in Table 5-13 and

Table 5-14. Accordingly, the limit value for the daytime is **55 dBA** for the Project since there will not be work at nighttime.

*Table 5-13. Limit Values in Regulation on Environmental Noise Control*

Noise Sources	Measured Parameters	Environmental Noise Levels		
		Daytime	Evening	Night
Industrial facilities, sources of transport	LA <sub>eq,5min.</sub>	65 dB(A)	60 dB(A)	55 dB(A)
Workplaces that broadcast music	LA <sub>eq,63-250 Hz</sub>	60 dB(A)	55 dB(A)	50 dB(A)
Workplaces	LA <sub>eq,5min.</sub>	Background + 5 dB(A)		Background + 3 dB(A)
In case of more than one workplace	LA <sub>eq,5min.</sub>	Background + 7 dB(A)		Background + 5 dB(A)
All sources	LC <sub>max</sub>	100 dB(C)		

*Table 5-14. Noise Limit Values in WBG General EHS Guidelines*

Receptor	One Hour L <sub>Aeq</sub> (dBA)	
	Daytime (07:00-22:00)	Nighttime (22:00-07:00)
Residential; institutional; educational	55	45
Industrial; commercial	70	70

Excavation and pipe-laying activities under the Project will progress regionally, and therefore, all of the above-mentioned vehicles and machinery will not be operating simultaneously within the same work area. Considering the layout of the work zones, the equipment likely to remain continuously within a single active area until completion of works includes: two (2) excavators, two (2) trucks, one (1) loader, one (1) pick-up truck, one (1) water truck, one (1) roller, one grader (1), and one (1) bulldozer. Calculations have been realistically made based on these units. The results of the noise level calculations are summarized in the following Table 5-15.

*Table 5-15. Noise Calculation Results*

r (m)	L <sub>PT</sub> (dB)	Aatm (dBA)	DF	L (dBA)	Aatm (dB)	DF	L (dBA)	Aatm (dB)	DF	L (dBA)	Aatm (dB)	DF	L (dBA)	L <sub>T</sub> (dBA)
		(f:500 Hz)	(dB)	(f:500 Hz)	(f:1000 Hz)	(dB)	(f:1000 Hz)	(f:2000 Hz)	(dB)	(f:2000 Hz)	(f:4000 Hz)	(dB)	(f:4000 Hz)	
			(f=500 Hz)		(f=1000 Hz)		(f=2000 Hz)		(f=4000 Hz)					
1	108.28	0.00	-3.2	105.08	0.00	0	108.28	0.00	1.2	109.47	0.02	1	109.26	114.35
5	94.30	0.00	-3.2	91.10	0.01	0	94.29	0.02	1.2	95.47	0.10	1	95.20	100.34
10	88.28	0.00	-3.2	85.08	0.01	0	88.27	0.05	1.2	89.43	0.20	1	89.08	94.28
20	82.26	0.01	-3.2	79.05	0.02	0	82.23	0.10	1.2	83.36	0.39	1	82.86	88.18
30	78.74	0.01	-3.2	75.53	0.04	0	78.70	0.15	1.2	79.79	0.59	1	79.14	84.58



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r (m)	L <sub>PT</sub> (dB)	Aatm (dBA)	DF	L (dBA)	Aatm (dB)	DF	L (dBA)	Aatm (dB)	DF	L (dBA)	Aatm (dB)	DF	L (dBA)	L <sub>T</sub> (dBA)
		(f:500 Hz)	(dB)	(f:500 Hz)	(f:1000 Hz)	(dB)	(f:1000 Hz)	(f:2000 Hz)	(dB)	(f:2000 Hz)	(f:4000 Hz)	(dB)	(f:4000 Hz)	
			(f=500 Hz)		(f=1000 Hz)		(f=2000 Hz)		(f=4000 Hz)					
40	76.24	0.01	-3.2	73.03	0.05	0	76.19	0.20	1.2	77.24	0.79	1	76.45	82.01
50	74.30	0.02	-3.2	71.08	0.06	0	74.24	0.25	1.2	75.25	0.99	1	74.31	79.99
60	72.72	0.02	-3.2	69.50	0.07	0	72.64	0.30	1.2	73.62	1.18	1	72.53	78.34
70	71.38	0.02	-3.2	68.16	0.09	0	71.29	0.35	1.2	72.23	1.38	1	71.00	76.93
80	70.22	0.02	-3.2	66.99	0.10	0	70.12	0.39	1.2	71.02	1.58	1	69.64	75.70
90	69.19	0.03	-3.2	65.97	0.11	0	69.08	0.44	1.2	69.95	1.78	1	68.42	74.61
100	68.28	0.03	-3.2	65.05	0.12	0	68.16	0.49	1.2	68.99	1.97	1	67.31	73.62
125	66.34	0.04	-3.2	63.10	0.15	0	66.19	0.62	1.2	66.92	2.47	1	64.87	71.52
150	64.76	0.05	-3.2	61.51	0.19	0	64.57	0.74	1.2	65.22	2.96	1	62.80	69.78
200	62.26	0.06	-3.2	59.00	0.25	0	62.01	0.99	1.2	62.47	3.95	1	59.31	66.99
250	60.32	0.08	-3.2	57.04	0.31	0	60.01	1.23	1.2	60.29	4.93	1	56.39	64.79
300	58.74	0.09	-3.2	55.44	0.37	0	58.37	1.48	1.2	58.46	5.92	1	53.82	62.96
350	57.40	0.11	-3.2	54.09	0.43	0	56.97	1.73	1.2	56.87	6.91	1	51.49	61.40
<b>400</b>	<b>56.24</b>	<b>0.12</b>	<b>-3.2</b>	<b>52.91</b>	<b>0.49</b>	<b>0</b>	<b>55.74</b>	<b>1.97</b>	<b>1.2</b>	<b>55.46</b>	<b>7.89</b>	<b>1</b>	<b>49.34</b>	<b>60.04</b>
500	54.30	0.15	-3.2	50.95	0.62	0	53.68	2.47	1.2	53.03	9.87	1	45.43	57.74

In the Project, noise levels were evaluated under a realistic assumption that a maximum of ten machines would operate simultaneously within a single work area. Although, in theory, higher noise levels could occur if all machinery were to operate together, such a scenario is not feasible due to the construction schedule and the dispersed, linear nature of the pipeline works.

Given that works at each specific location will be of short duration, and machinery will move progressively along the route, prolonged exposure is not expected. Nevertheless, noise monitoring will be conducted in accordance with the provisions of the Environmental Noise Control Regulation. Where construction activities take place near sensitive receptors, additional measures such as temporary noise barriers or scheduling work during less sensitive hours will be implemented as needed. Regular maintenance of vehicles and equipment will also be ensured to minimize unnecessary noise emissions.

Similarly, vibration during the construction phase of the Project will primarily result from excavation, soil compaction, and the movement of heavy machinery. Given the linear nature of the works and the short duration of construction activities in any single area, vibration impacts are expected to be minor and temporary. The use of well-maintained equipment and proper operation practices will further minimize vibration levels. In areas close to sensitive structures such as residential buildings or community facilities, preventive measures (e.g., reduced equipment speed, avoidance of simultaneous operation of heavy rollers and excavators, and scheduling during daytime) will be applied when necessary. Vibration monitoring will be conducted near sensitive receptors if complaints arise.

### 5.3.4.2 Operation Phase

During the operation phase of the Project, no significant sources of continuous noise or vibration are expected. The system will operate under pressure through underground pipelines without any mechanical pumping or high-energy equipment. The only potential sources of



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temporary noise or vibration may arise from periodic maintenance and repair work, which could involve light machinery or service vehicles.

These activities will be short-term and infrequent and are not anticipated to cause any notable impact on surrounding settlements or sensitive receptors. Regular maintenance of equipment and adherence to working hour limitations will ensure that operational noise and vibration remain within acceptable limits as defined by the national and international standards. Consequently, the overall impact of noise and vibration during the operation phase is considered negligible.

### 5.3.5 Waste Management

This section evaluates the environmental and social risks associated with waste generation during both the construction and operation phases of the Project. Waste streams encompass domestic solid waste, packaging waste, recyclable construction materials, hazardous waste, waste oils, waste batteries and accumulators, end-of-life tires, electronic waste, medical waste, and significant quantities of excavation materials generated during pipeline installation and the demolition of existing canal structures.

#### 5.3.5.1 Construction Phase

During the construction phase, domestic solid waste will be generated primarily from the daily activities of up to 200 personnel, consisting mainly of municipal waste, packaging materials and mixed household-type waste. Using the 2024 TurkStat municipal solid waste generation rate for Amasya Province (1.26 kg/person-day),<sup>22</sup> total domestic waste generation is estimated at 252 kg/day.

Packaging waste will arise from the delivery of construction materials, consumables and food supplies. Plastics, cardboard, nylon and wooden pallets constitute the main components of this stream. If not adequately stored, packaging materials may cause visual pollution or become dispersed by wind, increasing the fire load in temporary storage areas. Recyclable construction materials will also form a small but important waste stream, including scrap metal, reinforcement pieces, cable offcuts, pipe residues and dismantled components. Improper storage or mixing of recyclables can reduce recovery efficiency and expand the volume of disposable waste.

Excavation waste represents the most substantial construction-phase waste stream. Approximately 2,379,648 tons ( $\approx 1,487,280 \text{ m}^3$ ) of excavation soil will be generated. The excavated soil will be reused as much as possible for backfilling and surface restoration. The excess unused excavated soil will be disposed of at the officially designated and permitted excavation disposal sites identified by the Amasya Municipality and Suluova Municipality. Additionally, 113,766 tons ( $\approx 75,844 \text{ m}^3$ ) of topsoil will be stripped, stored separately and reinstated in full to preserve soil productivity. In sections where the new route intersects with existing concrete-lined channels, demolition will generate concrete waste, which will be transferred to licensed waste facilities. No batching plant will operate on-site; all sand-gravel will be sourced from permitted quarries, when needed. Excavation activities may temporarily

<sup>22</sup> Turkish Statistical Institute (TurkStat). Municipal Water, Wastewater and Waste Statistics Database (MEDAS). Available at: <https://biruni.tuik.gov.tr/medas/>



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contribute to dust generation, sedimentation risks, increased haul traffic and localized stockpile impacts, though these effects remain manageable with adequate controls.

Hazardous waste will be produced in limited quantities, typically from paint residues, contaminated containers, oily rags, spill absorbents or chemical packaging. Although volumes are expected to remain low, these materials may pose risks to soil, groundwater and worker health if not handled according to regulatory requirements. Similarly, small volumes of waste oils may occur during emergency repairs, despite the fact that routine maintenance will not be conducted on-site. Waste oils contain high concentrations of hydrocarbons and require sealed, labeled containers placed on impermeable surfaces until their transfer to licensed collectors.

Waste batteries and accumulators may be generated during the use of machinery and vehicles. Due to heavy metal content, these materials must be strictly segregated and delivered to licensed recycling facilities. End-of-life tires resulting from vehicle and machinery operation pose fire and vector-breeding risks if stored improperly. Electronic waste generated from office activities—such as chargers or small Information Technology (IT) components—will remain minimal. Medical waste arising from minor first-aid procedures will occur in very small quantities yet requires fully segregated storage and licensed transport due to its infectious nature.

Although environmental risks remain moderate, improper storage may lead to odor, littering or pest attraction; however, these impacts remain fully manageable with appropriate handling and regular collection. All waste types will be managed in accordance with the relevant national legislation and international standards given in Annex-4, the mitigation measures regarding the waste management are given in Chapter 6.

### 5.3.5.2 Operation Phase

During the operation period, domestic solid waste will be produced by approximately 25 personnel employed under the Irrigation Union. Using the same per capita rate for Amasya, total daily domestic waste generation is calculated at 31.5 kg/day. Waste quantities remain low and environmental risks minimal, provided that wastes are routinely collected and managed in coordination with municipal systems.

Packaging waste, recyclables, small quantities of Waste Electrical and Electronic Equipment (WEEE), spent batteries, and minor amounts of medical waste may be generated intermittently during routine inspections and administrative activities. Hazardous waste production is expected to remain negligible, with only small quantities arising from periodic maintenance works. As long as proper segregation, labeling and licensed disposal procedures are followed, the environmental risk remains low.

Maintenance works carried out during operation, particularly for repairing buried pipelines, may generate limited amounts of excavation soil. Reusable fractions will be reinstated as backfill, while surplus materials will be delivered to the officially designated and permitted excavation disposal sites identified by the Amasya Municipality and Suluova Municipality. These activities produce minimal environmental impact when managed appropriately and in line with the waste handling procedures established for the construction phase. Thus, the overall impact significance for operation phase regarding waste management is considered as low, and necessary mitigation measures are given in Chapter 6.



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### 5.3.6 Wastewater Management

#### 5.3.6.1 Construction Phase

During the construction phase, the generation of wastewater will be limited to domestic sources such as the use of toilets by site personnel. The main risks are associated with potential soil and surface water contamination due to improper collection, leakage, or uncontrolled discharge of wastewater from mobile toilets or septic tanks. Minor hygiene and odor issues could also occur if wastewater storage units are not regularly emptied or properly maintained.

According to TurkStat data for the year 2022, the daily wastewater discharged per capita in Amasya province is 164 L/person-day<sup>23</sup> and the daily wastewater for a maximum of 200 personnel to be employed during the construction phase is as calculated below.

$$\begin{aligned}
 \text{Total Amount of Wastewater Generated} &= \text{Number of Personnel} \times \text{Daily Wastewater Discharged per Capita} \\
 &= 200 \text{ -person} \times 164 \text{ L /person-day} \\
 &= 32,800 \text{ L/day} = 32.8 \text{ m}^3/\text{day}
 \end{aligned}$$

During the construction phase, generated wastewater will be collected in impermeable septic tanks and transported by licensed vehicles to Amasya Suluova Municipality WWTP (Suluova WWTP). In case Suluova WWTP is not suitable for wastewater disposal, wastewater generated will be sent to Merzifon Municipality WWTP located approximately 12 km west of the project area or Amasya WWTP located approximately 12 km southeast of the project area. The use of mobile toilets with their own impermeable wastewater collection reservoirs within the scope of the project is the responsibility of the Contractor, and the wastewater accumulated in these tanks must also be transported to a licensed WWTP using licensed vehicles, with the relevant permits obtained.

Moreover, 20 m<sup>3</sup>/day is envisaged for the water to be used for dust suppression which will be applied by water sprinkler truck, however, since this water will evaporate, there will be no wastewater generation.

The water requirement during the construction phase of the Project, the amount of wastewater generated, and the disposal method are summarized in Table 5-16.

Table 5-16. Estimated Wastewater Amounts for Construction Phase

Purpose of Use	Supply	Requirement of Water (m <sup>3</sup> /day)	Amount of Wastewater (m <sup>3</sup> /day)	Disposal Method
Personnel domestic and drinking water	Municipal water network and market	55	32.8	Municipal sewage system or mobile toilet septic tank / impermeable septic tank and transfer to licensed WWTP
Land irrigation for dust prevention	Transported water	20	Evaporation	Not necessary
<b>Total</b>		<b>75</b>	<b>32.8</b>	<b>WWTP</b>

<sup>23</sup> Turkish Statistical Institute (TurkStat). Municipal Water, Wastewater and Waste Statistics Database (MEDAS). Available at: <https://biruni.tuik.gov.tr/medas/>

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### 5.3.6.2 Operation Phase

The operation of the irrigation network Project will be responsibility of the Irrigation Union. It is estimated that 25 personnel will be working in this union responsible for the irrigation network operation, maintenance and repair.

According to TurkStat data for the year 2022, the daily wastewater discharged per capita in Amasya province is 164 L/person-day<sup>24</sup> and the daily wastewater for 25 personnel during the operation phase is as calculated below.

$$\begin{aligned}
 \text{Total Amount of Wastewater Generated} &= \text{Number of Personnel} \times \text{Daily Wastewater Discharged per Capita} \\
 &= 25 \text{ -person} \times 164 \text{ L /person-day} \\
 &= 4,100 \text{ L/day} = 4.1 \text{ m}^3\text{/day}
 \end{aligned}$$

It is estimated that the Irrigation Union will generally work in offices located in the central district, so the wastewater generated will be disposed of to the urban sewage system. For the maintenance and repair works, an impermeable septic tank might be constructed where necessary. The wastewater generated and collected in the septic tank will be emptied by vacuum trucks and sent to Suluova WWTP. The irrigation union to be selected for the operation of the Project should make an agreement/protocol with Suluova Municipality regarding the issue.

The natural drainage of the area is the Tersakan Stream. Surface waters formed after precipitation can be removed from the project area by this natural stream without damaging the project area.

Moreover, the irrigation system to be installed within the scope of the Project will provide effective irrigation methods (sprinkler, dripping and release systems) to eliminate the over irrigation of the crops.

## 5.3.7 Impacts on Biodiversity

### 5.3.7.1 Construction Phase

Construction activities associated with the rehabilitation of irrigation infrastructure, including excavation, pipeline installation, canal rehabilitation and the movement of construction machinery, may result in temporary disturbances to biodiversity within the Project Area of Influence (Aoi).

The Project Area is largely characterized by modified agricultural landscapes; however, several biodiversity receptors occur within the wider area, including the Yedikır Wetland Important Bird Area (IBA) and the Yedikır Dam Natural Protected Area.

Potential biodiversity impacts during the construction phase include:

<sup>24</sup> Turkish Statistical Institute (TurkStat). Municipal Water, Wastewater and Waste Statistics Database (MEDAS). Available at: <https://biruni.tuik.gov.tr/medas/>



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## **Habitat Disturbance and Vegetation Clearance**

Construction activities may require localized removal of vegetation along pipeline routes, canal banks and construction access points. These activities may temporarily disturb ruderal vegetation communities and small habitat patches along irrigation corridors. However, as works will largely occur within existing irrigation infrastructure corridors, the extent of vegetation loss is expected to be limited.

## **Disturbance to Fauna**

Noise, vibration and human presence associated with construction activities may cause temporary disturbance to fauna species inhabiting nearby agricultural fields, canal margins and wetland habitats. In particular, bird species associated with the Yedikır Wetland IBA may temporarily avoid areas close to active construction zones.

In addition, linear irrigation infrastructure elements within the Project Area of Influence, particularly along pipeline corridors and associated excavation zones, may provide limited ecological connectivity between agricultural habitats and nearby wetland systems, including the Yedikır Wetland. During the construction phase, activities such as trench excavation, temporary obstruction of surface water flow, soil stockpiling, and removal of vegetation may locally disrupt this connectivity. Such disturbances could reduce habitat permeability, limit species movement, and temporarily affect micro-habitats along the construction corridor. However, considering that the Project involves the rehabilitation of existing infrastructure through a closed, pressurized pipeline system and does not introduce new permanent linear barriers, these impacts are expected to be localized, short-term, and reversible. With the implementation of appropriate mitigation measures, including maintaining drainage continuity and reinstating disturbed areas, the residual impact is anticipated to be low. Such disturbance is expected to be short-term and reversible, as construction activities will be limited in duration and spatial extent.

## **Disturbance to Small Mammals and Reptiles**

Excavation activities may temporarily disturb small mammals, reptiles and amphibians that utilize canal banks, field margins and uncultivated patches. These species are typically common and widely distributed in agricultural landscapes.

## **Sedimentation and Water Quality Impacts**

Earthworks conducted near irrigation canals or drainage channels may result in temporary sediment runoff into watercourses if not properly managed. Increased turbidity could temporarily affect aquatic organisms and wetland habitats connected to the irrigation network.

## **Disturbance within the Yedikır Natural Protected Area**

A section of the S1 pipeline (approximately 2,845 m) is located within the Yedikır Dam Natural Protected Area (1st Degree Natural Site Area). However, the pipeline will be installed as a buried closed system, which significantly reduces the potential for long-term impacts on the protected area.

Construction works within this area may nevertheless result in temporary disturbance due to machinery movement and excavation activities.



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Overall, construction-related biodiversity impacts are expected to be temporary, localized and reversible, particularly because the project involves rehabilitation of existing irrigation infrastructure rather than development in previously undisturbed natural habitats.

### 5.3.7.2 Operation Phase

During the operation phase, biodiversity impacts are expected to be minimal, as the project involves the continued operation of existing irrigation infrastructure.

Potential impacts during the operation phase may include:

#### **Disturbance from Maintenance Activities**

Periodic inspection and maintenance of pipelines, canals and related infrastructure may result in occasional disturbance to fauna species inhabiting nearby agricultural fields and canal margins. These activities are expected to be infrequent and short in duration.

#### **Changes in Local Hydrological Conditions**

The rehabilitation of irrigation infrastructure may alter local water flow patterns or irrigation efficiency. While these changes are generally expected to improve water management, potential indirect effects on adjacent habitats, particularly small wetland patches connected to irrigation canals, may occur if water distribution patterns change significantly.

In addition, temporary and localized alterations in surface drainage patterns may occur during construction activities, potentially result in minor and short-term effects on the ecological connectivity between agricultural areas and adjacent wetland habitats. However, considering that the Project involves the rehabilitation of existing irrigation infrastructure through a closed, pressurized pipeline system and does not result in permanent modification of hydrological pathways, such effects are expected to be limited extent, temporary in duration, and readily manageable through standard appropriate construction and operational controls.

#### **Disturbance to Wetland-associated Bird Species**

The Yedikır Wetland IBA located within the broader Project Aol supports various wetland bird species. Although no permanent infrastructure will be constructed within core wetland habitats, occasional maintenance works or human presence may result in temporary disturbance to birds using nearby habitats.

#### **Risk of Accidental Pollution**

During operation, accidental spills of fuels, oils or other hazardous materials from maintenance equipment could potentially affect soil or water quality if not properly managed.

However, given that the Project mainly involves the operation of existing irrigation infrastructure, the likelihood and magnitude of biodiversity impacts during the operation phase are considered low.



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### 5.3.8 Natural Hazard Potential

#### 5.3.8.1 Construction Phase

The project area is located within a zone of high seismic hazard with a PGA475 value of 0.450 g, according to the updated Türkiye Earthquake Hazard Map published by the Disaster and Emergency Management Presidency (AFAD). The Merzifon Fault passes directly through the project site.

Amasya Province is located within a seismically active region hosting several major fault zones, including the North Anatolian Fault, Esiençay–Merzifon Fault, Ezinepazarı–Sungurlu Fault, Turhal Fault, Almus Fault, and Çorum–Salhançayı Fault, with portions of the first four faults situated within the provincial boundaries. Historical records and instrumental data indicate that destructive earthquakes along these faults have caused significant damage to residential buildings. Notable seismic events affecting the region include the 1939 Erzincan, 1942 Niksar–Erbaa, and 1943 Ladik–Tosya earthquakes.

The project area is situated within a seismically active part of Amasya Province, where several major fault zones intersect the region. Among these, the Merzifon Fault, which is a principal segment of the Esiençay–Merzifon fault system, passes directly through the site and exerts strong control over the local geological units. Structural features observed in and around the project area, such as lithological boundaries, geomorphological alignments, and fracture systems, highlight the influence of the fault on both engineering geological and hydrogeological conditions.

Other natural hazards such as floods, landslides, or avalanches are not expected to affect the project area. This is due to the fact that the site is located on gently sloping terrain, and there are no recorded instability or flood-prone zones in the area. However, intense rainfall events may temporarily increase surface runoff and cause localized erosion, particularly at excavation areas and stockpile sites. Overall, the probability of major natural hazard impacts during construction is considered low, provided that site management, slope stabilization, and emergency preparedness procedures are implemented in accordance with national disaster regulations.

#### 5.3.8.2 Operation Phase

During the operation phase, the potential effects of natural hazards are limited to seismic events that may affect the structural integrity of irrigation network components such as valve chambers, control structures, and pipeline joints. Since all facilities will be designed and constructed in accordance with the Turkish Building Earthquake Regulation and the Regulation on Buildings to Be Built in Disaster Areas, the likelihood of significant damage is low. Regular inspection and maintenance will ensure that any post-seismic malfunctions, such as leakage, displacement, or minor cracking, can be promptly detected and repaired.

During operation, attention should be paid to natural hazards such as landslides and floods. Additionally, extreme precipitation or drought conditions may slightly alter soil moisture regimes. This should be managed through periodic monitoring of ground stability and drainage efficiency. Overall, maintaining regular monitoring and emergency response measures under the supervision of DSI and the assigned irrigation union is important to minimize the potential impacts of natural hazards.



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## 5.4 Potential Social Risks and Impacts

### 5.4.1 Population and Migration

#### 5.4.1.1 Construction Phase

In the settlements within the AoI, consultations with mukhtars indicate that the gender distribution of the population is generally balanced, with women and men reported to be present in similar numbers in almost all settlements.

Population data at the district level show that the 15–64 age group constitutes the largest share of the population, accounting for approximately 63–72% of the population across districts, followed by the 65+ age group (approximately 11–26%), while the 0–14 age group constitutes approximately 8–19% of the population <sup>25</sup>. These figures indicate that the settlements are largely composed of working-age populations, although some villages also have a noticeable elderly population.

Based on mukhtar interviews, population mobility occurs mainly through seasonal fluctuations and rural-urban migration. Several settlements experience population increases during the summer months, particularly in villages where agricultural activities intensify.

Seasonal agricultural labor contributes to temporary population mobility in the region. During the construction phase, certain agricultural activities may be temporarily affected due to excavation and pipeline installation works. In such cases, the demand for seasonal agricultural labor in the project area may temporarily decrease. Consequently, seasonal population movements in the area may temporarily decline during construction.

Elderly individuals may represent a group that is more sensitive to environmental disturbances associated with construction activities, such as dust, noise, and construction traffic. Furthermore, elderly individuals -particularly those living alone- may experience difficulties in accessing information or participating in stakeholder engagement activities.

Households headed by women may also encounter certain disadvantages during the construction phase, particularly with respect to participation in information meetings and awareness activities. In several settlements, a limited number of households headed by women were identified.

Households whose livelihoods depend primarily on agricultural and livestock production within the irrigation command area may also experience temporary economic challenges if agricultural activities are interrupted during construction.

#### 5.4.1.2 Operation Phase

Stakeholder consultations indicate that improved irrigation infrastructure may strengthen agricultural production and enhance the attractiveness of agricultural activities in the region. Several stakeholders noted that reliable access to irrigation water could help reduce rural out-migration and may encourage some residents to remain in their villages

<sup>25</sup> Turkish Statistical Institute (TurkStat), Address-Based Population Registration System (ABPRS), Population distribution of districts within the Area of Influence by age groups, 2025, <https://biruni.tuik.gov.tr/medas/?locale=en> Access date: February 2026



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Currently, agriculture and livestock breeding constitute the primary livelihood sources in most settlements within the project area. Improved irrigation opportunities may therefore increase the economic sustainability of these activities and contribute to maintaining the existing agricultural workforce in rural areas.

In addition, improved irrigation infrastructure is expected to support higher agricultural productivity and allow for diversification of crop patterns. These improvements may strengthen rural livelihoods and reduce economic pressures that contribute to migration.

The operational lifetime of the Project is estimated to be approximately 50 years. Over this period, improved irrigation conditions may help stabilize rural population dynamics and support the long-term sustainability of agricultural livelihoods in the region.

The operation of the irrigation system will require a limited number of staff responsible for system management and maintenance, primarily within irrigation unions operating under DSI. Due to the small number of operational staff required, labour influx during the operation phase is not expected to create noticeable demographic changes in the settlements.

No particular impacts are expected during the operation phase in relation to vulnerable population groups such as elderly individuals or female-headed households.

## 5.4.2 Education

### 5.4.2.1 Construction Phase

No schools or educational facilities are located directly along the planned irrigation pipeline routes. Therefore, construction activities are not expected to pose risks to existing educational infrastructure.

Information obtained from mukhtars indicates that the overall literacy level in the settlements is relatively high, and the number of illiterate individuals is limited. Illiteracy was reported mainly among elderly residents.

Within the framework of the SEP, individuals with low literacy levels—particularly elderly residents—may be considered a disadvantaged group in terms of accessing written project information. Additional efforts may therefore be required to ensure that these individuals can effectively participate in consultation and information activities during the pre-construction and construction phases.

### 5.4.2.2 Operation Phase

No impacts are expected on educational facilities or education services during the operation phase of the Project.

Similarly, no significant impacts are anticipated for individuals with low literacy levels once the irrigation system becomes operational.



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### 5.4.3 Health

#### 5.4.3.1 Construction Phase

No healthcare facilities are located along the irrigation pipeline route. For this reason, construction activities are not expected to affect existing healthcare services.

During construction works, individuals with disabilities or mobility limitations may be more sensitive to impacts related to construction traffic, road use, or temporary access restrictions.

In addition, persons with disabilities, including individuals who are homebound or bedridden, may face challenges in participating in consultation meetings organized as part of stakeholder engagement activities.

#### 5.4.3.2 Operation Phase

No impacts are anticipated for healthcare facilities during the operation phase.

Similarly, no additional sensitivities related to persons with disabilities are expected to arise during the operational period of the irrigation system

### 5.4.4 Infrastructure Services

#### 5.4.4.1 Construction Phase

The evaluation results regarding electricity supply, potable water services, irrigation water, sewerage systems, waste collection, mobile phone coverage, internet infrastructure, and road conditions are presented in Annex-3 of this ESMP.

According to the assessments provided by mukhtars, electricity supply, sewerage infrastructure, and waste collection services generally received the highest levels of satisfaction across settlements.

By contrast, internet infrastructure and mobile phone coverage were among the services receiving the lowest satisfaction levels, particularly in rural settlements. Irrigation water availability also received relatively lower satisfaction ratings, reflecting the need for improvements in irrigation infrastructure within the region.

Local authorities and stakeholder institutions emphasized the importance of protecting existing infrastructure- such as roads, bridges, and access routes—during construction works. Potential damage to existing infrastructure during excavation and pipe installation was identified as a key concern.

#### 5.4.4.2 Operation Phase

No significant impacts on existing infrastructure services are expected during the operation phase of the Project.



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## 5.4.5 Livelihood Sources

### 5.4.5.1 Construction Phase

Agriculture and livestock production represent the primary livelihood sources in the settlements within the project area.

During the construction phase, temporary interruptions to agricultural activities may occur in certain locations due to excavation and construction works along irrigation routes. This may have short-term economic effects on individuals engaged in agricultural labor.

Women involved in agricultural activities may experience temporary income loss if agricultural production is disrupted during the construction period. In such cases, workers may seek employment in other agricultural areas or temporarily suspend their agricultural work.

Similarly, seasonal agricultural workers who normally participate in agricultural activities in the area may prefer to seek work in other regions during the construction phase if agricultural production temporarily declines.

### 5.4.5.2 Operation Phase

During the operation phase, improved irrigation infrastructure is expected to enhance agricultural productivity and enable diversification of crop production.

Stakeholders indicated that reliable irrigation may allow farmers to cultivate a wider range of crops in addition to traditional dry farming products such as barley, wheat, sunflower, and sugar beet.

Improved irrigation may also support livestock production by increasing the availability of forage crops used in animal feeding.

Overall, the improvement of irrigation infrastructure is expected to contribute positively to agricultural productivity, strengthen rural livelihoods, and support economic sustainability in the region.

## 5.4.6 Land Acquisition and Livelihoods

### 5.4.6.1 Construction Phase

The Project may require limited land acquisition and temporary land use for pipeline construction and associated infrastructure. However, the pipeline routes are generally planned to follow existing irrigation corridors and agricultural routes, which will help minimize potential land acquisition impacts.

No physical displacement is anticipated as a result of the Project.

Temporary impacts may include restricted access to agricultural lands during construction, temporary disruption of agricultural activities, and minor economic impacts on land users.



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In the event that land acquisition, land use restrictions, or livelihood impacts occur, a site-specific Resettlement Plan (RP) will be prepared in line with the TIMP2 RF and the requirements of ESS5.

All land acquisition-related impacts, mitigation measures, eligibility criteria, compensation principles, and livelihood restoration measures will be assessed and defined in detail through a RP to be prepared in line with the TIMP2 RF and the requirements of ESS5.

This ESMP will be updated once the final project footprint, including the construction site layout and associated land-related impacts, is confirmed.

#### **5.4.6.2 Operation Phase**

No impacts related to land acquisition are expected during the operation phase.

#### **5.4.7 Vulnerable/Disadvantaged Individuals or Groups**

The vulnerable groups identified in the social baseline include elderly individuals, female-headed households, persons with disabilities, individuals with limited literacy, seasonal agricultural workers, and non-Turkish speakers.

Consultations with these groups will be carried out as part of the stakeholder engagement process, and their feedback will be incorporated into the subproject's activities, in line with the Project's SEP.

Meeting times will be scheduled appropriately. Separate consultations will be organized if needed. Suitable communication channels will be used. The grievance mechanism will be clear and accessible.

##### **5.4.7.1 Construction Phase**

Elderly individuals and persons with disabilities may face difficulties attending meetings or accessing project information. If engagement methods are not adapted to their needs, participation in decision-making and feedback processes may be reduced. Therefore, during construction, both impact management and stakeholder engagement should adopt an accessible, inclusive approach that considers the specific needs of elderly residents, and disabled individuals.

Female-headed households may face specific risks. Participation in information disclosure and announcements may be low. Representation at stakeholder meetings may be limited. Awareness of project benefits and rights may be insufficient. Access to the grievance mechanism may be constrained.

The information disclosure and stakeholder engagement activities will be accessible to illiterate individuals through e.g. verbal communication and visual materials.

In several settlements, individuals of Afghan and Syrian origin were reported to be present in the area, mainly working as shepherds in livestock activities. These individuals often have limited proficiency in Turkish.



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Although no ethnic minority groups were identified in the settlements, the presence of migrant workers who speak languages other than Turkish may create communication challenges in accessing project-related information and announcements.

Such challenges are mainly related to stakeholder engagement activities during the pre-construction and construction phases.

#### 5.4.7.2 Operation Phase

Communication challenges related to non-Turkish speakers are expected to become less significant during the operation phase.

### 5.4.8 Occupational Health and Safety

#### 5.4.8.1 Construction Phase

Construction works will involve excavation, trenching, transportation, and installation of pipelines, operation of heavy machinery, and work at heights. These activities may expose workers to various occupational health and safety risks that could result in physical injuries, illnesses, or accidents if not managed properly.

Potential Risks and Impacts:

**Risk:** Slips, trips, and falls may occur due to uneven ground surfaces, excavation edges, and poor housekeeping practices.

**Impact:** Minor to severe injuries such as sprains, fractures, or head trauma; temporary work stoppages.

**Risk:** Machinery and vehicle accidents may result from improper traffic management, inadequate signaling, or lack of separation between workers and moving equipment.

**Impact:** Serious injuries or fatalities; property and equipment damage; disruption of work progress.

**Risk:** Exposure to dust and noise generated by excavation, concrete mixing, and vehicle movement may affect workers' respiratory and auditory health.

**Impact:** Short- or long-term respiratory problems, hearing loss, fatigue, and reduced work efficiency.

**Risk:** Manual handling and lifting of heavy materials may cause musculoskeletal disorders or strain injuries.

**Impact:** Chronic back, shoulder, or joint pain; loss of workdays and reduced productivity.

**Risk:** Electrical hazards from temporary power supplies, welding machines, and lighting systems may lead to electrical shocks, burns, or fires.

**Impact:** Severe injury or fatality; damage to electrical infrastructure and increased fire risk.



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**Risk:** Working in confined spaces such as manholes, chambers, and trenches may create oxygen deficiency or exposure to toxic gases.

**Impact:** Asphyxiation, unconsciousness, or death if ventilation and gas monitoring are inadequate.

**Risk:** Heat stress and dehydration are likely during summer months, especially during intensive outdoor work.

**Impact:** Fatigue, heat exhaustion, or heat stroke, potentially resulting in hospitalization or reduced productivity.

**Risk:** Poor site organization and inadequate housekeeping may increase the frequency of minor accidents or hinder emergency access.

**Impact:** Accumulated waste and obstructions leading to trip hazards, reduced morale, and inefficiency.

**Risk:** Inadequate sanitation and hygiene facilities may expose workers to infectious diseases or poor living conditions in worker camps.

**Impact:** Spread of communicable diseases, absenteeism, and potential community health concerns.

**Risk:** Psychosocial risks due to long working hours, limited rest, or stressful conditions.

**Impact:** Mental fatigue, stress, and decreased concentration, increasing the likelihood of accidents.

Overall, the potential impacts on workers' health and safety during construction are considered moderate, as they are predictable, temporary, and reversible if appropriate control measures are implemented. These risks and impacts will be managed through the implementation of the Project's LMP, which will apply in full and provide measures to mitigate OHS and community health and safety risks and impacts.

#### **5.4.8.2 Operation Phase**

During the operation phase, occupational risks will mainly arise during inspection, repair, and maintenance of the pressurized irrigation system and pumping facilities.

Potential Risks and Impacts:

**Risk:** Exposure to high-pressure water systems during maintenance of pipelines, valves, and pumps may cause mechanical injuries.

**Impact:** Cuts, bruises, or impact injuries from sudden release of pressure; risk of flooding or equipment damage.

**Risk:** Electrical hazards in pump stations and control rooms may occur due to faulty wiring, lack of grounding, or poor maintenance.

**Impact:** Electrical shocks, burns, or fatalities; interruption of irrigation services.



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**Risk:** Slip, trip, and fall risks in wet, confined, or poorly lit areas around pumping and control facilities.

**Impact:** Physical injuries leading to lost working hours or temporary incapacitation.

**Risk:** Confined space risks during inspection of manholes, valve chambers, or underground structures.

**Impact:** Oxygen deficiency, gas exposure, or entrapment; possible fatal outcomes.

**Risk:** Exposure to lubricants, fuels, and cleaning chemicals used during maintenance activities.

**Impact:** Skin irritation, chemical burns, or long-term respiratory effects from inadequate ventilation.

**Risk:** Fire and explosion hazards associated with electrical short circuits or improper fuel handling.

**Impact:** Equipment loss, worker injury, and extended operational downtime.

**Risk:** Ergonomic risks from repetitive or awkward maintenance activities.

**Impact:** Chronic strain injuries reduced work performance, or long-term health issues.

**Risk:** Psychosocial and fatigue-related risks for personnel working in isolated or shift-based environments.

**Impact:** Stress, reduced alertness, and higher probability of accidents or procedural errors.

The overall significance of these OHS impacts during operation is expected to be low to moderate, provided that workers are adequately trained, maintenance is planned and supervised, and OHS procedures are consistently applied.

## 5.4.9 Community Health and Safety

### 5.4.9.1 Construction Phase

Community health and safety risks during the construction phase are mainly associated with the presence of heavy machinery, increased workforce, and temporary site operations across neighborhoods. The most significant potential risk arises from construction traffic and the shared use of access roads between local residents and heavy vehicles such as trucks and excavators. Details and specific mitigation measures for this aspect are provided under the following section on traffic and transportation.

Additional community safety risks may also include hazards such as open excavations, which could pose a risk of falls—particularly for children—and other members of the community. Maintaining safe and continuous access to residential areas, local businesses, and vendors will be ensured throughout construction. Appropriate measures such as fencing of excavation areas, warning signage, temporary barriers, and lighting will be implemented to prevent accidents and ensure community safety. Where access routes are temporarily disrupted, temporary restoration or alternative safe pedestrian pathways will be provided. Continuous community engagement and timely information disclosure will be carried out to inform local residents about ongoing works and associated risks.



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Aside from traffic-related concerns, short-term community impacts may result from noise, dust, and emissions generated by excavation, material transport, and equipment operation, particularly near residential zones and farmland. These activities may cause temporary air quality deterioration and nuisance noise, potentially affecting vulnerable community members such as children, elderly people, or those with respiratory conditions. Those impacts have been assessed under the relevant headings in Section 5.3. These risks and impacts will be managed through the implementation of the Project’s LMP, which will apply in full and provide measures to mitigate OHS and community health and safety risks and impacts.

Localized soil and water contamination could occur if fuels, lubricants from machinery and site operations or waste and wastewater are improperly managed. Similarly, those impacts have been assessed under the relevant headings in Section 5.3. Moreover, a Waste Management Plan has been prepared and included in this ESMP as Annex-4.

In addition, the presence of existing natural gas transmission pipelines and associated facilities within or in close proximity to the Project area poses a potential community health and safety risk during construction activities. Excavation, heavy machinery operation, and pipeline installation works conducted near these assets may increase the risk of pipeline damage, gas leakage, fire or explosion, which could result in serious harm to workers, nearby communities, and surrounding infrastructure if not properly managed and coordinated. Necessary mitigation measures have been included in Table 6-2.

The manual or guideline named as “The Workers’ Accommodation: Processes and Standards” (August 31 2009) developed jointly by IFC and the EBRD, looks at the provision of housing or accommodation for workers by employers and the issues that arise from the planning, construction and management of such facilities<sup>26</sup>. In line with ILO Workers’ Housing Recommendation; Worker housing should ensure safe, hygienic, and adequately sized living spaces with proper water supply, sanitation, and waste management. The accommodations must protect residents from environmental and health hazards, provide essential facilities for daily living, maintain privacy, and separate human living areas from animal quarters. This requirement applies to all types of worker accommodations, including both camp sites and shared facilities such as hotels, apartments, or hostels.

The temporary concentration of workers during construction may increase the risk of communicable and water-related diseases, particularly if hygiene and sanitation facilities are not adequately maintained. Domestic water for construction personnel will be supplied either through subscription to the municipal water network or by licensed water tankers, ensuring that potable water meets national quality standards. Poor hygiene practices, wastewater mismanagement, or the use of contaminated water sources could lead to the spread of gastrointestinal illnesses and other infectious diseases among workers or nearby communities. To prevent such risks, the Contractor will implement strict hygiene protocols, provide clean drinking water and handwashing facilities, and ensure regular inspection and disinfection of water tanks and storage systems. Health awareness sessions will also be conducted to promote preventive behaviors such as proper waste disposal, personal hygiene, and early reporting of symptoms. All mitigation measures related to occupational health, hygiene, and worker accommodation will be implemented in line with the Project’s LMP and The Workers’

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<sup>26</sup> International Finance Corporation (IFC) and European Bank for Reconstruction and Development (EBRD), “Workers’ Accommodation: Processes and Standards”, August 2009, <https://www.ifc.org/content/dam/ifc/doc/mgrr/workers-accomodation.pdf>.



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Accommodation: Processes and Standards” (August 31 2009) developed jointly by IFC and the EBRD, and ILO Workers’ Housing Recommendation.

From a social perspective, potential gender-based violence (GBV), sexual exploitation and abuse/sexual harassment (SEA/SH), and community tension risks may arise due to the temporary influx of non-local workers. These risks are expected to remain low with the implementation of strict Code of Conduct (CoC) obligations, SEA/SH and GBV training, and an accessible Grievance Mechanism (GM) for community members, designed to handle sensitive complaints, including GBV, SEA/SH, and other confidential or high-risk concerns, in a safe, confidential, and appropriate manner. Separate and safe sanitation facilities for women and men, adequate lighting, and clear site signage will also contribute to minimizing security-related risks.

During the construction phase, emergency situations may arise from accidents, fires, natural events, or hazardous material spills. To minimize the potential health and safety impacts on both workers and nearby communities, the Contractor will prepare and implement an Emergency Preparedness and Response Plan (EPRP) in coordination with DSI and local AFAD authorities. The plan will define clear communication channels, responsibilities, and procedures for evacuation, medical assistance, and incident reporting. Emergency contact information will be displayed visibly at all active work sites, and drills will be carried out periodically to ensure staff readiness. Spill control kits, first aid supplies, and fire extinguishers will be kept on-site and regularly inspected. All personnel will receive induction and refresher training on emergency procedures, ensuring rapid and organized response in the event of an incident.

Overall, the magnitude of potential community health and safety impacts during construction is low, localized, and temporary in nature, provided that the Project’s management plans and awareness programs are properly implemented.

#### **5.4.9.2 Operation Phase**

During the operation phase, the Project is not expected to create significant risks for the surrounding communities. Occasional maintenance and inspection activities may lead to minor increases in vehicle traffic; however, these will be managed in line with this ESMP. The operation of the pressurized closed-pipe irrigation network eliminates risks of open-water accidents, vector breeding, or contamination associated with traditional irrigation canals.

Potential health and safety risks during operation may include minor leakage or rupture in pipelines leading to localized flooding or soil saturation, which could affect nearby farmland or infrastructure. Regular inspection, pressure control, and emergency response procedures will mitigate such risks effectively.

No significant air, noise, or odor emissions are anticipated during operation. However, maintenance machinery and generators, if used periodically, may temporarily increase local noise and exhaust emissions. In addition, public safety measures such as fencing around valve chambers, warning signs, and restricted access to technical facilities will be maintained to prevent unauthorized entry or accidents.

During the operation phase, risks of waterborne or communicable diseases are considered minimal. Since the irrigation system will operate as a closed pressurized pipeline network, there will be no stagnant water areas where vectors such as mosquitoes could breed. Nonetheless, potential contamination risks could arise if leaks or ruptures occur in the irrigation



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system, leading to localized standing water. Regular inspection and timely repair of the pipelines will minimize such risks. The irrigation union will maintain coordination with the local public health authorities to ensure early detection and response in case of any outbreak related to irrigation activities.

The potential for community security risks, including harassment or misconduct by staff, remains negligible under the continued enforcement of the CoC and awareness measures.

During operation, emergencies may stem from pipeline failures, mechanical breakdowns, or natural hazards such as earthquakes or extreme weather events. The irrigation union, once established, will develop and maintain a site-specific Emergency Response Plan to manage such incidents. This plan will include protocols for rapid isolation of damaged sections of the network, coordination with DSI and local emergency services, and communication with affected communities. Regular inspection and maintenance activities will be combined with periodic emergency drills to ensure preparedness. Emergency contact lists, access routes, and response equipment will be reviewed and updated annually. Prompt communication with local authorities and the public will ensure transparency and minimize disruption to community safety and agricultural activities.

Overall, community health, safety, and security risks during operation are assessed as low and manageable under proper maintenance and monitoring by DSI and the assigned irrigation union.

## 5.4.10 Traffic and Transportation

### 5.4.10.1 Construction Phase

The construction phase of the Project will require the intensive use of heavy machinery and transport vehicles, including excavators, loaders, trucks and equipment carriers. These vehicles will operate across a network of asphalt roads, village roads, stabilized roads and agricultural access routes along with the irrigation route. Although the construction routes do not directly pass through the centers of nearby settlements, several pipeline alignments run along the outer boundaries of neighborhoods and in close proximity to scattered rural houses, agricultural facilities and small businesses. As a result, community–construction interface will be significant throughout the construction period.

The shared use of these routes by construction machinery and the local population, farmers accessing their fields, residents travelling between neighborhoods, and occasional regional traffic, may increase the likelihood of traffic accidents. The presence of slow-moving heavy vehicles, restricted-width field roads, and limited visibility in certain segments can heighten collision risks, particularly during peak agricultural periods when road use intensifies. Temporary short-term road closures or partial lane blockages may occur during excavation activities, pipe-laying works, backfilling operations or material transport, potentially disrupting daily mobility and delaying access to essential services, including health care, especially in emergencies.

Long-term intensive use of asphalt and stabilized roads by construction vehicles may lead to pavement deterioration, rutting, pothole formation, and accelerated wear of road surfaces. On narrow agricultural routes, heavy trucks may damage road shoulders and create soil erosion along road margins. Although these impacts are expected to be localized and largely temporary and short-term, they may still alter accessibility patterns for nearby communities,



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restrict agricultural logistics, and reduce overall road safety. Considering the dispersed nature of construction sites, the multi-year duration of activities, and the seasonal intensification of rural mobility, proactive traffic and transport management will be essential to minimize community health and safety risks.

Since the heavy vehicle movements will be short-term and temporary in one location, the overall impact significance is determined as high to moderate without proper management activities, and the relevant mitigation measures are given in Table 6-2.

#### 5.4.10.2 Operation Phase

During the operation phase, traffic and transportation-related risks are expected to be significantly lower compared to the construction period; however, certain routine activities may still generate localized impacts. The operation of the irrigation system will require periodic maintenance of pipelines, inspection of valve chambers, monitoring of pressure units, and repair of malfunctioning components. These tasks will involve the movement of light- and medium-sized vehicles, maintenance trucks, and technical teams across the same road network used during construction.

Although maintenance activities will occur intermittently, temporary access restrictions or short periods of slowed traffic may arise near pipeline alignments, especially in narrow agricultural roads and areas close to scattered houses or small agricultural facilities. Occasional increases in vehicle movements may coincide with seasonal agricultural traffic, potentially contributing to short-term congestion. In rare cases, emergency repairs such as the rapid response to a pipeline rupture or leakage may require immediate access by operational vehicles.

Road wear due to operational traffic is expected to be minimal; however, repeated access for maintenance along unpaved agricultural roads may lead to minor surface deterioration or rut formation. These impacts remain low in magnitude, spatially limited, and mostly reversible. With structured maintenance planning, proper signaling, and effective communication with local communities, traffic-related risks during operation can be managed to negligible levels. The relevant mitigation measures are given in Table 6-3.

#### 5.4.11 Cultural Heritage

Based on the desk-based research and institutional consultations presented in the Cultural Heritage Baseline, a number of registered archaeological sites have been identified within the Project area and its surroundings. According to the information obtained from the Samsun Regional Council for the Protection of Cultural Heritage, a total of 30 registered archaeological sites, including archaeological mounds (höyük), tumulus and necropolis areas, are located within or near the Project area (see Table 5-17).

Although none of the proposed Project components are planned to be constructed within the officially designated protection boundaries of these archaeological sites, several cultural heritage assets are located in relatively close proximity to the pipeline routes and associated infrastructure. The presence of fertile agricultural lands and water resources in the Yeşilirmak Basin has historically supported human settlement in the region, which increases the likelihood of encountering previously undocumented archaeological remains during ground disturbance activities.



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During the construction phase, certain project activities may create potential impacts on tangible cultural heritage resources if not properly managed. The main activities that could potentially affect cultural heritage receptors include vegetation clearance, topsoil stripping, excavation works for pipeline installation, establishment of temporary construction areas and increased traffic movements associated with construction activities.

*Table 5-17. Impact Sources and Types on Tangible and Intangible Cultural Heritage Receptors*

Description of Activity	Potential Impact Type
Vegetation removal and site preparation	Physical disturbance of buried archaeological remains
Topsoil stripping and excavation works	Direct damage to subsurface cultural heritage resources
Movement of heavy construction vehicles and machinery	Vibration impacts and accidental disturbance
Establishment of construction camps, storage areas and temporary stockpiles	Physical disturbance and land alteration
Increased access to previously undisturbed areas	Risk of looting or unauthorized artifact collection
Presence of workforce and construction traffic	Visual disturbance and potential interference

Potential impacts may include direct physical damage or disturbance to cultural heritage resources as a result of ground disturbance activities such as excavation, filling, trenching and earthworks. In addition, indirect impacts may occur due to increased accessibility to archaeological areas, which could create opportunities for unauthorized collection of artifacts or accidental interference with cultural heritage resources.

Furthermore, previously undocumented archaeological remains may exist within the Project area. These remains may only be identified through advanced archaeological investigations or may be uncovered during construction activities involving soil excavation.

With regard to intangible cultural heritage, the Project area is characterized by rural settlements where cultural traditions related to agriculture, seasonal celebrations and local culinary practices continue to be maintained by local communities. As the Project involves the rehabilitation of existing irrigation infrastructure rather than the development of new settlement areas, it is not expected to directly interfere with these cultural practices.

To address the potential risks described above, the Project adopts a precautionary approach prioritizing avoidance of impacts on cultural heritage resources wherever possible. In cases where avoidance is not feasible, appropriate mitigation and management measures will be implemented in accordance with national cultural heritage legislation and the World Bank Environmental and Social Standard 8 (ESS8).

Following detailed correspondence and technical consultations with the DSI, it has been confirmed that the Project design will be revised to avoid any interaction with identified cultural heritage assets. In this context, the pipeline alignments will be reconfigured to exclude areas located within or in close proximity to registered or potential cultural heritage features.

This design-based avoidance approach is considered the primary mitigation measure in line with GIIP and national legislation on the protection of cultural assets. Accordingly, potential impacts on cultural heritage are expected to be prevented at source, thereby eliminating the need for a standalone site-specific Cultural Heritage Management Plan. Considering the potential presence of undiscovered archaeological remains, a Project-specific Chance Find Procedure (CFP) has been developed and will be implemented during the construction phase (see Annex-5). This procedure defines the actions to be taken in the event that cultural heritage



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materials are encountered during construction activities and ensures that relevant authorities are notified and appropriate protection measures are applied.

During the operation phase, activities are limited to routine maintenance and repair works of the irrigation infrastructure. Such works may occasionally require localized and small-scale ground disturbance (e.g., repair of pipeline leaks). However, these activities will occur within the existing infrastructure corridors and are not expected to affect any known cultural heritage assets. Nevertheless, the Chance Find Procedure will continue to apply during any maintenance activities involving ground disturbance.



## 6 MITIGATION MEASURES

In this section, mitigation measures for each of the potential impact/risk for pre-construction, construction and operation phases have been determined. The definitions of the pre-construction phase, construction phase and operation phase are as follows and the mitigation measures and the relevant monitoring actions in the next Monitoring and Evaluation (M&E) Chapter are determined as per these definitions:

- **Pre-construction phase:** This phase covers all preparatory activities before physical work begins. It includes finalizing the irrigation network design, route selection for the pressurized pipeline system, obtaining necessary permits and institutional clearances, conducting field surveys, baseline environmental and social assessments, stakeholder consultations, and preparing management plans (Environmental and Social Management Plan (ESMP), Labor Management Procedure (LMP), Stakeholder Engagement Plan (SEP)). Land access arrangements and contractor mobilization planning are also completed during this stage.
- **Construction phase:** This phase involves all on-site works, including on-site mobilization of the Contractor and land preparation activities, required to convert the existing open-channel system into a closed pressurized pipeline network. Typical activities include excavation along the designated corridors, pipe laying, installation of valves, chambers, and control structures, reinstatement of disturbed land, temporary material storage and transport, and the operation of quarries and borrow areas already licensed for use. Construction generates short-term, localized impacts such as dust, noise, traffic increase, and temporary access restrictions, all managed through site-specific mitigation measures.
- **Operation phase:** This phase begins once the new irrigation system is commissioned. Activities mainly include routine system operation, periodic maintenance and repair works within narrow corridors, monitoring of water use efficiency, and engagement with farmers on good irrigation and agro-chemical practices. Environmental and social impacts during this phase are minimal and mostly related to maintenance movements and potential agricultural runoff, both of which are addressed through ongoing management and awareness activities.

### 6.1 Pre-Construction Phase Mitigation Measures

The mitigation measures for the pre-construction phase which focuses on the permitting, documentation and planning are presented in Table 6-1.

*Table 6-1. Mitigation Measures for Pre-construction Phase*

No.	Issue	Potential Impact	Impact Significance Before Mitigation	Mitigation Measure	Impact Significance After Mitigation	Cost of Mitigation	Responsible Parties
PC-ESMS-01	Environmental and Social Management System	<p>Lack of or inadequate presence of environmental and social management system</p> <p>Lack of project-specific E&amp;S management plans/procedures</p> <p>Lack of permitting and approvals</p> <p>Lack of trainings of workers on environmental and social risks</p>	<b>Moderate</b>	<p>This site-specific ESMP defines the environmental and social management requirements for the Project and forms part of the bidding documents.</p> <p>All management plans will be informed to all workers immediately after the recruitment and repeated if necessary.</p> <p>The approved ESMP will be added into the bid documents and required to be implemented by the Contractors.</p> <p>An ESMS and GM together with the control and monitoring mechanisms will be established and implemented.</p> <p>Necessary responsible personnel in PMT, Contractor and Regional Directorate of DSI will be assigned for tracking and monitoring of the ESMP implementation and compliance. The Contractor will employ at least a full-time OHS specialist, an environmental specialist, and a social specialist prior to the commencement of construction works. The Contractor will submit the CVs of specialists for approval. These specialists will be present at the site throughout the construction period.</p> <p>Prior to the commencement of construction, the Contractor shall prepare and submit for PMT approval a Contractor Environmental and Social Management Plan (C-ESMP) consistent with the requirements of this ESMP and in line with the WB ESF and ESSs as well as the ESMF and other framework and plans of the TIMP11. No construction activities will commence until the C-ESMP is approved by the PMT.</p> <p>ESMP and other sub-management plans and procedures (Waste Management Plan (WMP) (prepared by the E&amp;S Consultant), Traffic Management Plan (TMP) (prepared by the Contractor), Occupational Health and Safety Management Plan (OHSMP) including Risk Assessment (prepared by the Contractor), Emergency Preparedness and Response Plan (EPRP) (prepared by the Contractor), Chance Find Procedure (CFP) (prepared by the E&amp;S Consultant), etc.) will be prepared and approved by the Project Management Team (PMT). The C-ESMP will include at minimum, the following site-specific management plans and procedures:</p>	<b>Low</b>	Included in Project cost	<p><u>Implementing:</u> Contractor</p> <p>DSI 7<sup>th</sup> Regional Directorate</p> <p><u>Supervising:</u> Project Management Team (PMT)</p>

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No.	Issue	Potential Impact	Impact Significance Before Mitigation	Mitigation Measure	Impact Significance After Mitigation	Cost of Mitigation	Responsible Parties
				<ul style="list-style-type: none"> <li>Camp Site Management Plan (CSMP) or Worker Accommodation Plan (WAP) (whichever will be applied in the construction period, in line with the TIMPII LMP and WBG worker accommodation guidelines)</li> <li>The Contractor shall implement measures to ensure that the temporary arrival of workers does not create adverse social impacts in the project area</li> <li>The Contractor shall provide worker accommodation in line with the WBG Worker Accommodation Guidelines, ensuring safety, hygiene, and security for all personnel</li> <li>Community Health and Safety (CHS) Management Plan (in line with the Project's LMP and The Workers' Accommodation: Processes and Standards" (August 31 2009) developed jointly by IFC and the EBRD, and ILO Workers' Housing Recommendation) will include provisions to prevent and manage SEA/SH)</li> <li>Noise and Vibration Management Plan (NVMP)</li> <li>Labor Management Plan (LM Plan) including Code of Conduct (in line with TIMPII LMP and The Workers' Accommodation: Processes and Standards" (August 31 2009) developed jointly by IFC and the EBRD, and ILO Workers' Housing Recommendation)</li> <li>LMP will be applied including measures for OHS and CHS</li> <li>Grievance Mechanism (GM) including pathways for SEA/SH complaints (in line with the TIMPII SEP and GRM)</li> </ul> <p>The Contractor will prepare a training program and provide training to all its workers, before they start working on site, on basic environmental, social, health and safety risks associated with the proposed construction works and the worker's responsibility. The training program will be repeated on three-monthly basis. The Contractor's training program will also cover topics related to Code of Conduct (CoC) such as sexual harassment (SH) particularly towards women and children, violence, including sexual and/or gender-based violence (GBV) and respectful attitudes while interacting with the local community. All initial trainings of the workers will be completed before the construction starts.</p> <p>A permission/approval log will be created, and permissions will be tracked through this log. All necessary permissions/approvals (design approvals, land acquisition documentations, water usage permits, official views from the institutions, etc.) will be obtained before construction starts.</p> <p>The Contractor will obtain the necessary permits and / or agreements regarding the land usage for the material storage areas and temporary construction site(s) depending on the ownership status of the land.</p> <p>An "EIA Exemption Letter" and "Environmental Permit Exemption Letter" official letters will be obtained from the relevant authority, where necessary (e.g., if a concrete plant is to be established by the contractor).</p> <p>A contract/agreement or protocol will be signed by the Contractor before the starting of the construction works with the Suluova WWTP and Suluova Municipality regarding waste and wastewater acceptance. In case Suluova WWTP is not suitable for wastewater disposal, Amasya WWTP or Merzifon WWTP can be considered as an alternative.</p> <p>In the event that the Contractor decides to use the DSI-owned quarries, the Contractor will be responsible for obtaining the required permits and licenses, including the relevant Non-Sanitary Establishment/Gayri Sıhhi Müessese (GSM) license, and for operating the quarries in compliance with national legislation and international standards. Should any of these quarries be utilized under the Project, their use will be managed under the Contractor's ESMP (C-ESMP), ensuring compliance with the WB ESF (including supply chain and OHS/community health and safety requirements) and applicable national regulations.</p> <p>An agreement will be signed with Suluova Municipality regarding excavation soil dumping site for the disposal of excess excavated soil.</p> <p>The project will not be started before the necessary static calculations, ground survey studies, etc. related to the project design are completed.</p>			
PC-ESMS-02	Environmental and Social Management System	Inadequate stakeholder engagement and lack of grievance mechanism establishment.	<b>Moderate</b>	Prior to the commencement of construction, the Contractor shall prepare and submit for PMT approval a Contractor Environmental and Social Management Plan (C-ESMP) consistent with the requirements of this ESMP and in line with the WB ESF and ESSs as well as the	<b>Low</b>	Included in Project cost	<u>Implementing:</u> Contractor



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No.	Issue	Potential Impact	Impact Significance Before Mitigation	Mitigation Measure	Impact Significance After Mitigation	Cost of Mitigation	Responsible Parties
		<p>The project's activities may result in adverse impacts that could cause nuisance and disturbance to the local communities.</p> <p>Inadequate Stakeholder Identification and Analysis can lead to conflicts and challenges later, resulting in delays or increased project costs.</p>		<p>ESMF and other framework and plans of the TIMPII. No construction activities will commence until the C-ESMP is approved by the PMT.</p> <p>The C-ESMP will include at minimum, the following site-specific social management plans and procedures:</p> <ul style="list-style-type: none"> <li>• Camp Site Management Plan (CSMP) or Worker Accommodation Plan (WAP) (whichever will be applied in the construction period, in line with the TIMPII LMP and WBG worker accommodation guidelines)</li> <li>• Community Health and Safety (CHS) Management Plan (including the mitigation measures regarding SEA/SH)</li> <li>• Traffic Management Plan (TMP)</li> <li>• Labor Management Plan (LM Plan) including Code of Conduct (in line with TIMPII LMP)</li> <li>• LMP will be applied including measures for OHS and CHS</li> <li>• Grievance Mechanism (GM) including pathways for SEA/SH complaints (in line with the TIMPII SEP and GRM)</li> </ul> <p>The Project's Stakeholder Engagement Plan (SEP) (see Chapter 9) will be implemented throughout the Project lifecycle.</p> <p>The ESMP will be disclosed to all stakeholders and relevant public information meetings will be held.</p> <p>Stakeholders will be consulted prior to the start of the Project in accordance with the SEP, informing them about the Project and its potential environmental and social risks and impacts.</p> <p>Vulnerable groups will be specifically consulted as part of the SEP, and their feedback will be integrated into project activities.</p> <p>The public will be informed about the upcoming works through printed and electronic media, as well as notifications posted in public places of the villages located within the impact area.</p> <p>The scheduling of physical works on the scheme will aim to minimize disruptions to irrigation service delivery during the irrigation season. In cases where temporary interruptions cannot be avoided, alternative water sources will be provided to farmers to maintain irrigation activities.</p> <p>Farmers will be informed about the construction schedule well in advance of the irrigation season.</p> <p>Announcements regarding construction activities will be made at least two days in advance. Preferred communication tools, such as social media, will be used where appropriate.</p> <p>Separate meetings will be organized specifically for women farmers to ensure their effective participation.</p> <p>Additional announcements will be conducted within villages to reach residents who do not use social media or messaging applications, particularly elderly farmers.</p> <p>Stakeholder engagement activities will not only provide information to villagers and farmers but will also incorporate their knowledge and experience.</p> <p>Farmers will be informed about their rights and available Grievance Mechanisms.</p> <p>The Project will maintain regular communication with local communities and respond to stakeholder feedback and requests.</p> <p>The Project will establish and maintain a transparent and accessible Grievance Mechanism for local communities.</p> <p>The SEP defines separate grievance mechanisms for surrounding communities and relevant project stakeholders, as well as a dedicated grievance mechanism for project workers.</p>			<p>DSI 7<sup>th</sup> Regional Directorate</p> <p><u>Supervising:</u></p> <p>Project Management Team (PMT)</p>
PC-ESMS-03	Environmental and Social Management System	Lack of E&S team for managing environmental and social risks and impacts	<b>Moderate</b>	<p>The Contractor will employ at least a full-time on-site OHS specialist, an environmental specialist, and a social specialist prior to the commencement of construction works.</p> <p>The Contractor shall submit the CVs of specialists for approval to DSI PMT. These specialists should be present at the site throughout the construction period.</p>	<b>Low</b>	Included in Project cost	<p><u>Implementing:</u></p> <p>Contractor</p> <p>DSI 7<sup>th</sup> Regional Directorate</p>



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No.	Issue	Potential Impact	Impact Significance Before Mitigation	Mitigation Measure	Impact Significance After Mitigation	Cost of Mitigation	Responsible Parties
				An archaeologist will be included in the contractor team to oversee all mitigation measures and monitoring activities in relation to archaeological sites.			<u>Supervising:</u> Project Management Team (PMT)
PC-ESMS-04	Labor and working conditions	Child labor, forced labor, discrimination, etc. Lack of OHS precautions, emergency prevention Inadequate accommodation conditions	<b>Moderate</b>	Develop and implement Contractor's Labor Management Plan (C-LMP) based on TIMP11 LMP including working conditions, fair treatment, non-discrimination, equal opportunity, vulnerable/disadvantaged individuals/workers, GBV, SEA/SH, prevention of child labor and forced labor according to TIMP11's Labour Management Procedure (LMP), incl. Workers' GM. Workers will receive written contracts including job description, working hours, wages, rights and duties, code of conduct, etc. will be arranged according to TIMP11's LMP. LMP will be applied including measures for OHS and CHS.	<b>Low</b>	Included in Project cost	<u>Implementing:</u> Contractor DSİ 7 <sup>th</sup> Regional Directorate <u>Supervising:</u> Project Management Team (PMT)
PC-ESMS-05	Land acquisition	Prevention of physical and economic displacement and minimization of income loss for land owners, and land users	<b>Moderate</b>	Land requirements for each scheme will be determined once the detailed engineering designs are finalized. For all areas requiring land acquisition, a Resettlement Plan (RP) will be prepared in line with the TIMP11 Resettlement Framework (RF) and the requirements of ESS5. Where land consolidation activities are carried out in the project area, any associated land losses or livelihood impacts will be assessed and addressed in accordance with ESS5. The technical design should be finalized to clearly define the project's footprint and land acquisition needs, taking this into account to ensure the timely preparation and implementation of the Resettlement Plan (RP) and to avoid potential delays in construction works. Impacted assets and livelihoods (if any) will be fully restored in accordance with the TIMP11 RF, including the restoration of livelihoods to pre-project levels in accordance with ESS5. All land users (both legal and informal) and their affected assets will be identified through a census survey and asset inventory. In cases where informal users are identified, compensation for affected assets will be provided at replacement cost, and livelihood restoration assistance will be provided in accordance with ESS5. Where applicable, land consolidation activities carried out by the relevant authorities may contribute to reducing the need for expropriation prior to irrigation modernization works. The Project will seek to minimize disruptions to existing agricultural and irrigation activities during construction, with the objective of preventing and minimizing income losses for landowners, land users, and seasonal workers through appropriate mitigation measures where required. In the event that treasury lands are temporarily used by the Contractor for construction sites or material storage areas, all formal and informal land users will be identified in advance through a screening and consultation process. Any potential livelihood impacts will be assessed, and appropriate compensation and/or livelihood assistance measures will be provided in accordance with the requirements of ESS5 of the World Bank. All formal and informal right holders and / or users in the relevant areas will be informed in advance about their eligibility and entitlements, including vulnerable groups defined in line with land acquisition.	<b>Low</b>	Included in Project cost	<u>Implementing:</u> Contractor DSİ 7 <sup>th</sup> Regional Directorate <u>Supervising:</u> Project Management Team (PMT)
PC-OHS-01	Occupational Health and Safety	Inadequate precautions regarding the OHS before starting work including lack of OHS-related trainings, Personal Protective Equipment (PPE) embezzlement, risks assessments, etc.	<b>High</b>	Consultations, assessments and plans regarding OHS and labor management and working conditions will be made by the Contractor and shared with Regional Directorate and PMT to prevent or, if unavoidable, reduce to an acceptable level every potential risk factor prior to the construction activities. OHSMP including Risk Assessment and EPRP will be prepared by Contractor. During the preparation of Risk Assessment Report and EPRP, community health and safety risks and impacts will be included in the assessment and plan.	<b>Low</b>	Included in Project cost	<u>Implementing:</u> Contractor DSİ 7 <sup>th</sup> Regional Directorate <u>Supervising:</u>

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No.	Issue	Potential Impact	Impact Significance Before Mitigation	Mitigation Measure	Impact Significance After Mitigation	Cost of Mitigation	Responsible Parties
				All the staff will participate in training sessions which include grievance mechanism (GM), gender-based violence (GBV), sexual exploitation and abuse (SEA), sexual harassment (SH), code of conduct (CoC) immediately after the recruitment process.			Project Management Team (PMT)
PC-CHS-01	Community Health and Safety (including security and traffic/transportation)	Traffic risks caused by roads closed without prior notice Discomfort due to increased dust and noise levels Conflicts that may arise between employees and community members due to deficiencies in employee training Unauthorized entry into the work area	High	The construction areas will be enclosed with a fence/curtain, etc. before the construction starts. Warning signs will be hung. A Community Health and Safety Management Plan and Traffic Management Plan (TMP) will be prepared by the Contractor. Security personnel will be assigned for control of the construction site access, where necessary. During the preparation of Risk Assessment Report and Emergency Preparedness and Response Plan to be prepared by the Contractor, community health and safety risks and impacts will be included in the assessment and plan.	Low	Included in Project cost	<u>Implementing:</u> Contractor DSİ 7 <sup>th</sup> Regional Directorate <u>Supervising:</u> Project Management Team (PMT)
PC-NHP-01	Natural Hazard Potential / Seismicity	Lack of emergency precautions and emergency preparedness and response plan Lack of emergency trainings and drills Deficiencies in the Project design Non-compliance with the regulations	Moderate	Designs of the pipeline network will be made in accordance with the national legislations (Regulation on the Structures to be Built in Natural Disaster Areas). DSİ will ensure that an effective dam safety program is in place and that full-level inspections and assessments have been conducted and documented to the satisfaction of the Bank. For high-hazard cases involving significant or complex remedial work, DSİ will employ independent experts to oversee the process. An Emergency Action Plan will be prepared by Contractor for the construction of the Project. Emergency Action Plans including natural disaster risks (especially flood and inundation risks) will be prepared and work will not start until the measures in these plans are taken.	Low	Included in Project cost	<u>Implementing:</u> Contractor DSİ 7 <sup>th</sup> Regional Directorate <u>Supervising:</u> Project Management Team (PMT)
PC-BIO-01	Baseline Biodiversity Screening and Habitat Verification	Lack of updated information on flora/fauna within the project footprint. Potential presence of sensitive species within irrigation corridors or wetland-adjacent habitats.	Moderate	Conduct a pre-construction biodiversity baseline survey along the irrigation network and pipeline corridors to confirm habitat type (Modified Habitat) and identify any sensitive species. Map and verify distances to nearby protected areas and biodiversity sites (Yedikır Wetland IBA, Akdağ KBA, Kelkit Valley KBA). Integrate survey results into the ESMP and share with PMT before mobilization. Based on the outcomes of the updated baseline and field verification studies, additional mitigation measures may be identified, if required. Any newly identified measures will be incorporated into the ESMP through an adaptive management approach. These additions will be subject to review and approval by the Project Management Team (PMT) and the relevant regulatory authorities, including DSİ Regional Directorate, prior to implementation.	Low	Included in Project cost	<u>Implementing:</u> Contractor DSİ 7 <sup>th</sup> Regional Directorate <u>Supervising:</u> Project Management Team (PMT)
PC-BIO-02	Protected Areas and Ecological Connectivity Assessment	Potential indirect or cumulative impacts on nearby protected areas (Yedikır Wetland). Disturbance of ecological corridors linking irrigation canals with wetland habitats.	Moderate	Review satellite imagery and drainage connectivity between the project area and Yedikır Wetland. Ensure that project works do not alter natural drainage or hydrological connections to the wetland by implementing the following measures: (i) maintain existing drainage pathways during trenching activities, (ii) avoid blockage or diversion of surface water flows, (iii) install temporary drainage structures where necessary to sustain flow continuity, and (iv) restore pre-construction drainage conditions immediately after completion of works. Maintain natural vegetation along canal edges where possible as ecological micro-corridors. Inform DKMP Regional Directorate prior to construction.	Low	Included in Project cost	<u>Implementing:</u> Contractor DSİ 7 <sup>th</sup> Regional Directorate <u>Supervising:</u> Project Management Team (PMT)
PC-BIO-03	Fauna Protection and Awareness	Accidental injury or disturbance to fauna (birds, amphibians, reptiles, small mammals) during site preparation and equipment mobilization.	Moderate	Provide toolbox training to workers on fauna protection and species identification. Prohibit hunting, trapping or disturbance of wildlife by workers. If nests, dens or burrows are encountered, stop work and notify the biodiversity specialist.	Low	Included in Project cost	<u>Implementing:</u> Contractor DSİ 7 <sup>th</sup> Regional Directorate



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No.	Issue	Potential Impact	Impact Significance Before Mitigation	Mitigation Measure	Impact Significance After Mitigation	Cost of Mitigation	Responsible Parties
				Install temporary signs marking sensitive areas.			<u>Supervising:</u> Project Management Team (PMT)
PC-BIO-04	Vegetation Clearance and Topsoil Management	Uncontrolled vegetation removal and topsoil loss prior to construction. Reduced potential for natural regeneration along canal edges.	<b>Moderate</b>	Limit vegetation clearance to the minimum necessary working width. Strip and store topsoil separately for reuse in site rehabilitation. Clearly mark working boundaries prior to clearance. Avoid machinery entry into adjacent agricultural plots or natural patches.	<b>Low</b>	Included in Project cost	<u>Implementing:</u> Contractor DSİ 7 <sup>th</sup> Regional Directorate <u>Supervising:</u> Project Management Team (PMT)
PC-BIO-05	Yedikır Natural Site – Sensitive Area Protection	Potential disturbance or encroachment within the Yedikır Dam Natural Protected Area (1st Degree Natural Site).	<b>High</b>	Clearly mark the boundaries of the protected area prior to mobilization. Ensure pipeline installation within this section is implemented as a buried closed system as required by the Regional Commission decision. Establish a no-work buffer zone around wetland margins where possible. Coordinate with DKMP and obtain necessary permissions before works in the protected area.	<b>Low</b>	Included in Project cost	<u>Implementing:</u> Contractor DSİ 7 <sup>th</sup> Regional Directorate <u>Supervising:</u> Project Management Team (PMT)
PC-BIO-06	Bird Breeding Season Verification	Construction activities may disturb breeding birds associated with Yedikır Wetland IBA.	<b>Moderate</b>	Conduct a pre-construction ornithological survey to confirm presence or absence of active nests within the project footprint and nearby wetland habitats. If active nests are identified, establish temporary protection buffers until breeding activity ends.	<b>Low</b>	Included in Project cost	<u>Implementing:</u> Contractor DSİ 7 <sup>th</sup> Regional Directorate <u>Supervising:</u> Project Management Team (PMT)
PC-BIO-07	Environmental Sensitivity Mapping	Lack of clear identification of environmentally sensitive areas before mobilization.	<b>Moderate</b>	Prepare a site environmental sensitivity map showing protected areas, irrigation corridors, wetland margins and sensitive habitats. Share the map with contractors and include it in site environmental management procedures before mobilization.	<b>Low</b>	Included in Project cost	<u>Implementing:</u> Contractor DSİ 7 <sup>th</sup> Regional Directorate <u>Supervising:</u> Project Management Team (PMT)
PC-BIO-08	Biodiversity Awareness and Method Statements	Contractors may not fully understand biodiversity protection requirements within or near protected areas.	<b>Moderate</b>	Prepare biodiversity protection method statements and include them in contractor environmental management plans. Provide awareness training to site personnel regarding protected areas, wildlife protection rules and reporting procedures before site mobilization.	<b>Low</b>	Included in Project cost	<u>Implementing:</u> Contractor DSİ 7 <sup>th</sup> Regional Directorate <u>Supervising:</u>

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No.	Issue	Potential Impact	Impact Significance Before Mitigation	Mitigation Measure	Impact Significance After Mitigation	Cost of Mitigation	Responsible Parties
							Project Management Team (PMT)



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## 6.2 Construction Phase Mitigation Measures

The mitigation measures for the construction phase are presented in Table 6-2.

Table 6-2. Mitigation Measures for Construction Phase

No.	Issue	Potential Impact	Impact Significance Before Mitigation	Mitigation Measure	Impact Significance After Mitigation	Cost of Mitigation	Responsible Parties
CP-WRU-01	Water Resources and Use	Water use and utility Contamination risk of surface and groundwater resources Surface runoff and sediment deposition	<b>Moderate</b>	<p>Provide required permits for water allocation.</p> <p>Provide bottled drinking water and ensure safe storage and distribution.</p> <p>Use water-efficient methods for dust suppression and avoid excessive or unnecessary water spraying and water use.</p> <p>Optimize dust suppression frequency based on weather conditions and avoid unnecessary water consumption during low-dust periods.</p> <p>Store fuels, oils, chemicals and construction materials on impermeable, bunded surfaces to prevent infiltration or runoff into water bodies.</p> <p>Implement spill prevention and response measures, including drip trays, designated refueling areas and spill kits at all work sites.</p> <p>Avoid construction activities during heavy rainfall where erosion or sediment transport risks increase.</p> <p>Implement the waste management plan/procedure properly</p> <p>Implement temporary stormwater drainage channels and ensure that runoff is directed away from excavation areas, stockpiles and watercourses.</p> <p>Install temporary sediment control measures (e.g., silt fences, straw bales, sediment traps) in excavation areas prone to runoff.</p> <p>Manage excavated soils properly and prevent loose material from entering irrigation channels, drainage lines, or water courses.</p> <p>Ensure wastewater and greywater generated at the construction site are collected and disposed of in accordance with local regulations.</p> <p>Schedule and coordinate construction works to avoid unnecessary disruption to existing irrigation flows and minimize temporary water access interruptions for farmers.</p>	<b>Low</b>	Included in Project cost	<p><u>Implementing:</u> Contractor</p> <p><u>Supervising:</u> DSi 7<sup>th</sup> Regional Directorate Project Management Team (PMT)</p>
CP-SM-01	Soil Management	Loss of soil fertility due to improper topsoil stripping, storage or reinstatement Soil structure degradation and reduced productivity on agricultural lands Erosion and sediment transport risk during rainfall Localized soil compaction from machinery movement Temporary waterlogging in shallow groundwater areas when trenches remain open Soil contamination risk due to accidental fuel/oil leaks or improper handling of concrete debris	<b>Moderate</b>	<p>Strip, stockpile and reinstatement topsoil separately from subsoil; prevent mixing through clear labeling and controlled storage.</p> <p>Limit temporary topsoil storage to ~1 week and stabilize stockpiles in designated locations away from drainage lines and irrigation ditches.</p> <p>Reuse excavated soil for backfilling and transport surplus to the licensed facilities of Suluova Municipality.</p> <p>Install sediment barriers (silt fences, straw bales) in erosion-prone zones and maintain them during rainfall events.</p> <p>Manage concrete debris from removed channel linings and transport to licensed facilities.</p> <p>Use only permitted quarries for sand-gravel; verify existing EIA-not-required permits.</p> <p>Keep trenches open for the minimum feasible duration in shallow groundwater zones; restore drainage continuity during works.</p>	<b>Low</b>	Included in Project cost	<p><u>Implementing:</u> Contractor</p> <p><u>Supervising:</u> DSi 7<sup>th</sup> Regional Directorate Project Management Team (PMT)</p>

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No.	Issue	Potential Impact	Impact Significance Before Mitigation	Mitigation Measure	Impact Significance After Mitigation	Cost of Mitigation	Responsible Parties
				Prevent soil contamination by using drip pans under machinery, placing hazardous materials on impermeable secondary containment, and keeping spill kits on-site. Restrict heavy machinery movement to defined access strips to minimize compaction; avoid unnecessary passes over croplands.			
CP-AQM-01	Air Quality Management	Increase in dust and exhaust emissions near sensitive receptors Decrease in visibility affecting the road safety Increase in the pollutant concentrations in the air leading to air pollution	<b>Moderate</b>	Regular watering of unpaved roads, excavation areas, backfilling zones, and haul routes during dry and windy periods. Covering all trucks transporting loose materials (soil, sand, aggregates) and ensuring loads are not exceeded. Keeping vehicle speeds below 30 km/h on internal construction roads. Temporarily ceasing excavation/loading activities during strong winds when suppression is ineffective. Stabilizing or covering long-term soil stockpiles; avoiding stockpiling near sensitive receptors. Compacting exposed surfaces and completing backfilling as early as possible. Ensuring all construction vehicles and machinery have valid exhaust emission measurements and undergo regular maintenance. Using fuel-efficient and low-emission machinery compliant with national emission standards and good international practice. Enforcing a strict anti-idling policy (e.g., machinery not kept running unnecessarily; max. 3 minutes of idling). Optimizing haul routes to reduce travel distance and fuel use. Transport activities scheduled to avoid local peak traffic hours to reduce cumulative emissions. Using dust suppression (e.g., misting or water spraying) during loading/unloading and material transfer. Keeping aggregate stockpiles covered or dampened; using windbreaks where relevant. Locating construction camps, workshops, and storage areas downwind of settlements when possible. Maintaining all internal roads in stable condition to minimize dust generation. Providing PPE (dust masks) to workers engaged in high-dust activities. Daily inspections for visible dust, exhaust emissions, and effectiveness of dust suppression measures. Recording all air-quality-related activities in relevant logs/registers/forms. Implementing immediate corrective actions if fugitive dust is observed crossing site boundaries. Compliance with the ambient air quality limit values stipulated in Project Standards given in this ESMP. Conducting dust measurements by an authorized laboratory accordingly if any grievance regarding dust generation is received from the nearest receptors.	<b>Low</b>	Included in Project cost	<u>Implementing:</u> Contractor <u>Supervising:</u> DSİ 7 <sup>th</sup> Regional Directorate Project Management Team (PMT)
CP-NVM-01	Noise and Vibration Management	Increase in noise and vibration levels near sensitive receptors	<b>Moderate</b>	Limit heavy machinery operation to daytime hours (07:00–19:00); night-time construction is prohibited.	<b>Low</b>	Included in Project cost	<u>Implementing:</u> Contractor <u>Supervising:</u>



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				<p>Use only machinery compliant with Turkish noise emission limits; maintain equipment regularly to minimize noise.</p> <p>Keep machinery and equipment in good working order by manufacturing maintenance procedures.</p> <p>Install acoustic enclosures around generators to reduce noise levels.</p> <p>Install temporary noise-reducing barriers (acoustic screens or soil brems) near sensitive receptors when necessary.</p> <p>Ensure all vehicles and machinery have working mufflers and exhaust silencers.</p> <p>Schedule the noisiest activities (rock breaking, concrete mixing, compaction) away from periods of high community activity.</p> <p>Implement vehicle speed limits (<math>\leq 30</math> km/h) on access and farm roads to reduce rolling noise.</p> <p>Train operators on quiet operation techniques, including avoiding unnecessary idling and abrupt bucket drops.</p> <p>Avoid simultaneous operation of high-vibration machinery in the same work zone to prevent cumulative vibration peaks.</p> <p>Comply with applicable OHS legislation on occupational noise exposure and implement all required protective measures, including providing and enforcing the use of appropriate hearing protection for workers.</p> <p>Monitor vibration levels when working near residential buildings or cultural heritage assets that are adjacent to the construction area.</p> <p>Avoid unnecessary use of alarms, horns and sirens.</p> <p>Schedule/Plan construction activities in consultation with nearby communities so that the noisiest activities are undertaken during periods that will result in the least disturbance.</p> <p>Conducting noise and/or vibration measurements by an authorized laboratory accordingly if any grievance regarding dust generation is received from the nearest receptors.</p> <p>Compliance with the environmental noise level limit values stipulated in Project Standards given in this ESMP.</p>			<p>DSİ 7<sup>th</sup> Regional Directorate</p> <p>Project Management Team (PMT)</p>
CP-WM-01	Waste Management	<p>Domestic solid waste generation from personnel</p> <p>Odor, littering and pest attraction if waste is not properly stored</p> <p>Visual pollution and fire risk from packaging waste</p> <p>Reduced recycling efficiency if materials are not segregated</p> <p>Soil and groundwater contamination risk from hazardous waste and materials</p> <p>Environmental and safety risks from batteries, accumulators, ELTs, WEEE and medical waste</p>	<b>Moderate</b>	<p>Apply the waste hierarchy in all waste management activities</p> <p>Implement the Waste Management Plan (WMP, given in Annex-4) properly.</p> <p>Provide regular training to all personnel on waste management and waste minimization.</p> <p>Collect all waste streams separately according to type and use clearly marked containers.</p> <p>Place dedicated collection bins/containers for each waste category on site.</p> <p>Store hazardous and non-hazardous waste separately in compliance with national regulations and international standards (including WB ESSs).</p> <p>Label all waste containers clearly with waste code, type, quantity, and storage date.</p> <p>Store all waste according to its physical and chemical characteristics to prevent incompatible reactions.</p> <p>Store hazardous waste in durable, closed containers placed on impermeable, bunded surfaces.</p> <p>Store waste oils only in impermeable, leak-proof, red-colored containers labeled "waste oil," equipped with overfill prevention devices.</p>	<b>Low</b>	Included in Project cost	<p><u>Implementing:</u> Contractor</p> <p><u>Supervising:</u> DSİ 7<sup>th</sup> Regional Directorate</p> <p>Project Management Team (PMT)</p>



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				<p>Keep different categories of waste oils separate and prevent mixing.</p> <p>Ensure that waste oils, oily rags, oil filters, and similar maintenance materials are collected properly and never discharged to soil or water bodies.</p> <p>Maximize reuse, recycling, and recovery of generated waste.</p> <p>Send recyclable and recoverable waste to licensed recovery/recycling facilities using licensed vehicles.</p> <p>Segregate spent batteries and accumulators from general waste and deliver them to licensed collection points in accordance with national regulations.</p> <p>Maintain all waste records and tracking documents regularly and accurately.</p> <p>Send hazardous waste to licensed hazardous-waste management facilities and keep all transport receipts; complete required notifications in the MoEUCC system.</p> <p>Ensure that boxes/containers for hazardous and non-hazardous waste are properly positioned on site and used consistently.</p> <p>Conduct construction machinery maintenance only at authorized service centers; send any waste accumulators or end-of-life tires generated on-site to the temporary waste storage area for collection by licensed companies.</p> <p>Manage excavation waste by reusing it as backfilling material as much as possible.</p> <p>Transport surplus excavation waste to the Suluova Municipality's permitted licensed site and keep all transfer records.</p> <p>Strip and store topsoil and subsoil separately to prevent mixing or contamination.</p> <p>Limit stockpile heights to a maximum of 6 m for subsoil and 2 m for topsoil.</p>			
CP-WWM-01	Wastewater Management	<p>Contamination risk of surface and groundwater due to improper collection</p> <p>Leakage or uncontrolled discharge of domestic wastewater</p> <p>Improper handling of waste and hazardous materials</p>	<b>Moderate</b>	<p>Provide sufficient number of mobile toilets or impermeable septic tanks at active work sites and ensure their regular maintenance and cleaning.</p> <p>Prevent wastewater discharge into soil or surface water.</p> <p>Ensure all wastewater is collected in sealed systems.</p> <p>Transport collected wastewater to the nearest licensed WWTP (Suluova WWTP, Amasya WWTP or Merzifon WWTP) via licensed vacuum trucks, in accordance with permits obtained from relevant authorities.</p> <p>Keep record of wastewater collection, transport, and disposal activities, including truck logbooks and disposal receipts.</p> <p>Ensure temporary sanitary facilities are located away from drainage lines, irrigation channels, or surface waters to avoid overflow or leakage.</p> <p>Provide hygiene awareness training to workers on proper use of sanitary facilities.</p> <p>Implement WMP properly to prevent the risks arising from improper waste and hazardous materials.</p>	<b>Low</b>	Included in Project cost	<p><u>Implementing:</u> Contractor</p> <p><u>Supervising:</u> DSİ 7<sup>th</sup> Regional Directorate</p> <p>Project Management Team (PMT)</p>
CP-NHP-01	Natural Hazard Potential	<p>Potential injury to workers and damage to equipment or materials due to ground shaking during an earthquake</p> <p>Localized surface runoff and erosion after intense rainfall</p>	<b>Moderate</b>	<p>Ensure all construction works comply with the Turkish Building Earthquake Regulation and Regulation on Buildings to be Built in Disaster Areas</p> <p>Implement site-specific emergency preparedness and response procedures for seismic events and extreme weather conditions.</p> <p>Store heavy equipment, fuel, and materials on stable, level ground away from slopes or drainage channels.</p>	<b>Low</b>	Included in Project cost	<p><u>Implementing:</u> Contractor</p> <p><u>Supervising:</u> DSİ 7<sup>th</sup> Regional Directorate</p>



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				<p>Conduct pre-construction hazard awareness training for workers, covering earthquake and heavy rainfall response.</p> <p>Monitor weather forecasts and suspend excavation or lifting activities during severe storms or heavy rain.</p> <p>Implement slope protection and temporary drainage measures at excavation and stockpile areas to minimize runoff and erosion.</p> <p>Maintain communication with local AFAD units for emergency coordination during natural events.</p>			Project Management Team (PMT)
CP-BIO-01	Habitat Disturbance and Vegetation Loss	<p>Removal or disturbance of vegetation during canal excavation and earthworks.</p> <p>Soil compaction and topsoil loss.</p> <p>Reduced regeneration potential of native vegetation after construction.</p>	<b>Moderate</b>	<p>Clearly demarcate work boundaries and restrict construction activities to the designated corridor.</p> <p>Strip and store topsoil separately for reuse during rehabilitation.</p> <p>Rehabilitate disturbed areas using native grass and shrub species where feasible.</p> <p>Stabilize canal banks using bioengineering techniques (e.g., seeding, vegetation stabilization) to prevent erosion.</p>	<b>Low</b>	Included in Project cost	<p><u>Implementing:</u> Contractor</p> <p><u>Supervising:</u> DSİ 7<sup>th</sup> Regional Directorate Project Management Team (PMT)</p>
CP-BIO-02	Noise, Vibration and Dust Impacts on Fauna	<p>Disturbance to birds, amphibians and small mammals due to construction noise and dust.</p> <p>Temporary disruption of breeding or feeding behavior of birds associated with Yedikır Wetland.</p>	<b>Moderate</b>	<p>Maintain dust and noise levels below acceptable limits through regular watering, speed restrictions and equipment maintenance.</p> <p>Avoid high-intensity works near wetland habitats during the main bird breeding season where possible.</p> <p>Cover stockpiles and ensure regular dust suppression.</p> <p>Ensure noise levels at sensitive receptors remain within acceptable limits.</p>	<b>Negligible</b>	Included in Project cost	<p><u>Implementing:</u> Contractor</p> <p><u>Supervising:</u> DSİ 7<sup>th</sup> Regional Directorate Project Management Team (PMT)</p>
CP-BIO-03	Physical Impacts on Wildlife (Fauna)	<p>Accidental injury or mortality of small mammals, reptiles or amphibians due to vehicle movement.</p> <p>Wildlife entering active construction zones.</p>	<b>Moderate</b>	<p>Limit vehicle speeds to 20–30 km/h within construction areas.</p> <p>Provide training to all workers on wildlife protection measures.</p> <p>If wildlife is encountered, temporarily halt works and allow animals to leave the area safely.</p> <p>Record and report any injured or dead fauna to the supervising authority.</p>	<b>Low</b>	Included in Project cost	<p><u>Implementing:</u> Contractor</p> <p><u>Supervising:</u> DSİ 7<sup>th</sup> Regional Directorate Project Management Team (PMT)</p>
CP-BIO-04	Pollution and Contamination Risks (Fuel, Oil, Waste)	<p>Soil and water contamination due to accidental fuel or oil spills.</p> <p>Negative effects on flora and fauna due to improper waste management.</p>	<b>Moderate</b>	<p>Designate impermeable and bunded areas for fuel and chemical storage.</p> <p>Keep spill response kits at refueling and maintenance locations.</p> <p>Implement proper waste management and temporary storage areas.</p> <p>Apply erosion and sediment control measures (e.g., silt fences, sediment traps) where necessary.</p>	<b>Negligible</b>	Included in Project cost	<p><u>Implementing:</u> Contractor</p> <p><u>Supervising:</u> DSİ 7<sup>th</sup> Regional Directorate Project Management Team (PMT)</p>
CP-BIO-05	Protection of Sensitive and Protected Areas	Potential disturbance to sensitive habitats connected to Yedikır Wetland and nearby ecological features.	<b>Moderate</b>	Clearly indicate protected areas and wetland boundaries on construction maps and inform site personnel.	<b>Low</b>	Included in Project cost	<p><u>Implementing:</u> Contractor</p> <p><u>Supervising:</u></p>

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				Maintain a buffer distance from wetland margins and natural drainage channels where possible. Avoid unnecessary disturbance to wetland-related habitats during construction.			DSİ 7 <sup>th</sup> Regional Directorate Project Management Team (PMT)
CP-BIO-06	Rehabilitation and Re-vegetation of Disturbed Areas	Exposed surfaces vulnerable to erosion after construction Fragmentation or loss of microhabitats	Moderate	After construction, reapply stored topsoil and replant disturbed areas with native vegetation. Preserve natural vegetation along canal edges where possible. Implement vegetation-based slope stabilization in erosion-prone areas.	Negligible	Included in Project Cost	<u>Implementing:</u> Contractor <u>Supervising:</u> DSİ 7 <sup>th</sup> Regional Directorate Project Management Team (PMT)
CP-BIO-07	Protection of Yedikır Dam Natural Protected Area	Risk of sedimentation, pollution or disturbance within the Yedikır Natural Protected Area.	Moderate	Ensure that the pipeline section within the protected area is installed as a buried closed system as required by the Regional Commission decision. Prevent sediment runoff toward wetland areas through the implementation of site-specific sediment control measures (e.g., silt fences, sediment traps, and controlled drainage systems), particularly during excavation and earthworks within or near the protected area. Ensure supervision during all construction activities near the protected area.	Low	Included in Project Cost	<u>Implementing:</u> Contractor <u>Supervising:</u> DSİ 7 <sup>th</sup> Regional Directorate Project Management Team (PMT)
CP-SOC-01	Disclosure and Stakeholder Engagement	Insufficient disclosure of project information can hinder effective communication and stakeholder engagement, leading to limited transparency and potential mistrust. Insufficient communication and engagement with stakeholders, including local communities, landowners, and relevant organizations, can result in misunderstandings, mistrust, and dissatisfaction. Inadequate consideration of stakeholder concerns, needs, and social dynamics can result in social disruptions, inequities, or negative impacts on the affected communities.	Moderate	Prior to the commencement of construction activities, the draft ESMP, RP, SEP, and other relevant documents will be disclosed to stakeholders in accordance with the Project's disclosure procedures, and consultations will be conducted. Information on the Project's Grievance Mechanism (GM), including submission channels and procedures, will be shared with the public Prior to the commencement of construction works, local communities and relevant stakeholders will be informed about the planned activities and the mitigation measures through meetings, public announcements, and other communication channels defined in the SEP to be implemented. Information on the start and expected completion dates of construction works, as well as working hours, will be displayed on signboards placed in visible locations within the affected settlements. The SEP will be implemented throughout the Project lifecycle, and the Project Grievance Mechanism (GM) will be established and maintained. All stakeholder engagement activities, including information meetings, feedback received, and grievances submitted during the construction period, will be systematically documented. Vulnerable groups will be specifically consulted as part of the SEP, and their feedback will be integrated into project activities. The Contractor will be responsible for the following: Assign a Community Liaison Officer (CLO) responsible for communication with local communities and for receiving requests and complaints. Identify appropriate communication tools to ensure effective engagement with non-Turkish speaking stakeholders. Information disclosed to stakeholders will include clear communication regarding employment opportunities, recruitment procedures, and eligibility criteria.	Low	Included in Project Cost	<u>Implementing:</u> Contractor <u>Supervising:</u> DSİ 7 <sup>th</sup> Regional Directorate Project Management Team (PMT)

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				<p>Construction scheduling and workforce planning will take into account seasonal population fluctuations</p> <p>Ensure that information disclosure and stakeholder engagement activities are accessible to illiterate individuals, particularly elderly persons (e.g. through verbal communication and visual materials).</p> <p>Care-dependent individuals and persons with disabilities will be treated as vulnerable groups within the scope of SEP activities, and engagement measures will be adapted accordingly.</p> <p>Information activities will raise awareness among local communities about potential temporary disturbances such as dust, noise, and access restrictions, as well as related mitigation measures.</p> <p>Stakeholder engagement activities will pay particular attention to farmers and economically vulnerable households.</p> <p>Information activities will consider the needs of households that may be more sensitive to temporary construction-related disruptions.</p> <p>Consult local communities to identify and proactively manage potential conflicts between an external workforce and local people.</p> <p>Install information boards displaying the name and contact details of the Contractor in visible locations around the work sites to ensure local communities can raise concerns and ask questions to contractor</p> <p>Raise awareness among local communities about potential inconveniences and risks associated with construction activities and the presence of an external workforce.</p> <p>Raise awareness among workers regarding appropriate conduct and interaction with local communities, establish the code of conduct in line with international practice and strictly enforce them, including the dismissal of workers and financial penalties of adequate scale.</p>			
CP-SOC-02	Vulnerable Groups	<p>Construction zones can pose safety hazards to road users, including the presence of heavy machinery, loose debris, or uneven road surfaces, increasing the risk of accidents or damage to vehicles.</p> <p>Construction activities may result in temporary road closures or disruptions, limiting or restricting access for local communities, businesses, and transportation.</p> <p>Repair/maintenance works that may cause temporary disturbance may threaten public health.</p> <p>During the construction phase of the project, local communities or contractor personnel may face negative impacts related to ethical behavior and codes of conduct, as well as sexual exploitation and abuse/harassment.</p>	<b>Moderate</b>	<p>The use of access roads should be planned in a way that does not pose risks to the travel safety of shuttle vehicles in villages with bussed training, and traffic measures (warning signs, speed limits, and information about settlements and schools for the periods when large and dangerous goods will be transported) should be taken.</p> <p>The grievance mechanism will be actively and efficiently operated.</p> <p>Temporary blockages in the access roads will be minimized during the construction period, and any blockage shall be planned prior to execution. An advance notice shall be given to the local representative (mukhtar and/or aza) including timing and point of blockage and an alternative route which needs to be used in case of emergency.</p> <p>Schedule works beyond irrigation season to the extent possible to avoid/minimize service disruption. Inform local population about construction and work schedules.</p> <p>Restricted vehicle movement to defined access routes and demarcated working areas to prevent excessive damage to vegetation and soil. Use noise-generating technologies between 08.00 -19.00</p> <p>The Community Liaison Officer (CLO) will be introduced to the local community and updated information about the grievance mechanism should continue to be provided.</p> <p>Stakeholder engagement and information disclosure activities will be designed in an inclusive and accessible manner for vulnerable and disadvantaged groups.</p> <p>Face-to-face communication, home visits where necessary, and the use of clear and understandable materials will be applied for elderly stakeholders.</p> <p>Flexible meeting schedules, one-on-one consultations, and targeted communication methods will be implemented to enhance the participation of female-headed households.</p> <p>Visual materials and verbal communication methods will be used to ensure accessibility for illiterate individuals.</p>	<b>Low</b>	Included in Project Cost	<p><u>Implementing:</u> Contractor</p> <p><u>Supervising:</u> DSİ 7<sup>th</sup> Regional Directorate</p> <p>Project Management Team (PMT)</p>



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				<p>Appropriate communication tools will be used to engage with stakeholders who speak languages other than Turkish. The Grievance Mechanism developed for all personnel working on site will be operational and grievances will be followed up. Clear procedures for submitting and resolving grievances will be communicated to workers.</p> <p>Implementation of the C-LMP based on the TIMP2II LMP and The Workers' Accommodation: Processes and Standards" (August 31 2009) developed jointly by IFC and the EBRD, and ILO Workers' Housing Recommendation will be ensured.</p> <p>LMP will be applied including measures for OHS and CHS.</p> <p>Pay particular attention to elderly individuals and those with chronic illnesses by minimizing dust, noise, and temporary access disruptions in proximity to settlements.</p>			
CP-SOC-03	Land Use and Resettlement and Land Acquisition	<p>Improperly planned construction activities can result in land disturbance, including excavation, grading, and temporary storage of materials, which may cause damage to the adjacent land and its structures.</p> <p>Construction operations may limit or restrict landowners' access to their properties, potentially impacting their ability to carry out farming or other activities on the land.</p> <p>Construction activities may require the resettlement of communities living in the project area, leading to the displacement of families and disruption of their social structures.</p> <p>Improper rehabilitation measures can leave affected communities without adequate means to rebuild their lives or access comparable livelihood opportunities.</p>	<b>Moderate</b>	<p>Training will be provided to the construction personnel so that they maintain the pre-established construction boundaries.</p> <p>Implement Project Grievance Mechanism. If any complaints related to arable lands are received through the Grievance Mechanism, evaluate the complaint and where necessary plan and implement corrective actions.</p> <p>Contractor will ensure that necessary corrective measures are taken from its own budget, in case of direct or indirect damage caused by project activities to adjacent properties that are state-owned or private property</p> <p>All land acquisition activities including easement rights will be completed prior to the commencement of construction works. RP will be fully implemented, and all compensation payments will be made before the start of any physical works.</p> <p>Temporary construction site areas will be selected on rented land or unused public parcels, prioritizing locations that minimize impacts on agricultural lands and existing land use.</p> <p>The layout and boundaries of temporary construction sites will be clearly defined prior to mobilization to avoid unnecessary land disturbance.</p> <p>Temporary construction site planning will consider integration with existing access routes to minimize additional disturbance.</p> <p>Where informal land users are identified, their use patterns will be assessed and addressed in accordance with the RP and ESS5 requirements.</p> <p>Resettlement Plan will be prepared based on TIMP2II RF.</p> <p>The Contractor will leave appropriate access gaps within the construction corridor, where technically feasible, to ensure farmers' passage to their agricultural lands and to minimize disruption to ongoing agricultural activities.</p> <p>The locations and design of these access gaps will be discussed with local farmers prior to construction, and their feedback will be taken into account during the detailed design and implementation process.</p> <p>Project activities will follow existing road and land alignments as much as practicable to minimize disturbances.</p> <p>Ensure effective supervision of construction activities to prevent unnecessary impacts on local roads, land use, and community assets.</p> <p>Implement temporary arrangements where required to maintain safe access and continuity of local movement.</p> <p>Additional protective measures will be applied in settlements with relatively fragile infrastructure services.</p>	<b>Low</b>	Included in Project Cost	<p><u>Implementing:</u> Contractor</p> <p><u>Supervising:</u> DSI 7<sup>th</sup> Regional Directorate</p> <p>Project Management Team (PMT)</p>



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CP-OHS-01	Inadequate OHS planning, risk assessment, or resource allocation	Neglect of OHS considerations, insufficient controls, or poor design may increase accident likelihood during construction	High	<p>OHS considerations will be integrated into project planning and design.</p> <p>Site-specific risk assessments will be conducted before the commencement of construction activities.</p> <p>Adequate personnel, PPE, and safety tools will be provided.</p> <p>A full-time OHS Specialist, an Occupational Physician, and an Assistant Health Personnel will be assigned.</p> <p>OHS controls will be incorporated into design documents and method statements.</p> <p>OHS performance indicators (KPIs) will be established and regularly reported. Accident and near-miss records will be systematically maintained, and root cause analyses will be conducted to prevent recurrence.</p>	Low	Included in Project cost	<p><u>Implementing:</u> Contractor</p> <p><u>Supervising:</u> DSİ 7<sup>th</sup> Regional Directorate Project Management Team (PMT)</p>
CP-OHS-02	Slips, trips, and falls	Minor to severe injuries; work stoppages	High	<p>Maintain even and clean working surfaces.</p> <p>Install guardrails and barriers around excavations and elevated areas.</p> <p>Provide anti-slip footwear and reflective vests.</p> <p>Conduct regular housekeeping inspections.</p>	Low	Included in Project cost	<p><u>Implementing:</u> Contractor</p> <p><u>Supervising:</u> DSİ 7<sup>th</sup> Regional Directorate Project Management Team (PMT)</p>
CP-OHS-03	Machinery and vehicle accidents	Serious injury or fatalities; equipment damage	High	<p>Implement a traffic management plan</p> <p>Separate pedestrian and vehicle pathways.</p> <p>Install signage and use flagmen.</p> <p>Ensure trained operators and regular maintenance.</p>	Low	Included in Project cost	<p><u>Implementing:</u> Contractor</p> <p><u>Supervising:</u> DSİ 7<sup>th</sup> Regional Directorate Project Management Team (PMT)</p>
CP-OHS-04	Exposure to dust and noise	Respiratory and hearing problems; fatigue	High	<p>Apply dust suppression (water spraying).</p> <p>Maintain machinery.</p> <p>Provide PPE (masks, earplugs).</p> <p>Conduct periodic noise/dust monitoring.</p>	Low	Included in Project cost	<p><u>Implementing:</u> Contractor</p> <p><u>Supervising:</u> DSİ 7<sup>th</sup> Regional Directorate Project Management Team (PMT)</p>
CP-OHS-05	Manual handling and lifting	Musculoskeletal disorders or strain injuries; lost workdays	High	<p>Use lifting aids and equipment.</p> <p>Provide manual handling training.</p> <p>Rotate workers; limit repetitive tasks.</p>	Low	Included in Project cost	<p><u>Implementing:</u> Contractor</p> <p><u>Supervising:</u> DSİ 7<sup>th</sup> Regional Directorate Project Management Team (PMT)</p>



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CP-OHS-06	Electrical hazards	Electric shock, burns, fatalities	High	Inspect electrical systems regularly. Ensure grounding and insulation. Apply Lockout/Tagout procedures. Train authorized personnel only.	Low	Included in Project cost	<u>Implementing:</u> Contractor <u>Supervising:</u> DSİ 7 <sup>th</sup> Regional Directorate Project Management Team (PMT)
CP-OHS-07	Confined space works	Oxygen deficiency, toxic gas exposure	High	Establish confined space entry permits. Ventilate and monitor gases. Keep rescue team ready. Train personnel.	Low	Included in Project cost	<u>Implementing:</u> Contractor <u>Supervising:</u> DSİ 7 <sup>th</sup> Regional Directorate Project Management Team (PMT)
CP-OHS-08	Heat stress and dehydration	Fatigue, heat exhaustion	Moderate	Provide shaded areas and water. Schedule work in cooler hours. Train workers on symptoms.	Low	Included in Project cost	<u>Implementing:</u> Contractor <u>Supervising:</u> DSİ 7 <sup>th</sup> Regional Directorate Project Management Team (PMT)
CP-OHS-09	Poor housekeeping / site organization	Increased minor accidents	High	Maintain daily housekeeping. Keep access routes clear. Supervise waste collection. Conduct weekly inspections.	Low	Included in Project cost	<u>Implementing:</u> Contractor <u>Supervising:</u> DSİ 7 <sup>th</sup> Regional Directorate Project Management Team (PMT)
CP-OHS-10	Sanitation and hygiene	Spread of diseases	Moderate	Provide sufficient toilets and hygiene facilities. Conduct cleaning/disinfection. Maintain safe drinking water supply.	Low	Included in Project cost	<u>Implementing:</u> Contractor <u>Supervising:</u> DSİ 7 <sup>th</sup> Regional Directorate Project Management Team (PMT)
CP-OHS-11	Inadequate worker training and supervision	Accidents due to lack of knowledge and unsafe acts	High	Conduct mandatory OHS induction and periodic refresher training. Supervise new and unskilled workers closely.	Low	Included in Project cost	<u>Implementing:</u> Contractor <u>Supervising:</u>



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				Implement disciplinary and reward system for safety compliance. Record attendance and evaluation results.			DSİ 7 <sup>th</sup> Regional Directorate Project Management Team (PMT)
CP-OHS-12	Lack of emergency preparedness	Increased injury severity during incidents	High	Prepare site-specific Emergency Preparedness and Response Plan. Conduct fire, evacuation, and rescue drills regularly. Provide first-aid kits and trained personnel. Coordinate with local emergency services.	Low	Included in Project cost	<u>Implementing:</u> Contractor <u>Supervising:</u> DSİ 7 <sup>th</sup> Regional Directorate Project Management Team (PMT)
CP-CHS-01	Community Health and Safety	Health and safety risks to nearby residents due to construction traffic, noise, dust, and machinery operation	Moderate	Coordinate heavy vehicle movements and construction schedules to minimize disturbance; refer to Traffic and Transport section. Implement dust suppression, noise control, and emission reduction measures at all active sites. Maintain clear warning signs, fencing, and restricted zones around construction areas. Provide information to local communities about ongoing works, traffic routes, and safety precautions.	Low	Included in Project cost	<u>Implementing:</u> Contractor <u>Supervising:</u> DSİ 7 <sup>th</sup> Regional Directorate Project Management Team (PMT)
CP-CHS-02	Communicable and water-related diseases	Spread of infectious or waterborne diseases due to poor hygiene, inadequate sanitation, or unsafe water use	Moderate	Maintain clean and separate sanitation facilities for men and women. Inspect and disinfect water storage tanks regularly. Conduct hygiene awareness and health education sessions for workers. Enforce strict hygiene and sanitation protocols at work sites.	Low	Included in Project cost	<u>Implementing:</u> Contractor <u>Supervising:</u> DSİ 7 <sup>th</sup> Regional Directorate Project Management Team (PMT)
CP-CHS-03	GBV, SEA/SH	Social tension or safety risks arising from misconduct or harassment incidents	Moderate	Enforce the Code of Conduct for all personnel and subcontractors. Deliver SEA/SH and GBV training and awareness to all workers. Establish and publicize a Grievance Mechanism accessible to community members. Provide separate, well-lit sanitation areas and ensure privacy for women. Prohibit any form of harassment or discrimination on site.	Low	Included in Project cost	<u>Implementing:</u> Contractor <u>Supervising:</u> DSİ 7 <sup>th</sup> Regional Directorate Project Management Team (PMT)
CP-CHS-04	Emergency preparedness and response	Injuries, property damage, or community exposure in case of accidents, fire, or natural events	Moderate	Prepare and implement an Emergency Preparedness and Response Plan (EPRP) in coordination with DSİ and AFAD. Display emergency contact numbers and evacuation routes at all worksites. Conduct emergency drills and refresher training for all workers. Keep fire extinguishers, spill kits, and first aid materials on-site and inspect them regularly.	Low	Included in Project cost	<u>Implementing:</u> Contractor <u>Supervising:</u> DSİ 7 <sup>th</sup> Regional Directorate

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				<p>Maintain direct communication with local emergency services.</p> <p>Apply special engineering designs and protective measures at gas pipeline crossings or where pipelines run in parallel.</p> <p>Ensure full compliance with the national Pipeline Technical Safety and Environmental Regulations.</p> <p>Train all relevant personnel on gas pipeline safety requirements and emergency procedures.</p>			Project Management Team (PMT)
CP-TM-01	Traffic Management	Risks to community members due to heavy vehicle movements, shared use of roads by residents and construction machinery, temporary road closures, reduced access to essential services, and road deterioration from intensive construction traffic.	<b>High</b>	<p>Prepare and implement a Traffic Management Plan (TMP) (by the Contractor) covering access routes, transport schedules, signage, detours, and speed limits.</p> <p>Use designated routes and restrict construction vehicles to identified roads wherever feasible.</p> <p>Install warning signs, barriers, cones, and flagmen at active work sites, narrow sections, community-adjacent areas, and road-crossing points.</p> <p>Apply speed limits suitable for rural and agricultural roads (e.g., 20–30 km/h in community-adjacent sections).</p> <p>Coordinate heavy vehicle movements to avoid peak agricultural traffic periods when possible.</p> <p>Provide advance notice to nearby communities regarding temporary road closures, expected delays, or intensified construction activities.</p> <p>Ensure safe pedestrian and vehicle passages near scattered houses, agricultural facilities, and business areas located along pipeline routes.</p> <p>Monitor and promptly repair roads damaged by construction machinery to prevent potholes, rutting, and shoulder failure, if occurred.</p> <p>Ensure that all construction vehicles are well-maintained, equipped with reverse alarms, functioning lights, mirrors, and reflectors.</p> <p>Prohibit unauthorized access to construction zones and ensure proper fencing at dangerous areas.</p> <p>Conduct traffic safety meetings with relevant stakeholder and impacted community members.</p>	<b>Low</b>	Included in Project cost	<p><u>Implementing:</u> Contractor</p> <p><u>Supervising:</u> DSİ 7<sup>th</sup> Regional Directorate</p> <p>Project Management Team (PMT)</p>
CP-CHM-01	Cultural Heritage Management	Possible, physical and visual irreversible adverse effect on an registered cultural heritage sites within the Project area	<b>Moderate</b>	<p>No construction works will be undertaken within the official protection boundary of the archaeological site/s.</p> <p>An archaeologist will be included in the contractor team to oversee all mitigation measures and monitoring activities in relation to archaeological sites.</p> <p>The project proponent will officially notify the Samsun Regional Council for the Conservation of Cultural Property regarding the project details to initiate the legal protection assessment process.</p> <p>All archaeological/ cultural heritage sites located within the project impact area will be identified as archaeologically sensitive areas in the project construction plans and drawings.</p> <p>No ground-disturbing activities will be planned or implemented within the defined area before the official decision to be issued by the Samsun Regional Council for the Conservation of Cultural Property.</p> <p>If any ground-disturbing activities are to take place in the vicinity of the defined sensitive area boundaries, daily archaeological monitoring will be implemented.</p>	<b>Negligible</b>	Included in Project cost	<p><u>Implementing:</u> Contractor</p> <p><u>Supervising:</u> DSİ 7<sup>th</sup> Regional Directorate</p> <p>Project Management Team (PMT)</p>

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				In the event of any chance finds discovered during construction, the necessary salvage excavation and detailed documentation will be carried out in accordance with international best practice and the requirements of the Regional Council.  Daily monitoring activities should be conducted near registered archaeological sites.			
CP-CHM-02	Cultural Heritage Management	The cultural heritage sites which are located outside the Project area, within the Aol and its surrounding landscape could be visually impacted by the project. Hence, any irreversible effect that can be caused by the Project's related activities on the cultural heritage sites is not expected.	Low	No construction works will be undertaken within the official protection boundary of the archaeological site/s.  All archaeological/ cultural heritage sites located within the project impact area will be identified as archaeologically sensitive areas in the project construction plans and drawings.  If temporary access road construction or any construction related needs are required in the upcoming period, cultural heritage sites must be considered in the planning phase of these possible construction activity.	Negligible	Included in Project cost	<u>Implementing:</u> Contractor  <u>Supervising:</u> DSİ 7 <sup>th</sup> Regional Directorate  Project Management Team (PMT)
CP-CHM-03	Cultural Heritage Management	Impact on the Conservation-Use Balance of Cultural Heritage (such as restricted access to cultural heritage due to project activities)	Low	Implement arrangements that facilitate access to archaeological sites (such as installing directional or warning signs within the construction area).  Prevent construction works that may restrict access to archaeological sites, or to reduce them to acceptable levels.  Daily monitoring activities should be conducted near registered archaeological sites.  An archaeologist will be included in the contractor team to oversee all mitigation measures and monitoring activities in relation to archaeological sites.	Negligible	Included in Project cost	<u>Implementing:</u> Contractor  <u>Supervising:</u> DSİ 7 <sup>th</sup> Regional Directorate  Project Management Team (PMT)
CP-CHM-04	Cultural Heritage Management	Risk of impact on potential unknown artefacts or chance find within and in the close proximity of the Project area	Low	Should unknown archaeological resources be encountered, these must be documented and notified in accordance with Turkish regulations (Law No: 2863) and will add to the country's heritage knowledge and databases.  The Chance Find Procedure (given in Annex-5) will be communicated to all employees and implemented.  Archaeological monitoring is required during ground-disturbing construction work.  A precautionary approach following best practice must be employed to prevent damaging buried cultural heritage assets, chance finds.  An archaeologist will be included in the contractor team to oversee all mitigation measures and monitoring activities in relation to archaeological sites.	Negligible	Included in Project cost	<u>Implementing:</u> Contractor  <u>Supervising:</u> DSİ 7 <sup>th</sup> Regional Directorate  Project Management Team (PMT)

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### 6.3 Operation Phase Mitigation Measures

The mitigation measures for the operation phase are presented in Table 6-3.

Table 6-3. Mitigation Measures for Operation Phase

No.	Issue	Potential Impact	Impact Significance Before Mitigation	Mitigation Measure	Impact Significance After Mitigation	Cost of Mitigation	Responsible Parties
OP-WRU-01	Water Resources and Use	<p>Localized waterlogging and soil deterioration in case of pipeline leaks or valve malfunctions</p> <p>Potential contamination of surface or groundwater from accidental spills during maintenance</p> <p>Sediment transport or erosion around malfunction points or drainage discharge location</p> <p>indirect water quality impacts associated with agricultural return flows containing nutrients or agrochemicals</p>	<b>Moderate</b>	<p>Inspect the pressurized closed system regularly to identify leaks, faulty valves, or malfunction risks.</p> <p>Implement rapid leak detection and immediate repair protocols to prevent localized flooding and water wastage.</p> <p>Maintain valves, air-release units, chambers and pipe joints according to manufacturer and DSI operational standards.</p> <p>Prevent chemical and fuel spills during maintenance by using spill kits, secondary containment and controlled work procedures.</p> <p>Stabilize erosion-prone areas around malfunction points, drainage outlets or discharge locations if needed.</p> <p>Provide awareness training to farmers on pesticide/fertilizer use and promote best irrigation practices to reduce agricultural return-flow pollution.</p> <p>Ensure that operational water use of the Project personnel is limited to drinking, utility and facility needs and apply water-efficiency measures where possible.</p> <p>Restrict maintenance activities requiring water (e.g., flushing) to as-needed cases only.</p> <p>Maintain and clean drainage channels and outlet structures regularly to prevent blockages that could contribute to localized flooding or erosion.</p> <p>Maintain an operational logbook documenting maintenance activities, water usage, leak events and corrective actions.</p> <p>Ensure the Yedikır Dam is made safe in accordance with the related Dam Safety Report.</p> <p>Install warning signs around the Yedikır Dam, including "GÖLETTE YÜZMEK YASAKTIR [SWIMMING IN THE DAM IS PROHIBITED]" and "SULAMA SUYUDUR, KESİNLİKLE İÇİLMEZ [THIS IS IRRIGATION WATER; STRICTLY NOT FOR DRINKING]".</p> <p>Prepare an Emergency Preparedness Plan (EPP) for the operation phase of the Yedikır Dam (by Yedikır Dam Irrigation Union), covering dam failure, flood risks, water contamination and related hazards.</p>	<b>Low</b>	Included in operation costs	<p><u>Implementing:</u> Yedikır Dam Irrigation Union and/or</p> <p>Maintenance and Repair Contractor</p> <p><u>Supervising:</u></p> <p>DSİ 7<sup>th</sup> Regional Directorate</p> <p>Project Management Team (PMT)</p>
OP-SM-01	Soil Management	<p>Localized soil disturbance or compaction from maintenance vehicle access</p> <p>Minor temporary soil exposure during repair works</p> <p>Diffuse soil contamination risk from improper pesticide use by farmers</p>	<b>Moderate</b>	<p>Restrict maintenance vehicle movement to predefined access paths and minimize repeated passes.</p> <p>Limit ground disturbance by keeping repair works within narrow, pre-established corridor limits.</p> <p>Reinstate disturbed soil immediately after maintenance; level and compact lightly to restore surface stability.</p> <p>Provide awareness-raising sessions for farmers on appropriate pesticide and agro-chemical use through stakeholder engagement activities.</p> <p>Promote good agricultural practices to reduce chemical runoff into irrigation channels.</p>	<b>Low</b>	Included in operation costs	<p><u>Implementing:</u> Yedikır Dam Irrigation Union and/or</p> <p>Maintenance and Repair Contractor</p> <p><u>Supervising:</u></p> <p>DSİ 7<sup>th</sup> Regional Directorate</p> <p>Project Management Team (PMT)</p>
OP-AQM-01	Air Quality Management	<p>Increase in dust and exhaust emissions near sensitive receptors</p>	<b>Low</b>	<p>Watering of unpaved access routes during maintenance periods if vehicle movement is intensive or occurs in dry/windy conditions.</p>	<b>Negligible</b>	Included in operation costs	<p><u>Implementing:</u> Yedikır Dam Irrigation Union and/or</p>



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No.	Issue	Potential Impact	Impact Significance Before Mitigation	Mitigation Measure	Impact Significance After Mitigation	Cost of Mitigation	Responsible Parties
		<p>Decrease in visibility affecting the road safety</p> <p>Increase in the pollutant concentrations in the air leading to air pollution during maintenance and repair works</p>		<p>Ensuring maintenance vehicles comply with speed limits on service roads.</p> <p>Covering materials transported for repair works (pipes, backfill material, gravel, sand) to prevent dust dispersion.</p> <p>Restoring disturbed ground surfaces immediately after maintenance works (compacting, covering, or stabilizing temporarily exposed soil).</p> <p>Ensuring all maintenance vehicles and equipment have up-to-date emission inspections and proper servicing.</p> <p>Implementing an anti-idling rule during repair activities.</p> <p>Minimizing the number of trips to remote assets by planning maintenance shifts efficiently.</p> <p>Using electric or low-emission service vehicles where feasible (long-term improvement measure).</p> <p>Ensuring access roads used during operation remain well maintained and free of accumulated dust.</p> <p>Preventing soil disturbance during inspections and minor repair works unless necessary.</p> <p>For major repair works (e.g., pipeline replacement), applying construction-phase dust suppression measures identically.</p> <p>Keeping backfill, sand, gravel, or replacement pipe bedding material covered or dampened during maintenance mobilization.</p> <p>Avoiding long-term storage of loose material along irrigation routes.</p> <p>Periodic site inspections (monthly or quarterly, depending on operation plan) to ensure dust and emission risks remain low.</p> <p>Recording any complaints related to dust or exhaust in the GM system and responding with corrective actions.</p> <p>Scheduling maintenance activities causing dust near settlements during daytime hours and informing local communities in advance.</p>			<p>Maintenance and Repair Contractor</p> <p><u>Supervising:</u></p> <p>DSİ 7<sup>th</sup> Regional Directorate</p> <p>Project Management Team (PMT)</p>
OP-NVM-01	Noise and Vibration Management	Increase in noise and vibration levels near sensitive receptors during maintenance and repair works	Low	<p>Restrict routine maintenance works that generate noise (e.g., valve testing, flushing, pump inspections) to daylight hours.</p> <p>Ensure all operational vehicles used for patrols and inspections comply with noise emission standards and are maintained regularly.</p> <p>Install noise-absorbing covers or housings on valve chambers, flow-control structures, and any above-ground units producing tonal noise.</p> <p>Implement vegetation screening (shrubs/trees) around permanent structures located near sensitive receptors, when necessary.</p> <p>Avoid unnecessary idling of maintenance vehicles and generators.</p> <p>Ensure periodic inspections of valves, joints, air-release units and chambers to identify abnormal vibration sources in the pressurized system.</p> <p>Apply damping materials or elastomer supports on units that exhibit resonance during operation.</p> <p>Conduct vibration checks during peak irrigation periods to detect surge-related vibration along the pipeline.</p> <p>Prohibit use of high-vibration equipment for routine maintenance near households, farmland structures, or irrigation cooperatives.</p>	Negligible	Included in operation costs	<p><u>Implementing:</u> Yedikır Dam Irrigation Union and/or</p> <p>Maintenance and Repair Contractor</p> <p><u>Supervising:</u></p> <p>DSİ 7<sup>th</sup> Regional Directorate</p> <p>Project Management Team (PMT)</p>

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OP-WM-01	Waste Management <i>(maintenance and repair Works)</i>	<p>Domestic solid waste generation from personnel</p> <p>Small quantities of packaging waste, recyclables and WEEE generated during maintenance and repair works</p> <p>Spent batteries and limited medical waste posing contamination risk if mismanaged</p> <p>Hazardous waste from periodic maintenance</p> <p>Limited excavation soil from pipeline repair works during maintenance and repair works</p> <p>Potential localized soil disturbance if surplus excavation is not properly disposed of</p>	Low	<p>Apply the waste hierarchy in all waste management activities</p> <p>Implement the Waste Management Plan (WMP, given in Annex-4) properly.</p> <p>Provide regular training to all personnel on waste management and waste minimization.</p> <p>Collect all waste streams separately according to type and use clearly marked containers.</p> <p>Place dedicated collection bins/containers for each waste category on site.</p> <p>Store hazardous and non-hazardous waste separately in compliance with national regulations and international standards (including WB ESSs).</p> <p>Label all waste containers clearly with waste code, type, quantity, and storage date.</p> <p>Store all waste according to its physical and chemical characteristics to prevent incompatible reactions.</p> <p>Store hazardous waste in durable, closed containers placed on impermeable, bunded surfaces.</p> <p>Store waste oils only in impermeable, leak-proof, red-colored containers labeled "waste oil," equipped with overflow prevention devices.</p> <p>Keep different categories of waste oils separate and prevent mixing.</p> <p>Ensure that waste oils, oily rags, oil filters, and similar maintenance materials are collected properly and never discharged to soil or water bodies.</p> <p>Maximize reuse, recycling, and recovery of generated waste.</p> <p>Send recyclable and recoverable waste to licensed recovery/recycling facilities using licensed vehicles.</p> <p>Segregate spent batteries and accumulators from general waste and deliver them to licensed collection points in accordance with national regulations.</p> <p>Maintain all waste records and tracking documents regularly and accurately.</p> <p>Send hazardous waste to licensed hazardous-waste management facilities and keep all transport receipts; complete required notifications in the MoEUCC system.</p> <p>Ensure that boxes/containers for hazardous and non-hazardous waste are properly positioned on site and used consistently.</p> <p>Conduct construction machinery maintenance only at authorized service centers; send any waste accumulators or end-of-life tires generated on-site to the temporary waste storage area for collection by licensed companies.</p> <p>Manage excavation waste by reusing it as backfilling material as much as possible.</p> <p>Transport surplus excavation waste to the Akın Excavation Soil Dumping Site and keep all transfer records.</p> <p>Strip and store topsoil and subsoil separately to prevent mixing or contamination.</p> <p>Limit stockpile heights to a maximum of 6 m for subsoil and 2 m for topsoil.</p>	Negligible	Included in operation costs	<p><u>Implementing:</u> Yedikır Dam Irrigation Union and/or Maintenance and Repair Contractor</p> <p><u>Supervising:</u> DSİ 7<sup>th</sup> Regional Directorate Project Management Team (PMT)</p>
OP-WWM-01	Wastewater Management	<p>Localized contamination of soil or groundwater due to leakage or improper disposal of domestic wastewater generated by operation and maintenance personnel</p>	Low	<p>Construct impermeable septic tanks only where connection to the sewage network is not feasible and ensure regular emptying by licensed vacuum trucks during maintenance and repair works at the site.</p> <p>Sign an agreement/protocol with Suluova Municipality for the collection and disposal of wastewater to the licensed Suluova WWTP, where necessary.</p> <p>Prohibit direct discharge of wastewater to soil, surface water, or drainage channels.</p>	Negligible	Included in operation costs	<p><u>Implementing:</u> Yedikır Dam Irrigation Union and/or Maintenance and Repair Contractor</p> <p><u>Supervising:</u></p>



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				Maintain wastewater transfer records (e.g., vacuum truck receipts, coordination with Suluova) for transparency and audit purposes. Conduct periodic inspections to ensure integrity of septic tanks and connections (if any) to prevent leakage.			DSİ 7 <sup>th</sup> Regional Directorate Project Management Team (PMT)
OP-NHP-01	Natural Hazard Potential	Structural damage to irrigation network components (valve chambers, control structures, pipelines) due to seismic activity Minor erosion or drainage issues following extreme precipitation or drought	Low	Design, construct, and maintain all facilities in accordance with the Turkish Building Earthquake Regulation and the Regulation on Buildings to be Built in Disaster Areas Conduct regular inspection and maintenance of valve chambers, control structures, and pipelines to detect and repair any post-seismic leakage, displacement, or cracking. Maintain up-to-date emergency preparedness and response plans in coordination with DSİ and local AFAD authorities for the operation of the irrigation system. Inspect drainage systems and outfall channels periodically to ensure effective runoff management and prevent localized erosion. Record and report all seismic events or major natural occurrences affecting infrastructure to DSİ. Conduct training for Yedikır Dam Irrigation Union staff on emergency procedures and structural safety checks following an earthquake or severe weather event.	Negligible	Included in operation costs	<u>Implementing:</u> Yedikır Dam Irrigation Union and/or Maintenance and Repair Contractor <u>Supervising:</u> DSİ 7 <sup>th</sup> Regional Directorate Project Management Team (PMT)
OP-BIO-01	Disturbance to Wildlife During Maintenance Works	Temporary disturbance to birds, amphibians and reptiles due to vegetation clearing or maintenance activities along irrigation canals. Potential disturbance of nests or breeding sites if works coincide with breeding season.	Low	Schedule maintenance and vegetation clearing activities outside the main breeding season where feasible. Avoid night-time or high-noise maintenance works near wetland habitats. Retain partial vegetation along canal edges to maintain microhabitats for fauna. Provide biodiversity awareness briefings to maintenance crews.	Negligible	Included in operation costs	<u>Implementing:</u> Yedikır Dam Irrigation Union and/or Maintenance and Repair Contractor <u>Supervising:</u> DSİ 7 <sup>th</sup> Regional Directorate Project Management Team (PMT)
OP-BIO-02	Vegetation Management and Habitat Integrity	Excessive vegetation clearance along canal banks leading to habitat fragmentation and reduced ecological value.	Low	Apply selective vegetation management rather than full clearance. Avoid the use of chemical herbicides; use mechanical vegetation control methods where possible. Encourage natural regeneration of native vegetation along canal edges.	Negligible	Included in operation costs	<u>Implementing:</u> Yedikır Dam Irrigation Union and/or Maintenance and Repair Contractor <u>Supervising:</u> DSİ 7 <sup>th</sup> Regional Directorate Project Management Team (PMT)
OP-BIO-03	Wildlife Entrapment or Mortality	Small fauna (frogs, reptiles, birds or small mammals) falling into irrigation canals and becoming trapped during operation or maintenance.	Low	Install escape ramps or fauna exit points at representative canal sections where feasible. Conduct periodic visual inspections of canal structures to detect trapped fauna. Record and report fauna incidents within the Biodiversity Monitoring Logbook.	Negligible	Included in operation costs	<u>Implementing:</u> Yedikır Dam Irrigation Union and/or Maintenance and Repair Contractor <u>Supervising:</u> DSİ 7 <sup>th</sup> Regional Directorate



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OP-BIO-04	Pollution and Runoff Management	Contamination of nearby soils or drainage lines due to maintenance activities, fuel leaks or improper waste handling.	Low	<p>Store fuels and chemicals on impermeable surfaces with secondary containment.</p> <p>Ensure all maintenance wastes are collected and disposed of through licensed waste management companies.</p> <p>Prevent discharge of oily or chemical residues into irrigation or drainage canals.</p>	Negligible	Included in operation costs	<p><u>Implementing:</u> Yedikır Dam Irrigation Union and/or</p> <p>Maintenance and Repair Contractor</p> <p><u>Supervising:</u></p> <p>DSİ 7<sup>th</sup> Regional Directorate</p> <p>Project Management Team (PMT)</p>
OP-BIO-05	Long-Term Habitat Monitoring and DKMP Coordination	Undetected gradual habitat degradation along canal network or lack of coordination with conservation authorities.	Moderate	<p>Prepare annual biodiversity monitoring summaries where relevant and coordinate with DSİ and DKMP if required.</p> <p>If habitat degradation or species mortality is observed, implement adaptive management measures (e.g., vegetation restoration, structural adjustments).</p>	Negligible	Included in operation costs	<p><u>Implementing:</u> Yedikır Dam Irrigation Union and/or</p> <p>Maintenance and Repair Contractor</p> <p><u>Supervising:</u></p> <p>DSİ 7<sup>th</sup> Regional Directorate</p> <p>Project Management Team (PMT)</p>
OP-BIO-06	Long-Term Protection of Yedikır Natural Protected Area	Risk of pollution or disturbance affecting habitats connected to the Yedikır Dam Natural Protected Area and associated wetland ecosystems.	Moderate	<p>Avoid the use of herbicides or agrochemicals near wetland-connected canal sections where possible.</p> <p>Regularly inspect canal discharge points for signs of pollution or sediment accumulation.</p> <p>Include monitoring results related to Yedikır Wetland in periodic environmental monitoring reports if required.</p>	Low	Included in operation costs	<p><u>Implementing:</u> Yedikır Dam Irrigation Union and/or</p> <p>Maintenance and Repair Contractor</p> <p><u>Supervising:</u></p> <p>DSİ 7<sup>th</sup> Regional Directorate</p> <p>Project Management Team (PMT)</p>
OP-SOC-01	Disclosure and Stakeholder Engagement, Grievance Mechanism	<p>Insufficient disclosure of project information can hinder effective communication and stakeholder engagement, leading to limited transparency and potential mistrust.</p> <p>Insufficient communication and engagement with stakeholders, including local communities, landowners, and relevant organizations, can result in misunderstandings, mistrust, and dissatisfaction.</p>	Moderate	<p>Stakeholder engagement activities during operation will continue to apply inclusive measures to facilitate the participation of female-headed households and elderly individuals.</p> <p>Training programs on agricultural practices and water management will be provided to farmers and relevant stakeholders.</p> <p>Grievance mechanism will be established for OHS and Community Health and Safety issues in operation period.</p> <p>Updated information about the grievance mechanism will be provided permanently.</p>	Low	Included in operation costs	<p><u>Implementing:</u> Yedikır Dam Irrigation Union and/or</p> <p>Maintenance and Repair Contractor</p> <p><u>Supervising:</u></p> <p>DSİ 7<sup>th</sup> Regional Directorate</p> <p>Project Management Team (PMT)</p>

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		Inadequate consideration of stakeholder concerns, needs, and social dynamics can result in social disruptions, inequities, or negative impacts on the affected communities.  Inadequate grievance mechanisms can lead to unresolved community concerns and grievances and escalate social tensions and conflicts within the community.					
OP-OHS-01	Inadequate OHS management, planning or inspections during operation	Increased likelihood of accidents due to lack of supervision or preventive maintenance	<b>High</b>	The OHS Management System will be effectively implemented throughout the operation phase. OHS performance indicators (KPIs) will be developed and reported on a monthly basis. Records of occupational accidents and near-miss incidents will be regularly maintained. Root cause analyses will be carried out to prevent recurrence of incidents. OHS performance data will be incorporated into annual operational reports. Regular internal OHS audits will be conducted to ensure continuous improvement.	<b>Low</b>	Included in operation costs	<u>Implementing:</u> Yedikır Dam Irrigation Union and/or  Maintenance and Repair Contractor <u>Supervising:</u> DSİ 7 <sup>th</sup> Regional Directorate  Project Management Team (PMT)
OP-OHS-02	Exposure to high-pressure systems	Cuts, bruises, or equipment damage	<b>High</b>	Depressurize before maintenance. Train personnel in safe valve operations. Inspect pipes, valves, and pumps regularly. Install pressure-relief systems.	<b>Low</b>	Included in operation costs	<u>Implementing:</u> Yedikır Dam Irrigation Union and/or  Maintenance and Repair Contractor <u>Supervising:</u> DSİ 7 <sup>th</sup> Regional Directorate  Project Management Team (PMT)
OP-OHS-03	Electrical hazards in pump/control rooms	Electric shock, burns, fatalities	<b>High</b>	Apply lockout/tagout system. Inspect electrical systems regularly. Maintain grounding and insulation. Post warning signs.	<b>Low</b>	Included in operation costs	<u>Implementing:</u> Yedikır Dam Irrigation Union and/or  Maintenance and Repair Contractor <u>Supervising:</u> DSİ 7 <sup>th</sup> Regional Directorate  Project Management Team (PMT)
OP-OHS-04	Slip, trip, and fall hazards	Physical injury, loss of workdays	<b>High</b>	Ensure drainage, lighting, and clean floors. Use anti-slip coatings.	<b>Low</b>	Included in operation costs	<u>Implementing:</u> Yedikır Dam Irrigation Union and/or



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				Provide PPE (non-slip boots).			Maintenance and Repair Contractor <u>Supervising:</u> DSİ 7 <sup>th</sup> Regional Directorate Project Management Team (PMT)
OP-OHS-05	Confined space entry	Asphyxiation, toxic gas exposure	High	Apply confined space permits. Gas monitoring and ventilation. Maintain rescue plan. Train authorized personnel.	Low	Included in operation costs	<u>Implementing:</u> Yedikır Dam Irrigation Union and/or Maintenance and Repair Contractor <u>Supervising:</u> DSİ 7 <sup>th</sup> Regional Directorate Project Management Team (PMT)
OP-OHS-06	Chemical exposure	Skin or respiratory irritation	High	Maintain MSDS for all substances. Store and label chemicals properly. Provide PPE and spill kits. Conduct annual health monitoring.	Low	Included in operation costs	<u>Implementing:</u> Yedikır Dam Irrigation Union and/or Maintenance and Repair Contractor <u>Supervising:</u> DSİ 7 <sup>th</sup> Regional Directorate Project Management Team (PMT)
OP-OHS-07	Fire and explosion risks	Injury, equipment loss, downtime	High	Inspect electrical and fuel systems. Provide and maintain fire suppression systems. Conduct regular fire drills.	Low	Included in operation costs	<u>Implementing:</u> Yedikır Dam Irrigation Union and/or Maintenance and Repair Contractor <u>Supervising:</u> DSİ 7 <sup>th</sup> Regional Directorate Project Management Team (PMT)
OP-OHS-08	Inadequate training and health surveillance	Higher accident rates, undetected illness	High	Conduct pre-employment and annual medical checks. Provide refresher OHS training. Track worker competence and health data confidentially.	Low	Included in operation costs	<u>Implementing:</u> Yedikır Dam Irrigation Union and/or Maintenance and Repair Contractor <u>Supervising:</u>



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OP-OHS-09	Ergonomic risks	Musculoskeletal disorders	Moderate	Rotate tasks, provide ergonomic tools. Design maintenance platforms safely. Train workers on posture and movement.	Low	Included in operation costs	<u>Implementing:</u> Yedikır Dam Irrigation Union and/or Maintenance and Repair Contractor <u>Supervising:</u> DSİ 7 <sup>th</sup> Regional Directorate Project Management Team (PMT)
OP-OHS-10	Psychosocial stress and fatigue	Mental fatigue, decreased concentration	Moderate	Apply fair shift rotation and adequate rest. Monitor workload and morale. Provide counseling or support mechanisms.	Low	Included in operation costs	<u>Implementing:</u> Yedikır Dam Irrigation Union and/or Maintenance and Repair Contractor <u>Supervising:</u> DSİ 7 <sup>th</sup> Regional Directorate Project Management Team (PMT)
OP-CHS-01	Community health and safety	Risks to community members due to maintenance works, leakage, or pipeline rupture	Low	Prepare and implement Community Health and Safety Management Plan (CHSMP). Conduct regular inspection and maintenance of pipelines, valve chambers, and control structures. Repair leaks or damages immediately to prevent localized flooding or contamination as soon as possible. Maintain fencing, warning signs, and restricted access around operational facilities, where necessary. Inform nearby communities before any major maintenance activities that may affect access or safety. Manage operational vehicle movements in accordance with the Traffic and Transport section.	Negligible	Included in operation costs	<u>Implementing:</u> Yedikır Dam Irrigation Union and/or Maintenance and Repair Contractor <u>Supervising:</u> DSİ 7 <sup>th</sup> Regional Directorate Project Management Team (PMT)
OP-CHS-02	Communicable and water-related diseases	Potential spread of waterborne or vector-related diseases from stagnant water or system leaks	Low	Monitor for stagnant water formation and eliminate it immediately. Inspect and maintain closed-pipe network to prevent leaks and ruptures. Coordinate with local health authorities for disease monitoring and response. Provide awareness to irrigation staff on hygiene, vector control, and early disease reporting.	Negligible	Included in operation costs	<u>Implementing:</u> Yedikır Dam Irrigation Union and/or Maintenance and Repair Contractor <u>Supervising:</u> DSİ 7 <sup>th</sup> Regional Directorate



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							Project Management Team (PMT)
OP-CHS-03	Community security and SEA/SH risks	Misconduct or harassment incidents by operational staff	Low	<p>Prepare and implement Community Health and Safety Management Plan (CHSMP).</p> <p>Enforce the CoC for all operational personnel.</p> <p>Continue SEA/SH and GBV awareness and prevention training.</p> <p>Maintain a confidential and accessible Grievance Mechanism for community members.</p> <p>Ensure gender-sensitive communication and respectful interaction with all stakeholders.</p>	Negligible	Included in operation costs	<p><u>Implementing:</u> Yedikır Dam Irrigation Union and/or Maintenance and Repair Contractor</p> <p><u>Supervising:</u> DSI 7<sup>th</sup> Regional Directorate</p> <p>Project Management Team (PMT)</p>
OP-CHS-04	Emergency preparedness and response	Community exposure or infrastructure damage due to pipeline failure, mechanical breakdown, or natural hazard	Low	<p>Develop and implement a site-specific Emergency Response Plan in coordination with DSI and AFAD.</p> <p>Conduct periodic emergency drills and refresher training for operation staff.</p> <p>Maintain updated emergency contact lists, access routes, and communication procedures.</p> <p>Ensure availability and regular inspection of emergency response equipment.</p> <p>Report any major incidents promptly to DSI and local authorities.</p>	Negligible	Included in operation costs	<p><u>Implementing:</u> Yedikır Dam Irrigation Union and/or Maintenance and Repair Contractor</p> <p><u>Supervising:</u> DSI 7<sup>th</sup> Regional Directorate</p> <p>Project Management Team (PMT)</p>
OP-TM-01	Traffic Management	Short-term safety risks arising from maintenance vehicle movements, temporary access restrictions near scattered houses or agricultural facilities, and delayed access in emergency repair situations.	Low	<p>Plan and schedule routine maintenance works to minimize disruption on agricultural and community-adjacent roads.</p> <p>Inform nearby residents before any significant maintenance activity that may temporarily restrict traffic flow or access.</p> <p>Use operational vehicles only on designated access roads; avoid unnecessary passage through sensitive areas and protected boundaries.</p> <p>Install temporary warning signage and cones during maintenance activities taking place near households, business facilities, or narrow field roads.</p> <p>Ensure that all operational vehicles are well-maintained and equipped with functioning signaling, lighting, and identification markings.</p> <p>Maintain an emergency access protocol for rapid but safe vehicle entry to respond to leaks, ruptures, or urgent infrastructure failures.</p> <p>Coordinate with DSI and local authorities during emergency repairs to ensure road safety and proper community notification.</p>	Negligible	Included in operation costs	<p><u>Implementing:</u> Yedikır Dam Irrigation Union and/or Maintenance and Repair Contractor</p> <p><u>Supervising:</u> DSI 7<sup>th</sup> Regional Directorate</p> <p>Project Management Team (PMT)</p>
OP-CHM-01	Chance Find during maintenance and repair works	Risk of impact on potential unknown artefacts or chance find within and in the close proximity of the Project area during the maintenance and repair works	Low	<p>A precautionary approach following best practice must be employed to prevent damaging buried cultural heritage assets, chance finds.</p> <p>Should unknown archaeological resources be encountered, these must be documented in accordance with Turkish regulations (Law No: 2863) and will add to the country's heritage knowledge and databases.</p> <p>The Chance Find Procedure (given in Annex-5) will be communicated to all employees and implemented.</p>	Negligible	Included in operation costs	<p><u>Implementing:</u> Yedikır Dam Irrigation Union and/or Maintenance and Repair Contractor</p> <p><u>Supervising:</u></p>



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## 7 MONITORING AND EVALUATION

### 7.1 Pre-Construction Phase Monitoring & Evaluation (M&E) Plan

Monitoring actions, including monitoring parameters, key performance indicators (KPIs), methods, frequencies, costs and responsibilities for pre-construction phase is presented in Table 7-1.

Table 7-1. Monitoring and Evaluation Plan for Pre-construction Phase

Issue	Parameters to be monitored	Key Performance Indicators (KPIs) to be monitored	Monitoring Method	Timing/Frequency of Monitoring	Cost of Monitoring	Responsible Parties
MON-PC-ESMS-01	<ul style="list-style-type: none"> <li>Preparation and approval of ESMP and sub-management plans (WMP, CPF, Chemicals &amp; Hazardous Materials Plan, Water Supply/Wastewater Plan, Labor Management Plan including Code of Conduct);</li> <li>Assignment of required E&amp;S personnel;</li> <li>Establishment of ESMS and GM system;</li> <li>Inclusion of ESMP in bid documents;</li> <li>Training program schedule.</li> <li>Permissions and approvals;</li> <li>Agreements related to waste, wastewater, and excavation disposal.</li> <li>Workers' training on E&amp;S risks</li> </ul>	<ul style="list-style-type: none"> <li>ESMP and all sub-plans prepared and approved prior to construction;</li> <li>E&amp;S team assigned;</li> <li>GM established and functional;</li> <li>All workers informed before mobilization.</li> <li>All applicable permits and formal agreements obtained;</li> <li>All plans prepared according to TIMPII/ESF;</li> <li>CoC training completed for workers.</li> <li>100% of site workers trained on E&amp;S risks before starting work</li> </ul>	<ul style="list-style-type: none"> <li>Review of ESMP package and approval letters;</li> <li>Verification of personnel assignments;</li> <li>Review of GM records;</li> <li>Document control checks.</li> <li>Review of permits, approvals, and agreements;</li> <li>Document checks for all sub-plans;</li> <li>Verification of training documentation (training records, signed attendance sheets, training reports, presentations, etc.).</li> </ul>	Once prior to construction mobilization.	Included in Project cost	<p><u>Implementing:</u> Contractor DSİ 7<sup>th</sup> Regional Directorate</p> <p><u>Supervising:</u> Project Management Team (PMT)</p>
MON-PC-ESMS-02	<ul style="list-style-type: none"> <li>Stakeholder Engagement and Grievance Mechanism</li> <li>Impacted Stakeholder Notification Process</li> <li>Identification of stakeholders</li> </ul>	<ul style="list-style-type: none"> <li>Number of public consultation meetings: at least 80% of the planned meetings.</li> <li>At least one meeting per DVIG group in each district.</li> <li>At least one meeting in each district with the participation of women farmers and women's cooperatives.</li> <li>100% of resolved grievance</li> <li>Number of complaints received.</li> <li>Number of complaints resolved within 30 days (target 70%).</li> </ul>	<ul style="list-style-type: none"> <li>SEP implementation / public meetings and consultations records.</li> <li>Existence of grievance records</li> </ul>	Monthly compliance reports	Included in Project cost	<p><u>Implementing:</u> Contractor DSİ 7<sup>th</sup> Regional Directorate</p> <p><u>Supervising:</u> Project Management Team (PMT)</p>
MON-PC-ESMS-03	<ul style="list-style-type: none"> <li>Assignment of E&amp;S team</li> </ul>	<ul style="list-style-type: none"> <li>At least an OHS specialist</li> <li>At least an Environmental specialist</li> <li>At least a Social specialist</li> <li>One archaeologist</li> </ul>	<ul style="list-style-type: none"> <li>CVs of specialists for approval</li> </ul>	Throughout the construction period	Included in Project cost	<p><u>Implementing:</u> Contractor DSİ 7<sup>th</sup> Regional Directorate</p> <p><u>Supervising:</u> Project Management Team (PMT)</p>
MON-PC-ESMS-04	<ul style="list-style-type: none"> <li>Workers' training on E&amp;S risks</li> </ul>	<ul style="list-style-type: none"> <li>100% of site workers trained on E&amp;S risks before starting work</li> </ul>	<ul style="list-style-type: none"> <li>Training records, signed attendance sheets, training reports</li> </ul>	Prior to commencement of site work	Included in Project cost	<p><u>Implementing:</u> Contractor DSİ 7<sup>th</sup> Regional Directorate</p> <p><u>Supervising:</u> Project Management Team (PMT)</p>
MON-PC-ESMS-05	<ul style="list-style-type: none"> <li>Resettlement and Land Acquisition</li> </ul>	<ul style="list-style-type: none"> <li>Number of engagement activities.</li> <li>Number of complaints.</li> <li>Expropriation process update.</li> <li>Number of cases continuing and completed.</li> </ul>	<ul style="list-style-type: none"> <li>RP will be prepared.</li> </ul>	Times specified in RP	Included in Project cost	<p><u>Implementing:</u> Contractor DSİ 7<sup>th</sup> Regional Directorate</p> <p><u>Supervising:</u></p>

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		<ul style="list-style-type: none"> <li>Number of lands taken with by consent.</li> <li>Compensation paid. RP payments.</li> <li>Records on harms and damages on the assets and compensations/repair</li> </ul>				Project Management Team (PMT)
MON-PC-OHS-01	<ul style="list-style-type: none"> <li>Absence of OHS Management System and Health &amp; Safety Plan leading to increased future occupational risks</li> </ul>	<ul style="list-style-type: none"> <li>Occupational Health and Safety Management should be established.</li> <li>A comprehensive, site-specific Health and Safety Plan should be prepared prior to the commencement of construction activities.</li> </ul>	<ul style="list-style-type: none"> <li>Site inspections and OHS audits</li> </ul>	Before construction starts	Included in Project cost	<u>Implementing:</u> Contractor DSİ 7 <sup>th</sup> Regional Directorate <u>Supervising:</u> Project Management Team (PMT)
MON-PC-OHS-02	<ul style="list-style-type: none"> <li>E&amp;S team of the Contractor and related employment records</li> </ul>	<ul style="list-style-type: none"> <li>Number of experts employed.</li> <li>Suitability of experts for the task.</li> </ul>	<ul style="list-style-type: none"> <li>Review and control of employment records</li> </ul>	Preparation and approval of documents prior to commencement of construction works and weekly, monthly and quarterly after approval of documents during construction phase	Included in Project cost	<u>Implementing:</u> Contractor DSİ 7 <sup>th</sup> Regional Directorate <u>Supervising:</u> Project Management Team (PMT)
MON-PC-CHS-01	<ul style="list-style-type: none"> <li>Traffic and community safety precautions;</li> <li>Installation of warning signs;</li> <li>Site entrance control measures;</li> <li>CHSMP and TMP preparation.</li> </ul>	<ul style="list-style-type: none"> <li>CHSMP and TMP prepared;</li> <li>Warning signs installed (Target: 100%);</li> <li>Controlled site access established.</li> </ul>	<ul style="list-style-type: none"> <li>Site inspections;</li> <li>Photographic evidence;</li> <li>Review of CHSMP and TMP documents.</li> </ul>	Once prior to site access establishment.	Included in Project cost	<u>Implementing:</u> Contractor DSİ 7 <sup>th</sup> Regional Directorate <u>Supervising:</u> Project Management Team (PMT)
MON-PC-NHP-01	<ul style="list-style-type: none"> <li>Compliance of pipeline design with seismic and natural-hazard regulations;</li> <li>Availability of Emergency Action Plan (EAP); hazard-related structural verifications.</li> </ul>	<ul style="list-style-type: none"> <li>Design documents comply with national regulations;</li> <li>EAP prepared before construction;</li> <li>Independent expert involvement for high-hazard cases (if applicable).</li> </ul>	<ul style="list-style-type: none"> <li>Design review;</li> <li>Verification of EAP;</li> <li>Review of engineering and structural assessments.</li> </ul>	Once prior to construction.	Included in Project cost	<u>Implementing:</u> Contractor DSİ 7 <sup>th</sup> Regional Directorate <u>Supervising:</u> Project Management Team (PMT)
MON-PC-BIO-01	<ul style="list-style-type: none"> <li>Presence of sensitive flora and fauna species within the project footprint</li> </ul>	<ul style="list-style-type: none"> <li>Verified absence of critical or protected species before construction</li> </ul>	<ul style="list-style-type: none"> <li>Field survey and visual inspection by qualified biodiversity expert</li> <li>Review of updated DKMP species data and national red list records</li> </ul>	Once before construction mobilization	Included in Project cost	<u>Implementing:</u> Contractor DSİ 7 <sup>th</sup> Regional Directorate <u>Supervising:</u> Project Management Team (PMT)
MON-PC-BIO-02	<ul style="list-style-type: none"> <li>Distance and buffer zones to protected areas (Yedikır Wetland IBA, Akdağ KBA, Kelkit Valley KBA)</li> </ul>	<ul style="list-style-type: none"> <li>Verify and maintain buffer distances (≥50 m) from sensitive areas where feasible. In locations where the Project footprint overlaps with or is in close proximity to such areas due to the rehabilitation of existing infrastructure, implement site-specific mitigation measures to minimize disturbance (e.g., controlled work zones, reduced working width, timing restrictions, and enhanced supervision).</li> </ul>	<ul style="list-style-type: none"> <li>GIS verification and map review</li> <li>Site boundary check and marking confirmation</li> </ul>	Once before site works begin	Included in Project cost	<u>Implementing:</u> Contractor DSİ 7 <sup>th</sup> Regional Directorate <u>Supervising:</u> Project Management Team (PMT)
MON-PC-BIO-03	<ul style="list-style-type: none"> <li>Vegetation clearance limits and topsoil management plan</li> </ul>	<ul style="list-style-type: none"> <li>Work boundaries marked and topsoil stripping properly implemented</li> </ul>	<ul style="list-style-type: none"> <li>Site inspection and photographic documentation</li> <li>Verification of topsoil storage area</li> </ul>	Continuous during initial site preparation	Included in Project cost	<u>Implementing:</u> Contractor DSİ 7 <sup>th</sup> Regional Directorate <u>Supervising:</u> Project Management Team (PMT)



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Issue	Parameters to be monitored	Key Performance Indicators (KPIs) to be monitored	Monitoring Method	Timing/Frequency of Monitoring	Cost of Monitoring	Responsible Parties
MON-PC-BIO-04	<ul style="list-style-type: none"> <li>Biodiversity awareness and training activities for construction personnel</li> </ul>	<ul style="list-style-type: none"> <li>% of workers trained on biodiversity protection procedures (Target: 100%)</li> </ul>	<ul style="list-style-type: none"> <li>Review of training records and attendance sheets</li> <li>Random field interviews with staff</li> </ul>	Once prior to construction and for all new staff	Included in Project cost	<u>Implementing:</u> Contractor DSİ 7 <sup>th</sup> Regional Directorate <u>Supervising:</u> Project Management Team (PMT)
MON-PC-BIO-05	<ul style="list-style-type: none"> <li>GIS confirmation of Yedikır Dam Natural Protected Area boundary</li> </ul>	<ul style="list-style-type: none"> <li>100% of no-work buffer correctly demarcated.</li> </ul>	<ul style="list-style-type: none"> <li>GPS survey and visual marking verification.</li> </ul>	Once before mobilization.	Included in Project cost	<u>Implementing:</u> Contractor DSİ 7 <sup>th</sup> Regional Directorate <u>Supervising:</u> Project Management Team (PMT)



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## 7.2 Construction Phase Monitoring and Evaluation Plan

Monitoring actions, including monitoring parameters, key performance indicators (KPIs), methods, frequencies, costs and responsibilities for the construction phase is presented in Table 7-2

Table 7-2. Monitoring and Evaluation Plan for Construction Phase

Issue	Parameters to be monitored	Key Performance Indicators (KPIs) to be monitored	Monitoring Method	Timing/Frequency of Monitoring	Cost of Monitoring	Responsible Parties
MON-CP-WRU-01	<ul style="list-style-type: none"> <li>Daily water consumption for drinking, utility and dust suppression (m<sup>3</sup>/day)</li> <li>Validity of water allocation permit/subscription</li> <li>Availability and condition of spill kits, drip trays and secondary containment</li> <li>Evidence of soil erosion and sediment movement in excavation areas</li> <li>Condition and functionality of temporary stormwater drainage channels</li> <li>Proper installation and maintenance of sediment-control structures (silt fences, straw bales, sediment traps)</li> <li>Records of spills, leakages or uncontrolled discharges</li> <li>Dust suppression frequency and water-use optimization</li> </ul>	<ul style="list-style-type: none"> <li>Daily water use within planned limits (66.5 m<sup>3</sup>/day)</li> <li>Number of spill kits available and maintained (100% availability)</li> <li>Number of erosion/sedimentation cases observed</li> <li>Number of spill incidents and response time (&lt; 1 hour preferred)</li> <li>Percentage of sediment-control structures functioning properly</li> <li>Compliance with water allocation documentation (100%)</li> <li>Number of grievances related to water resources, use and access interruptions</li> </ul>	<ul style="list-style-type: none"> <li>Daily visual inspection of construction site, excavation areas, stockpiles and drainage lines</li> <li>Review of monthly water consumption logs</li> <li>Inspection of stormwater management systems and sediment barriers</li> <li>Review of incident logs, spill reports and corrective action forms</li> <li>Monitoring after heavy rainfall for erosion and sediment transport risks</li> <li>Observation of dust suppression timing and efficiency</li> </ul>	<ul style="list-style-type: none"> <li>Daily site inspections</li> <li>Monthly review of water-use records</li> <li>After heavy rainfall, additional erosion/drainage inspection</li> <li>Monthly Environmental and Social Monitoring Reports (ESMRs)</li> <li>Immediate monitoring following spill or complaint</li> </ul>	Included in Project cost	<p><u>Implementing:</u> Contractor</p> <p><u>Supervising:</u> DSİ 7<sup>th</sup> Regional Directorate Project Management Team (PMT)</p>
MON-CP-SM-01	<ul style="list-style-type: none"> <li>Topsoil stripping, stockpiling duration and reinstatement quality</li> <li>Condition and placement of erosion/sediment barriers</li> <li>Evidence of soil erosion, sediment displacement or blocked drainage</li> <li>Machinery movement routes and compaction indicators</li> <li>Records of spills, leakages, and contaminated soil removal</li> <li>Proper disposal of concrete debris and excavated surplus</li> <li>Use of permitted quarries and documentation of material sourcing</li> </ul>	<ul style="list-style-type: none"> <li>Number of topsoil stripping and reinstatement records reviewed (100%)</li> <li>Number of sites where topsoil storage duration is recorded (maximum 1 week)</li> <li>Number of sediment-control structures inspected for functionality</li> <li>Number of uncontrolled spill incidents recorded (Zero uncontrolled spills)</li> <li>Number of spill kits available and maintained (100% spill kit availability)</li> <li>Number of records confirming transport of surplus soil to licensed disposal sites (100%)</li> <li>Number of inspections confirming use of permitted quarries only (100%)</li> <li>Number of observations related to obstruction of drainage/irrigation channels (Zero long-term obstruction)</li> </ul>	<ul style="list-style-type: none"> <li>Review of daily topsoil stripping and reinstatement logs</li> <li>Inspection of stockpile areas and verification of topsoil storage duration</li> <li>Visual inspection of sediment-control structures (e.g., silt fences, straw bales)</li> <li>Review of spill incident logs, spill response records and spill kit checklists</li> <li>Verification of surplus soil transport documents and disposal receipts</li> <li>Review of quarry compliance documentation and material delivery records</li> <li>Inspection of irrigation and drainage lines for soil obstruction</li> </ul>	<ul style="list-style-type: none"> <li>Daily site inspections for stockpiles, spill kits, irrigation obstruction checks</li> <li>Weekly soil management review</li> <li>After heavy rainfall: additional erosion/drainage inspections</li> <li>Monthly ESMRs</li> </ul>	Included in Project cost	<p><u>Implementing:</u> Contractor</p> <p><u>Supervising:</u> DSİ 7<sup>th</sup> Regional Directorate Project Management Team (PMT)</p>
MON-CP-AQM-01	<ul style="list-style-type: none"> <li>Dust suppression methods and records</li> <li>Water spraying records</li> <li>Related inspection records of the machinery and equipment</li> <li>Compliance of air quality measurements results (if any)</li> </ul>	<ul style="list-style-type: none"> <li>Number of vehicles, machinery and equipment and their maintenance records</li> <li>Exhaust emission inspection results of vehicle</li> <li>Number of air quality complaints received and resolved in time</li> <li>Number of trainings on air quality,</li> <li>Amount water used for dust suppression</li> </ul>	<ul style="list-style-type: none"> <li>Visual observation at the site for the physical precautions</li> <li>Review of the documentation (inspection records, dust suppression records, measurement reports, etc.)</li> <li>Settled dust and PM<sub>10</sub> measurements by accredited laboratories</li> </ul>	<ul style="list-style-type: none"> <li>Daily inspections for availability of the physical precautions</li> <li>Monthly for other parameters</li> <li>In case of grievance for measurements</li> </ul>	Included in Project cost	<p><u>Implementing:</u> Contractor</p> <p><u>Supervising:</u> DSİ 7<sup>th</sup> Regional Directorate Project Management Team (PMT)</p>

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MON-CP-NVM-01	<ul style="list-style-type: none"> <li>Noise levels near worksites and sensitive receptors</li> <li>Equipment/machinery maintenance and inspection records</li> <li>Worker PPE use (hearing protection)</li> <li>Complaints related to noise and vibration</li> <li>Records of vibration near structures, if applicable</li> <li>Work-hour compliance</li> </ul>	<ul style="list-style-type: none"> <li>Number of maintained vehicles/machinery with valid inspection records</li> <li>Number of noise-related complaints received and resolved in time</li> <li>Number of workers provided with appropriate hearing protection</li> <li>Number of PPE compliance checks conducted</li> <li>Percentage of works conducted within permitted hours (07:00–19:00)</li> <li>Vibration exceedances recorded (if any)</li> </ul>	<ul style="list-style-type: none"> <li>Visual observation at site for PPE use, machinery condition, and compliance with work hours</li> <li>Review of documentation (machinery maintenance records, PPE records, complaint logs)</li> <li>Noise measurements at selected points if complaints arise or sensitive receptors are nearby</li> <li>Vibration checks for works conducted near buildings or heritage areas</li> </ul>	<p>Daily inspections for physical precautions and work-hour compliance</p> <p>Weekly review of maintenance and PPE records</p> <p>In case of grievance, targeted noise/vibration measurements</p> <p>Monthly summary monitoring for Key Performance Indicators (KPI)</p> <p>Monthly ESMRs</p>	Included in Project cost	<p><u>Implementing:</u> Contractor</p> <p><u>Supervising:</u> DSİ 7<sup>th</sup> Regional Directorate Project Management Team (PMT)</p>
MON-CP-WM-01	<ul style="list-style-type: none"> <li>Proper implementation of Waste Management Plan (WMP, Annex-4)</li> <li>Availability and condition of waste collection bins/containers</li> <li>Segregation of hazardous and non-hazardous waste</li> <li>Labeling of containers (waste code, type, quantity, storage date)</li> <li>Storage conditions of waste (impermeable surface, bunded area, closed containers)</li> <li>Separate storage of different waste types and prevention of mixing</li> <li>Condition and integrity of hazardous waste and material containers</li> <li>Quantity of waste generated by type and destination (reuse/recycle/disposal)</li> <li>Waste transfer records, licenses and receipts from authorized facilities</li> <li>Training records on waste management and minimization</li> <li>Condition of temporary waste storage areas and stockpile heights</li> <li>Topsoil/subsoil segregation and reinstatement practices</li> </ul>	<ul style="list-style-type: none"> <li>Number of waste bins/containers inspected (Target: 100% compliance with WMP)</li> <li>Amount of waste segregated by type and recorded (Target: All waste streams properly segregated)</li> <li>Number of hazardous and non-hazardous waste storage areas inspected (Target: 100% separate storage)</li> <li>Percentage of containers properly labeled (Target: 100%)</li> <li>Number of incidents of uncontrolled waste discharge (Target: 0)</li> <li>Volume or tonnage of recyclable/recoverable waste sent to licensed facilities (Target: ≥ 90% of recyclable waste)</li> <li>Number of hazardous waste consignments transferred with valid receipts (Target: 100%)</li> <li>Number of personnel trained in waste management (Target: All relevant staff annually trained)</li> <li>Height of excavation/topsoil stockpiles measured (Target: ≤ 6 m for subsoil, ≤ 2 m for topsoil)</li> <li>Number of site audits or inspections completed (Target: As per schedule, 100%)</li> </ul>	<ul style="list-style-type: none"> <li>Field inspection of waste storage and handling areas</li> <li>Review of waste tracking records, manifests and transport receipts</li> <li>Verification of labels, container condition and segregation status</li> <li>Visual inspection of oil storage and spill-prevention systems</li> <li>Review of training attendance logs and toolbox talk records</li> <li>Check compliance with excavation and stockpile management requirements</li> <li>Review of licensed company contracts and waste transfer documentation</li> </ul>	<p>Weekly inspection of waste storage areas;</p> <p>Monthly review of records;</p> <p>After any incident or non-compliance</p> <p>Monthly ESMRs</p>	Included in Project cost	<p><u>Implementing:</u> Contractor</p> <p><u>Supervising:</u> DSİ 7<sup>th</sup> Regional Directorate Project Management Team (PMT)</p>
MON-CP-WWM-01	<ul style="list-style-type: none"> <li>Wastewater generation and disposal</li> </ul>	<ul style="list-style-type: none"> <li>Number of mobile toilets and/or septic tanks in active use</li> <li>Frequency of wastewater collection and transfer operations (number/month)</li> <li>Number of wastewater disposal receipts/logbooks reviewed</li> <li>Number of leakage, overflow, or discharge incidents recorded</li> </ul>	<ul style="list-style-type: none"> <li>Routine inspection of sanitary facilities and septic tanks</li> <li>Review of wastewater transport receipts and disposal documentation</li> <li>On-site observation for leaks or improper discharges</li> <li>Review of WMP compliance and site audit records</li> </ul>	<p>Weekly during construction</p> <p>After heavy rainfall, incident or complaint</p> <p>Monthly review of documentation</p>	Included in Project cost	<p><u>Implementing:</u> Contractor</p> <p><u>Supervising:</u> DSİ 7<sup>th</sup> Regional Directorate Project Management Team (PMT)</p>



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		<ul style="list-style-type: none"> <li>Number of non-compliances identified during WMP implementation audits</li> <li>Number of worker or community complaints related to hygiene or odor</li> </ul>		Monthly ESMRs		
MON-CP-NHP-01	<ul style="list-style-type: none"> <li>Seismic and meteorological hazard preparedness</li> <li>Slope and drainage stability</li> </ul>	<ul style="list-style-type: none"> <li>Number of emergency drills and hazard awareness trainings conducted</li> <li>Number of site inspections for slope stability and erosion control</li> <li>Number of incidents or near-miss cases related to natural hazards</li> <li>Availability rate of emergency response equipment and communication tools on-site</li> </ul>	<ul style="list-style-type: none"> <li>Review of training and drill records</li> <li>Routine field inspections of slopes, drainage structures, and storage areas</li> <li>Documentation review of emergency preparedness equipment inventories</li> <li>Reporting of hazard-related incidents to DSI</li> </ul>	<p>Weekly site inspections</p> <p>Prior to and after heavy rainfall events</p> <p>Quarterly review of emergency preparedness records</p> <p>After any regional seismic activity</p> <p>Monthly ESMRs</p>	Included in Project cost	<p><u>Implementing:</u> Contractor</p> <p><u>Supervising:</u> DSİ 7<sup>th</sup> Regional Directorate Project Management Team (PMT)</p>
MON-CP-BIO-01	<ul style="list-style-type: none"> <li>Areas where vegetation is cleared and topsoil is stored</li> </ul>	<ul style="list-style-type: none"> <li>No exceedance of defined work boundaries</li> <li>Topsoil properly stored in designated areas</li> <li>Soil integrity maintained for future rehabilitation</li> </ul>	<ul style="list-style-type: none"> <li>Daily site inspection and photo documentation</li> <li>Review of topsoil management and rehabilitation checklist</li> </ul>	<p>Weekly inspections and continuous throughout construction</p> <p>Monthly ESMRs</p>	Included in Project cost	<p><u>Implementing:</u> Contractor</p> <p><u>Supervising:</u> DSİ 7<sup>th</sup> Regional Directorate Project Management Team (PMT)</p>
MON-CP-BIO-02	<ul style="list-style-type: none"> <li>Fauna movement and nesting/breeding areas</li> </ul>	<ul style="list-style-type: none"> <li>No active nests or fauna detected within work zone</li> <li>Immediate stop-work and notification in case of species detection</li> <li>Zero wildlife mortality</li> </ul>	<ul style="list-style-type: none"> <li>Visual observation and daily fauna checks</li> <li>Worker reporting and site observation log</li> <li>Completion of wildlife observation forms</li> </ul>	<p>Daily and before each work shift</p> <p>Monthly ESMRs</p>	Included in Project cost	<p><u>Implementing:</u> Contractor</p> <p><u>Supervising:</u> DSİ 7<sup>th</sup> Regional Directorate Project Management Team (PMT)</p>
MON-CP-BIO-03	<ul style="list-style-type: none"> <li>Noise and dust levels</li> </ul>	<ul style="list-style-type: none"> <li>Noise level &lt; 70 dB(A)</li> <li>Dust emissions visually under control</li> <li>Zero complaints recorded</li> </ul>	<ul style="list-style-type: none"> <li>Weekly noise measurement with sound meter</li> <li>Visual inspection for dust and review of complaint log</li> <li>Verification of dust suppression frequency</li> </ul>	<p>Weekly monitoring and daily visual observation during dry periods</p> <p>Monthly ESMRs</p>	Included in Project cost	<p><u>Implementing:</u> Contractor</p> <p><u>Supervising:</u> DSİ 7<sup>th</sup> Regional Directorate Project Management Team (PMT)</p>
MON-CP-BIO-04	<ul style="list-style-type: none"> <li>Fuel, oil, and chemical leakage/spillage</li> </ul>	<ul style="list-style-type: none"> <li>Zero spill or leakage events</li> <li>100% availability of spill kits on site</li> <li>Proper hazardous waste storage in secondary containment</li> </ul>	<ul style="list-style-type: none"> <li>Field inspection and equipment check</li> <li>Review of waste storage and management areas</li> <li>Review of incident/spill reports</li> </ul>	<p>Daily visual observation and monthly record review</p> <p>Monthly ESMRs</p>	Included in Project cost	<p><u>Implementing:</u> Contractor</p> <p><u>Supervising:</u> DSİ 7<sup>th</sup> Regional Directorate Project Management Team (PMT)</p>
MON-CP-BIO-05	<ul style="list-style-type: none"> <li>Buffer distance to protected areas (Yedikır Wetland IBA, Akdağ KBA, Kelkit Valley KBA)</li> </ul>	<ul style="list-style-type: none"> <li>No encroachment within 50 m buffer zone</li> <li>DKMP notified and report submitted where required</li> </ul>	<ul style="list-style-type: none"> <li>GPS and map verification</li> <li>Review of site reports submitted to DKMP</li> </ul>	<p>Monthly reporting and periodic site verification</p> <p>Monthly ESMRs</p>	Included in Project cost	<p><u>Implementing:</u> Contractor</p> <p><u>Supervising:</u> DSİ 7<sup>th</sup> Regional Directorate Project Management Team (PMT)</p>
MON-CP-BIO-06	<ul style="list-style-type: none"> <li>Post-construction rehabilitation and vegetation growth</li> </ul>	<ul style="list-style-type: none"> <li>≥80% vegetation cover achieved in rehabilitated areas</li> <li>No erosion observed</li> </ul>	<ul style="list-style-type: none"> <li>Site inspection and photographic documentation</li> <li>Estimation of vegetation cover using visual assessment method</li> </ul>	<p>At 3rd, 6th, and 12th month after construction</p> <p>Monthly ESMRs</p>	Included in Project cost	<p><u>Implementing:</u> Contractor</p> <p><u>Supervising:</u> DSİ 7<sup>th</sup> Regional Directorate Project Management Team (PMT)</p>
MON-CP-SOC-01	<ul style="list-style-type: none"> <li>Disclosure of SEP</li> </ul>	<ul style="list-style-type: none"> <li>Websites of MoAF, DSİ, TIMPİİ</li> <li>Local media ads (at least three local newspapers); and</li> </ul>	<ul style="list-style-type: none"> <li>Important developments and announcements about the project</li> </ul>	Throughout construction period	Included in Project cost	<p><u>Implementing:</u> Contractor</p>



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	<ul style="list-style-type: none"> <li>Implementation of GM</li> <li>Implementation of Workers' GM</li> </ul>	<ul style="list-style-type: none"> <li>Notifications to be sent to Mukhtars of settlements in the Basins, to be displayed in a public location in communities.</li> <li>Number of complaints received.</li> <li>Number of complaints resolved within 30 days (target 70%).</li> <li>Suitability of complaint opening and closing forms.</li> <li>Satisfaction rate (target 70%).</li> </ul>				<u>Supervising:</u> DSİ 7 <sup>th</sup> Regional Directorate Project Management Team (PMT)
MON-CP-SOC-02	<ul style="list-style-type: none"> <li>Including vulnerable groups</li> </ul>	<ul style="list-style-type: none"> <li>The elderly and the disabled (or those with additional accessibility needs), migrants, and individuals whose mother language is not Turkish and other disadvantaged/vulnerable groups which may be identified during the Project shall be addressed separately in the consultations.</li> <li>Project 20 settlements, PAPs including vulnerable groups.</li> </ul>	<ul style="list-style-type: none"> <li>Meeting records</li> <li>Grievance records (number and nature), and analysis of settled grievances</li> <li>Internal and external audits</li> </ul>	Throughout construction period	Included in Project cost	<u>Implementing:</u> Contractor <u>Supervising:</u> DSİ 7 <sup>th</sup> Regional Directorate Project Management Team (PMT)
MON-CP-SOC-03	<ul style="list-style-type: none"> <li>Documentation of land acquisition related activities</li> </ul>	<ul style="list-style-type: none"> <li>Resettlement Plan will be prepared based on TIMPII 's RF</li> </ul>	<ul style="list-style-type: none"> <li>Websites of MoAF, DSİ, TIMPII</li> </ul>	Prior to construction	Included in Project cost	<u>Implementing:</u> Contractor <u>Supervising:</u> DSİ 7 <sup>th</sup> Regional Directorate Project Management Team (PMT)
MON-CP-OHS-01	<ul style="list-style-type: none"> <li>Implementation of OHS measures and preventive actions</li> <li>Use and condition of PPE</li> <li>Housekeeping and site organization</li> <li>Worker training and toolbox talks</li> <li>Vehicle and machinery safety</li> <li>Emergency preparedness and response arrangements</li> <li>Sanitation and welfare facilities</li> </ul>	<ul style="list-style-type: none"> <li>Number of incidents, near misses, and non-compliances</li> <li>% of workers trained and using PPE</li> <li>Frequency of emergency drills</li> <li>Dust/noise levels within legal limits</li> <li>Timely reporting and closure of corrective actions</li> </ul>	<ul style="list-style-type: none"> <li>Site inspections and OHS audits</li> <li>Review of accident/incident and near-miss reports</li> <li>Worker interviews and safety meetings</li> <li>Review of monitoring data (dust/noise)</li> <li>Review of training and toolbox talk records</li> </ul>	Daily site checks Weekly and monthly monitoring Quarterly audits and reviews Monthly ESMRs	Included in Project cost	<u>Implementing:</u> Contractor <u>Supervising:</u> DSİ 7 <sup>th</sup> Regional Directorate Project Management Team (PMT)
MON-CP-CHS-01	<ul style="list-style-type: none"> <li>Implementation of CHSMP</li> <li>Condition of warning signs, fencing, restricted zones</li> <li>Communication records with local residents on ongoing works</li> </ul>	<ul style="list-style-type: none"> <li>100% compliance with the CHSMP</li> <li>% of required warning signs installed and maintained (target: 100%)</li> <li>% of fenced / restricted zones properly secured (target: 100%)</li> <li>Number of community information sessions conducted</li> </ul>	<ul style="list-style-type: none"> <li>Site inspections and photographic records</li> <li>Interviews with workers and nearby community representatives</li> <li>Review of communication &amp; grievance logs</li> </ul>	Daily site checks Weekly community-related observations Monthly ESMRs Quarterly audits	Included in Project cost	<u>Implementing:</u> Contractor <u>Supervising:</u> DSİ 7 <sup>th</sup> Regional Directorate Project Management Team (PMT)
MON-CP-CHS-02	<ul style="list-style-type: none"> <li>Sanitation and hygiene facilities (cleanliness, separation for men/women)</li> <li>Water storage tank (if any) hygiene and disinfection</li> <li>Worker hygiene awareness sessions conducted</li> <li>Compliance with site hygiene protocols</li> </ul>	<ul style="list-style-type: none"> <li>% of sanitation facilities functioning and clean (target: 100%)</li> <li>Number of hygiene trainings/toolbox talks delivered</li> <li>Number of infectious-disease related incidents (target: 0)</li> <li>Compliance rate with sanitation protocols (target: 100%)</li> </ul>	<ul style="list-style-type: none"> <li>Regular inspections of sanitation areas</li> <li>Review of disinfection logs for water storage tanks (if any)</li> <li>Review of training attendance sheets</li> <li>Review of medical/incident records</li> </ul>	Daily checks Weekly sanitation inspections Monthly ESMRs	Included in Project cost	<u>Implementing:</u> Contractor <u>Supervising:</u> DSİ 7 <sup>th</sup> Regional Directorate Project Management Team (PMT)
MON-CP-CHS-03	<ul style="list-style-type: none"> <li>Implementation of CoC</li> <li>Records of GBV / SEA / SH trainings</li> <li>Accessibility and functionality of Grievance Mechanism</li> </ul>	<ul style="list-style-type: none"> <li>% of workers trained in GBV and SEA/SH (target: 100%)</li> <li>Number of GBV and SEA/SH grievances (target: 0)</li> </ul>	<ul style="list-style-type: none"> <li>Review of training records</li> <li>Review of grievance mechanism logs</li> <li>Review of CoC compliance reports</li> </ul>	Monthly monitoring Quarterly audits Immediate review upon any reported incident	Included in Project cost	<u>Implementing:</u> Contractor <u>Supervising:</u> DSİ 7 <sup>th</sup> Regional Directorate



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	<ul style="list-style-type: none"> <li>Adequacy of separate and private facilities for women</li> <li>Enforcement of zero-tolerance policies</li> </ul>	<ul style="list-style-type: none"> <li>% of CoC acknowledgements signed (target: 100%)</li> <li>Functionality of grievance channels</li> </ul>		Monthly ESMRs		Project Management Team (PMT)
MON-CP-CHS-04	<ul style="list-style-type: none"> <li>Availability and condition of fire extinguishers, spill kits, first-aid kits</li> <li>Emergency contact numbers and evacuation route postings</li> <li>Records of emergency drills</li> <li>Communication procedures with local emergency services</li> <li>Storage and inspection of emergency equipment</li> </ul>	<ul style="list-style-type: none"> <li>Availability rate of emergency equipment on site (target: 100%)</li> <li>Frequency of emergency drills (minimum quarterly)</li> <li>% of workers trained in EPR (target: 100%)</li> <li>Response time during drills (continual improvement)</li> </ul>	<ul style="list-style-type: none"> <li>Site inspections and equipment checklists</li> <li>Review of emergency drill logs</li> <li>Worker interviews</li> <li>Review of EPR plan implementation records</li> </ul>	<ul style="list-style-type: none"> <li>Monthly inspections</li> <li>Monthly ESMRs</li> <li>Quarterly emergency drills</li> </ul>	Included in Project cost	<p><u>Implementing:</u> Contractor</p> <p><u>Supervising:</u> DSİ 7<sup>th</sup> Regional Directorate Project Management Team (PMT)</p>
MON-CP-TM-01	<ul style="list-style-type: none"> <li>Implementation of TMP</li> <li>Condition, visibility, and adequacy of traffic signage, barriers, cones, and flagmen</li> <li>Compliance with designated routes and speed limits</li> <li>Condition of community-adjacent roads and agricultural access routes</li> <li>Community notifications regarding temporary road closures or delays</li> <li>Vehicle maintenance status (lights, alarms, reflectors, brakes)</li> <li>Road damage caused by construction traffic and repair records</li> </ul>	<ul style="list-style-type: none"> <li>Number of traffic-related incidents, near-misses, and complaints (target: 0–low)</li> <li>% compliance with routes and speed limits (target: 100%)</li> <li>% of required warning signage and barriers installed and maintained (target: 100%)</li> <li>Number of road segments repaired following damage by construction vehicles</li> <li>Response time to community notifications (within required periods)</li> <li>Number of non-compliances identified during site inspections</li> </ul>	<ul style="list-style-type: none"> <li>Daily site inspections of active routes</li> <li>Review of vehicle logs, speed monitoring records, and operator checklists</li> <li>Review of TMP implementation records and signage/barrier inventories</li> <li>Review of grievance mechanism entries related to traffic</li> <li>Photographic documentation of road conditions</li> </ul>	<ul style="list-style-type: none"> <li>Daily checks (active construction points)</li> <li>Weekly monitoring of access routes</li> <li>Monthly ESMRs</li> <li>Immediate inspection following any traffic-related incident or grievance</li> </ul>	Included in Project cost	<p><u>Implementing:</u> Contractor</p> <p><u>Supervising:</u> DSİ 7<sup>th</sup> Regional Directorate Project Management Team (PMT)</p>
MON-CP-CHM-01	<ul style="list-style-type: none"> <li>Archaeological monitoring</li> <li>Cultural heritage assets</li> <li>Chance finds (implementation of CFP, Annex-5)</li> </ul>	<ul style="list-style-type: none"> <li>Compliance with national legislative requirements: Reporting 100% of the number of cultural heritage findings throughout operation</li> <li>No grievances regarding cultural heritage</li> <li>Reporting / Notification/ Obtaining Permit of Chance Findings</li> <li>Compliance with the CFP protocols in case of chance finds</li> </ul>	<ul style="list-style-type: none"> <li>Archaeologists or cultural heritage monitoring consultants will be employed for daily archaeological monitoring during construction.</li> <li>The experts will work with equipment operators and have authority to stop work.</li> <li>They will accompany all ground disturbance activities.</li> <li>They will instruct operators to stop work in case of a chance find.</li> <li>The experts will train employees about the Cultural Heritage and Chance Finds</li> <li>Grievance mechanism will be implemented</li> <li>Daily Monitoring by an Archaeologist</li> <li>The experts will implement the CFP</li> </ul>	<ul style="list-style-type: none"> <li>Continuous monitoring for archaeological sites</li> <li>Monthly review of grievances</li> <li>Monthly review of logs, chance find forms, etc.</li> <li>Immediate notification and reporting to regional board in case of chance finds</li> <li>Monthly ESMRs</li> </ul>	Included in Project cost	<p><u>Implementing:</u> Contractor</p> <p><u>Supervising:</u> DSİ 7<sup>th</sup> Regional Directorate Project Management Team (PMT)</p>

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### 7.3 Operation Phase Monitoring and Evaluation Plan

Monitoring actions, including monitoring parameters, key performance indicators (KPIs), methods, frequencies, costs and responsibilities for the operation phase is presented in Table 7-3.

Table 7-3. Monitoring and Evaluation Plan for Operation Phase

Issue	Parameters to be monitored	Key Performance Indicators (KPIs) to be monitored	Monitoring Method	Timing/Frequency of Monitoring	Cost of Monitoring	Responsible Parties
MON-OP-WRU-01	<ul style="list-style-type: none"> <li>Daily potable and utility water consumption of irrigation union staff</li> <li>System pressure readings and leak detection indicators</li> <li>Number and condition of leaks, valve failures or pipeline malfunctions</li> <li>Maintenance records for valves, chambers, joints, air-release units</li> <li>Condition of drainage channels and outlet structures</li> <li>Evidence of localized waterlogging or erosion</li> <li>Records of accidental spills during maintenance</li> <li>Calibration records of flow-control and pressure-regulating structures</li> <li>Farmer feedback and grievance records regarding water quality or return flows</li> <li>Emergency preparedness actions related to the Dam (signage, dam safety compliance, EPP implementation)</li> </ul>	<ul style="list-style-type: none"> <li>Daily staff water use within expected limits (9.04 m<sup>3</sup>/day)</li> <li>Number of leaks detected and repaired within acceptable timeframes</li> <li>Number of drainage blockages identified and cleared</li> <li>Completion rate of scheduled maintenance activities (100%)</li> <li>Number of erosion/waterlogging cases at malfunction points</li> <li>Availability of spill response equipment during maintenance (100%)</li> <li>Number of farmer complaints regarding agricultural return-flow issues</li> <li>Calibration frequency of flow-control structures (as per Operation &amp; Maintenance (O&amp;M) plan)</li> <li>Compliance of Pond with Dam Safety Report requirements (100%)</li> </ul>	<ul style="list-style-type: none"> <li>Routine inspection of pipeline, chambers, valves and control structures</li> <li>Review of O&amp;M logbooks, leak repair records and maintenance schedules</li> <li>Field inspection following abnormal pressure readings or farmer complaints</li> <li>Visual checks of drainage outlets and erosion-prone sites</li> <li>Periodic verification of spill kit availability</li> <li>Review of dam safety signage, EPP implementation and emergency readiness</li> <li>Collection and assessment of farmer feedback</li> </ul>	<ul style="list-style-type: none"> <li>Routine inspections as per DSİ O&amp;M schedule</li> <li>Monthly review of water-use and maintenance records</li> <li>Additional inspections following leak, spill or complaint</li> <li>Annual system performance assessment</li> <li>Seasonal inspection of Dam and related structures</li> </ul>	Included in operation costs	<p><u>Implementing:</u> Yedikır Dam Irrigation Union and/or Maintenance and Repair Contractor</p> <p><u>Supervising:</u> DSİ 7<sup>th</sup> Regional Directorate Project Management Team (PMT)</p>
MON-OP-SM-01	<ul style="list-style-type: none"> <li>Condition of maintenance access paths</li> <li>Records of soil reinstatement following maintenance/repair works</li> <li>Visual condition of restored surfaces (leveling, light compaction)</li> <li>Farmer attendance and documentation of awareness-raising sessions</li> <li>Farmer grievance records related to soil disturbance or chemical runoff</li> </ul>	<ul style="list-style-type: none"> <li>Compliance with designated access paths (100%)</li> <li>Reinstatement completed after each maintenance task (100%)</li> <li>Number of farmer awareness sessions conducted</li> <li>Number of farmer participants in awareness activities (increasing trend)</li> <li>Number of grievances related to soil disturbance/chemical runoff (target: zero)</li> </ul>	<ul style="list-style-type: none"> <li>Routine inspection of maintenance access paths and work zones</li> <li>Review of maintenance logs and reinstatement records</li> <li>Verification of farmer training attendance sheets</li> <li>Review of grievance logs and follow-up actions</li> </ul>	<ul style="list-style-type: none"> <li>Routine inspections: As per the schedule</li> <li>After each maintenance/repair activity: reinstatement check</li> <li>Monthly: Review of maintenance logs and soil reinstatement records and grievances</li> <li>Annual: Review of overall soil management performance</li> </ul>	Included in operation costs	<p><u>Implementing:</u> Yedikır Dam Irrigation Union and/or Maintenance and Repair Contractor</p> <p><u>Supervising:</u> DSİ 7<sup>th</sup> Regional Directorate Project Management Team (PMT)</p>
MON-OP-AQM-01	<ul style="list-style-type: none"> <li>Dust suppression methods and records</li> <li>Water spraying records (during maintenance and repair works)</li> <li>Related inspection records of the machinery and equipment</li> </ul>	<ul style="list-style-type: none"> <li>Number of vehicles, machinery and equipment and their maintenance records</li> <li>Exhaust emission inspection results of vehicle</li> </ul>	<ul style="list-style-type: none"> <li>Visual observation at the site for the physical precautions</li> <li>Review of the documentation (inspection records, dust suppression records, measurement reports, etc.)</li> </ul>	<ul style="list-style-type: none"> <li>Daily inspections for availability of the physical precautions</li> <li>In case of grievance for measurements</li> </ul>	Included in operation costs	<p><u>Implementing:</u> Yedikır Dam Irrigation Union and/or Maintenance and Repair Contractor</p> <p><u>Supervising:</u> DSİ 7<sup>th</sup> Regional Directorate</p>

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	<ul style="list-style-type: none"> <li>Compliance of air quality measurements results (if any)</li> </ul>	<ul style="list-style-type: none"> <li>Number of air quality complaints received and resolved in time</li> <li>Number of trainings on air quality,</li> <li>Amount water used for dust suppression</li> </ul>	<ul style="list-style-type: none"> <li>Settled dust and PM10 measurements by accredited laboratories</li> </ul>			Project Management Team (PMT)
MON-OP-NVM-01	<ul style="list-style-type: none"> <li>Noise levels during routine maintenance works</li> <li>Condition of valves, chambers, pressurized pipe units (vibration sources)</li> <li>Inspection records of operational vehicles</li> <li>Worker PPE use during high-noise maintenance activities</li> <li>Noise/vibration-related complaints from farmers or nearby residents</li> </ul>	<ul style="list-style-type: none"> <li>Number of operational vehicles with valid exhaust/noise inspection results</li> <li>Number of noise/vibration-related complaints resolved in time</li> <li>Number of maintenance activities conducted within permitted hours</li> <li>Number of workers equipped with hearing protection during maintenance tasks</li> <li>Vibration abnormalities recorded during system inspections</li> </ul>	<ul style="list-style-type: none"> <li>Visual observation during maintenance activities for noise and vibration risks</li> <li>Review of documentation (maintenance records, complaint logs, vehicle inspection records)</li> <li>Noise measurements performed by accredited laboratories if recurring grievances occur</li> <li>Vibration inspection of valves, chambers, joints, and air-release units during periodic maintenance</li> </ul>	<ul style="list-style-type: none"> <li>Routine maintenance inspections (according to DSI schedule)</li> <li>Monthly review of maintenance and complaint records</li> <li>In case of grievance, targeted noise/vibration measurement</li> <li>Annual evaluation of operational noise/vibration risks</li> </ul>	Included in operation costs	<p><u>Implementing:</u> Yedikır Dam Irrigation Union and/or Maintenance and Repair Contractor</p> <p><u>Supervising:</u> DSİ 7<sup>th</sup> Regional Directorate Project Management Team (PMT)</p>
MON-OP-WM-01	<ul style="list-style-type: none"> <li>Proper implementation of Waste Management Plan (WMP, Annex-4)</li> <li>Availability and condition of waste collection bins/containers</li> <li>Segregation of hazardous and non-hazardous waste</li> <li>Labeling of containers (waste code, type, quantity, storage date)</li> <li>Storage conditions of waste (impermeable surface, bunded area, closed containers)</li> <li>Separate storage of different waste types and prevention of mixing</li> <li>Condition and integrity of hazardous waste and material containers</li> <li>Quantity of waste generated by type and destination (reuse/recycle/disposal)</li> <li>Waste transfer records, licenses and receipts from authorized facilities</li> <li>Training records on waste management and minimization</li> <li>Condition of temporary waste storage areas and stockpile heights</li> <li>Topsoil/subsoil segregation and reinstatement practices</li> </ul>	<ul style="list-style-type: none"> <li>Number of waste bins/containers inspected (Target: 100% compliance with WMP)</li> <li>Amount of waste segregated by type and recorded (Target: All waste streams properly segregated)</li> <li>Number of hazardous and non-hazardous waste storage areas inspected (Target: 100% separate storage)</li> <li>Percentage of containers properly labeled (Target: 100%)</li> <li>Number of incidents of uncontrolled waste discharge (Target: 0)</li> <li>Volume or tonnage of recyclable/recoverable waste sent to licensed facilities (Target: ≥ 90% of recyclable waste)</li> <li>Number of hazardous waste consignments transferred with valid receipts (Target: 100%)</li> <li>Number of personnel trained in waste management (Target: All relevant staff annually trained)</li> <li>Height of excavation/topsoil stockpiles measured (Target: ≤ 6 m for subsoil, ≤ 2 m for topsoil)</li> <li>Number of site audits or inspections completed (Target: As per schedule, 100%)</li> </ul>	<ul style="list-style-type: none"> <li>Field inspection of waste storage and handling areas</li> <li>Review of waste tracking records, manifests and transport receipts</li> <li>Verification of labels, container condition and segregation status</li> <li>Visual inspection of oil storage and spill-prevention systems</li> <li>Review of training attendance logs and toolbox talk records</li> <li>Check compliance with excavation and stockpile management requirements</li> <li>Review of licensed company contracts and waste transfer documentation</li> </ul>	<ul style="list-style-type: none"> <li>Monthly inspection of waste storage areas;</li> <li>Quarterly review of records;</li> <li>After any incident or non-compliance</li> </ul>	Included in operation costs	<p><u>Implementing:</u> Yedikır Dam Irrigation Union and/or Maintenance and Repair Contractor</p> <p><u>Supervising:</u> DSİ 7<sup>th</sup> Regional Directorate Project Management Team (PMT)</p>
MON-OP-WWM-01	<ul style="list-style-type: none"> <li>Wastewater generation and disposal</li> </ul>	<ul style="list-style-type: none"> <li>Number of office and maintenance locations connected to the municipal sewage system</li> </ul>	<ul style="list-style-type: none"> <li>Routine inspection of office and maintenance facilities</li> </ul>	Monthly during operation	Included in operation costs	<p><u>Implementing:</u> Yedikır Dam Irrigation Union and/or</p>



Issue	Parameters to be monitored	Key Performance Indicators (KPIs) to be monitored	Monitoring Method	Timing/Frequency of Monitoring	Cost of Monitoring	Responsible Parties
		<ul style="list-style-type: none"> <li>Number of impermeable septic tanks constructed and in service</li> <li>Frequency of wastewater collection and transfer operations (number/month) if septic tank of mobile toilet are in use</li> <li>Number of wastewater disposal receipts/logbooks reviewed if septic tank of mobile toilet are in use</li> <li>Percentage of septic tanks inspected and found leak-free if septic tank of mobile toilet are in use</li> <li>Number of non-compliances identified during wastewater management audits</li> </ul>	<ul style="list-style-type: none"> <li>Review of wastewater collection and disposal receipts/logbooks</li> <li>Visual inspection for leaks, overflow, or improper discharge</li> <li>Review of O&amp;M records</li> </ul>	<p>After maintenance or repair activities</p> <p>Following any complaint or incident</p> <p>Annual performance review</p>		<p>Maintenance and Repair Contractor</p> <p><u>Supervising:</u></p> <p>DSİ 7<sup>th</sup> Regional Directorate</p> <p>Project Management Team (PMT)</p>
MON-OP-NHP-01	<ul style="list-style-type: none"> <li>Seismic activity, structural integrity, and drainage performance</li> </ul>	<ul style="list-style-type: none"> <li>Number of post-seismic inspections conducted and reports submitted</li> <li>Percentage of valve chambers, control structures, and pipelines inspected after major rainfall or earthquake</li> <li>Number of drainage and outfall channels inspected and maintained annually</li> <li>Number of seismic or weather-related incidents recorded and resolved</li> <li>Availability rate of emergency response and communication equipment</li> <li>Percentage of staff trained on earthquake and emergency response procedures</li> </ul>	<ul style="list-style-type: none"> <li>Review of O&amp;M inspection and maintenance logs</li> <li>Field verification of structural integrity after seismic or extreme weather events</li> <li>Review of emergency drill and training records</li> <li>Coordination with AFAD and DSİ records regarding regional seismic activity</li> <li>Visual inspection of drainage and outfall efficiency</li> </ul>	<p>Routine inspections as per O&amp;M plan</p> <p>After any regional earthquake or severe weather event</p> <p>Semi-annual review of emergency preparedness and training</p> <p>Annual performance assessment of drainage and infrastructure</p>	Included in operation costs	<p><u>Implementing:</u> Yedikır Dam Irrigation Union and/or</p> <p>Maintenance and Repair Contractor</p> <p><u>Supervising:</u></p> <p>DSİ 7<sup>th</sup> Regional Directorate</p> <p>Project Management Team (PMT)</p>
MON-OP-BIO-01	<ul style="list-style-type: none"> <li>Presence and activity of fauna species (birds, amphibians, reptiles, small mammals) in and around the irrigation canals</li> </ul>	<ul style="list-style-type: none"> <li>Stable or increased number of fauna observations compared to baseline</li> <li>No fauna mortality recorded due to canal entrapment</li> </ul>	<ul style="list-style-type: none"> <li>Regular fauna monitoring by visual survey</li> <li>Review of maintenance logs for wildlife encounters</li> <li>Use of photographic documentation and fauna record forms</li> </ul>	Seasonally (spring and autumn)	Included in operation costs	<p><u>Implementing:</u> Yedikır Dam Irrigation Union and/or</p> <p>Maintenance and Repair Contractor</p> <p><u>Supervising:</u></p> <p>DSİ 7<sup>th</sup> Regional Directorate</p> <p>Project Management Team (PMT)</p>
MON-OP-BIO-02	<ul style="list-style-type: none"> <li>Vegetation cover and habitat condition along canal edges</li> </ul>	<ul style="list-style-type: none"> <li>Vegetation maintained at natural density (≥70%)</li> <li>No evidence of excessive clearing or erosion</li> <li>Erosion control measures functional</li> </ul>	<ul style="list-style-type: none"> <li>Field inspection along canals</li> <li>Photographic comparison with baseline condition</li> <li>Evaluation of erosion and vegetation regeneration areas</li> </ul>	Biannual (twice a year)	Included in operation costs	<p><u>Implementing:</u> Yedikır Dam Irrigation Union and/or</p> <p>Maintenance and Repair Contractor</p> <p><u>Supervising:</u></p> <p>DSİ 7<sup>th</sup> Regional Directorate</p> <p>Project Management Team (PMT)</p>
MON-OP-BIO-03	<ul style="list-style-type: none"> <li>Functionality of fauna escape ramps and protective fencing</li> </ul>	<ul style="list-style-type: none"> <li>≥90% of fauna ramps and fences functional</li> <li>No fauna mortality within drainage or canal sections</li> </ul>	<ul style="list-style-type: none"> <li>On-site inspection during maintenance rounds</li> <li>Photo records and maintenance checklist</li> <li>Event recording if fauna found trapped or injured</li> </ul>	Quarterly inspections	Included in operation costs	<p><u>Implementing:</u> Yedikır Dam Irrigation Union and/or</p> <p>Maintenance and Repair Contractor</p> <p><u>Supervising:</u></p>

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MON-OP-BIO-04	<ul style="list-style-type: none"> <li>Pollution risk and chemical use along canal routes</li> </ul>	<ul style="list-style-type: none"> <li>No unauthorized chemical/herbicide use</li> <li>Waste and oil spill incidents = 0</li> </ul>	<ul style="list-style-type: none"> <li>Field inspections of maintenance areas</li> <li>Review of waste management and spill records</li> <li>Immediate response in case of pollution observation</li> </ul>	Continuous during operation	Included in operation costs	<u>Implementing:</u> Yedikır Dam Irrigation Union and/or Maintenance and Repair Contractor <u>Supervising:</u> DSİ 7 <sup>th</sup> Regional Directorate Project Management Team (PMT)
MON-OP-SOC-01	<ul style="list-style-type: none"> <li>Grievance Mechanism</li> </ul>	<ul style="list-style-type: none"> <li>Number of complaints received.</li> <li>Number of complaints resolved within 30 days (target 70%).</li> <li>Suitability of complaint opening and closing forms.</li> <li>Satisfaction rate (target 70%).</li> </ul>	<ul style="list-style-type: none"> <li>Grievance records (number and nature), and analysis of settled grievances</li> <li>Internal and external audits</li> </ul>	Weekly, monthly and quarterly during operation phase	Included in operation costs	<u>Implementing:</u> Yedikır Dam Irrigation Union and/or Maintenance and Repair Contractor <u>Supervising:</u> DSİ 7 <sup>th</sup> Regional Directorate Project Management Team (PMT)
MON-OP-OHS-01	<ul style="list-style-type: none"> <li>Implementation of OHS Management System and preventive measures</li> <li>Functionality and maintenance of safety equipment and systems (electrical, mechanical, fire, confined space, PPE)</li> <li>OHS training, health surveillance and medical checks</li> <li>Emergency preparedness (EPRP implementation and fire drills)</li> <li>Sanitation and welfare conditions</li> </ul>	<ul style="list-style-type: none"> <li>Number of incidents, near misses, and corrective actions completed</li> <li>% of workers trained and medically examined annually</li> <li>Frequency of OHS audits and fire/emergency drills</li> <li>% of maintained safety systems and equipment</li> <li>% of confined space entries under valid permits</li> <li>% of compliance with PPE use and housekeeping standards</li> </ul>	<ul style="list-style-type: none"> <li>Regular site inspections and internal OHS audits</li> <li>Review of OHS records, incident reports, and training attendance</li> <li>Worker interviews and toolbox talks</li> <li>Review of maintenance, medical, and fire safety records</li> <li>Emergency drill observations</li> </ul>	Daily and weekly site checks  Monthly OHS monitoring and reporting  Quarterly internal audits and reviews  Annual training and medical surveillance	Included in operation costs	<u>Implementing:</u> Yedikır Dam Irrigation Union and/or Maintenance and Repair Contractor <u>Supervising:</u> DSİ 7 <sup>th</sup> Regional Directorate Project Management Team (PMT)
MON-OP-CHS-01	<ul style="list-style-type: none"> <li>Condition of pipelines, valve chambers, and control structures</li> <li>Repair response time for leaks or damages</li> <li>Status of fencing, warning signs, and restricted operational zones (if any)</li> <li>Records of community notifications before major maintenance</li> <li>Operational (maintenance and repair) vehicle movements along designated routes</li> </ul>	<ul style="list-style-type: none"> <li>Number of leaks/ruptures detected and repaired (target: immediate action)</li> <li>% of pipeline inspections completed on schedule (target: 100%)</li> <li>% of warning signs/fencing maintained (target: 100%)</li> <li>Number of community complaints (target: 0–low)</li> <li>Number of community notifications before major works</li> </ul>	<ul style="list-style-type: none"> <li>Routine field inspections &amp; photographic records</li> <li>Review of pipeline condition and maintenance logs</li> <li>Review of community communication records</li> <li>Review of operational vehicle movement logs</li> <li>Interviews with irrigation union staff</li> </ul>	Monthly site observations  Monthly ESMRs  Additional inspections after major maintenance activities	Included in operation costs	<u>Implementing:</u> Yedikır Dam Irrigation Union and/or Maintenance and Repair Contractor <u>Supervising:</u> DSİ 7 <sup>th</sup> Regional Directorate Project Management Team (PMT)
MON-OP-CHS-02	<ul style="list-style-type: none"> <li>Presence of stagnant water in operational structures</li> <li>Condition and integrity of closed-pipe network</li> </ul>	<ul style="list-style-type: none"> <li>Number of stagnant-water occurrences eliminated (target: no stagnant-water occurrences)</li> <li>% of pipeline network inspected (target: 100%)</li> </ul>	<ul style="list-style-type: none"> <li>On-site inspections of operational structures</li> <li>Review of maintenance logs for closed-pipe network</li> <li>Consultation records with health authorities</li> </ul>	Monthly inspections  Monthly ESMRs  Annually coordination with health authorities	Included in operation costs	<u>Implementing:</u> Yedikır Dam Irrigation Union and/or Maintenance and Repair Contractor <u>Supervising:</u> DSİ 7 <sup>th</sup> Regional Directorate



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Issue	Parameters to be monitored	Key Performance Indicators (KPIs) to be monitored	Monitoring Method	Timing/Frequency of Monitoring	Cost of Monitoring	Responsible Parties
	<ul style="list-style-type: none"> <li>Coordination records with local health authorities</li> <li>Hygiene and vector-control awareness activities for irrigation staff</li> </ul>	<ul style="list-style-type: none"> <li>Number of joint disease-monitoring actions with health authorities</li> <li>Number of awareness sessions held annually</li> <li>Number of disease-related incidents reported (target: 0)</li> </ul>	<ul style="list-style-type: none"> <li>Review of training and awareness session attendance</li> <li>Review of incident/disease reports</li> </ul>			Project Management Team (PMT)
MON-OP-CHS-03	<ul style="list-style-type: none"> <li>Implementation of CoC by operational staff</li> <li>SEA/SH and GBV prevention training records</li> <li>Functionality and confidentiality of Grievance Mechanism</li> <li>Respectful and gender-sensitive communication practices with farmers</li> <li>Any reported incidents of misconduct or harassment</li> </ul>	<ul style="list-style-type: none"> <li>% of operational staff who signed and follow CoC (target: 100%)</li> <li>% of staff trained on SEA/SH &amp; GBV (target: 100%)</li> <li>Number of SEA/SH-related grievances (target: 0)</li> <li>Number of grievances closed in a timely manner (100%)</li> </ul>	<ul style="list-style-type: none"> <li>Review of CoC compliance checklists</li> <li>Review of grievance mechanism logs</li> <li>Training records</li> <li>Community feedback</li> <li>Review of training attendance records</li> </ul>	<p>Monthly monitoring</p> <p>Quarterly audits</p> <p>Immediate review upon any reported SEA/SH grievance</p>	Included in operation costs	<p><u>Implementing:</u> Yedikır Dam Irrigation Union and/or Maintenance and Repair Contractor</p> <p><u>Supervising:</u> DSİ 7<sup>th</sup> Regional Directorate Project Management Team (PMT)</p>
MON-OP-CHS-04	<ul style="list-style-type: none"> <li>Status and condition of emergency response equipment</li> <li>Emergency contact lists, access routes, and communication procedures</li> <li>Records of emergency drills and refresher trainings</li> <li>Reporting system for major incidents</li> <li>Coordination with DSİ and AFAD for emergency readiness</li> </ul>	<ul style="list-style-type: none"> <li>% of emergency equipment available and functional (target: 100%)</li> <li>Frequency of emergency drills (target: at least annually)</li> <li>% of staff trained in EPR (target: 100%)</li> <li>Incident reporting time (continuous improvement)</li> <li>Number of major incidents reported to DSİ/local authorities</li> </ul>	<ul style="list-style-type: none"> <li>Equipment checklists</li> <li>Review of emergency drill logs</li> <li>Review of updated emergency contact lists</li> <li>Review of incident report records</li> </ul>	<p>Quarterly inspections</p> <p>Annual emergency drills</p> <p>Immediate reporting after major incidents</p>	Included in operation costs	<p><u>Implementing:</u> Yedikır Dam Irrigation Union and/or Maintenance and Repair Contractor</p> <p><u>Supervising:</u> DSİ 7<sup>th</sup> Regional Directorate Project Management Team (PMT)</p>
MON-OP-TM-01	<ul style="list-style-type: none"> <li>Vehicle movements during routine maintenance activities</li> <li>Adequacy of temporary warning signage during maintenance works</li> <li>Community notifications prior to access restrictions</li> <li>Vehicle maintenance and safety compliance for operational fleets</li> <li>Implementation of emergency access protocol during urgent repairs</li> </ul>	<ul style="list-style-type: none"> <li>Number of operation-related traffic incidents or complaints (target: 0)</li> <li>% of maintenance activities with appropriate signage and barriers (target: 100%)</li> <li>Timeliness of community notifications prior to maintenance works</li> <li>% of operational vehicles with up-to-date maintenance checks (target: 100%)</li> <li>Emergency response access time (continuous improvement)</li> </ul>	<ul style="list-style-type: none"> <li>Routine inspections of maintenance routes and work areas</li> <li>Review of maintenance logs and vehicle inspection records</li> <li>Review of community communication and notification records</li> <li>Review of emergency intervention logs</li> </ul>	<p>Monthly or quarterly checks depending on maintenance schedule</p> <p>Monthly ESMRs</p> <p>Immediate review following emergency repairs</p>	Included in operation costs	<p><u>Implementing:</u> Yedikır Dam Irrigation Union and/or Maintenance and Repair Contractor</p> <p><u>Supervising:</u> DSİ 7<sup>th</sup> Regional Directorate Project Management Team (PMT)</p>
MON-OP-CHM-01	<ul style="list-style-type: none"> <li>Chance finds during major maintenance and repair works</li> </ul>	<ul style="list-style-type: none"> <li>Reporting / Notification/ Obtaining Permit of Chance Findings</li> <li>Compliance with the CFP protocols in case of chance finds</li> </ul>	<ul style="list-style-type: none"> <li>Archaeologists or cultural heritage monitoring consultants will be employed for daily archaeological monitoring during major maintenance and repair works.</li> <li>The experts will work with equipment operators and have authority to stop work.</li> <li>They will accompany all ground disturbance activities.</li> </ul>	<p>Continuous monitoring for archaeological sites</p> <p>Monthly review of grievances</p> <p>Monthly review of logs, chance find forms, etc.</p> <p>Immediate notification and reporting to</p>	Included in operation costs	<p><u>Implementing:</u> Yedikır Dam Irrigation Union and/or Maintenance and Repair Contractor</p> <p><u>Supervising:</u> DSİ 7<sup>th</sup> Regional Directorate Project Management Team (PMT)</p>



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Issue	Parameters to be monitored	Key Performance Indicators (KPIs) to be monitored	Monitoring Method	Timing/Frequency of Monitoring	Cost of Monitoring	Responsible Parties
			<ul style="list-style-type: none"> <li>• They will instruct operators to stop work in case of a chance find.</li> <li>• The experts will train employees about the Cultural Heritage and Chance Finds</li> <li>• Grievance mechanism will be implemented</li> <li>• Daily Monitoring by an Archaeologist</li> <li>• The experts will implement the CFP</li> </ul>	regional board in case of chance finds		



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## 8 IMPLEMENTATION ARRANGEMENTS, CAPACITY BUILDING AND TRAINING

### 8.1 Roles and Responsibilities

Implementation of the Environmental and Social Management Plan (ESMP) for the Amasya Suluova Right and Left Bank Irrigation Rehabilitation Project will follow the institutional structure established under the Türkiye Second Irrigation Modernization and Water Efficiency Project (TIMPII). The Project is implemented by the General Directorate of State Hydraulic Works (DSİ) under the Ministry of Agriculture and Forestry.

Environmental and social risk management responsibilities are distributed among the DSİ Project Management Team (PMT), the relevant DSİ Regional Directorate, the Contractor, and supporting Environmental and Social (E&S) consultants. These institutional arrangements are defined under the Environmental and Social Management Framework (ESMF), the Environmental and Social Commitment Plan (ESCP), and the Stakeholder Engagement Plan (SEP/PKP) prepared for TIMPII.<sup>27</sup>

#### 8.1.1 DSİ Project Management Team (PMT)

The DSİ Project Management Team (PMT) acts as the central coordination unit responsible for ensuring compliance with the World Bank Environmental and Social Framework (ESF) and the environmental and social instruments prepared under TIMPII.

The PMT's responsibilities include:

- Ensuring that sub-project specific environmental and social instruments (such as ESMPs, SEPs, LMPs and Resettlement Plans) are prepared, reviewed and approved prior to implementation. Implementing Resettlement Plans, in a timely manner, ensuring that land acquisition activities are initiated without delay and in accordance with national legislation and World Bank ESS5 requirements.
- Ensuring that environmental and social requirements are incorporated into procurement documents and contractor contracts.
- Supervising the implementation of environmental and social risk management measures in accordance with the ESCP commitments.
- Consolidating environmental and social monitoring data received from the Regional Directorates and preparing periodic Environmental and Social Monitoring Reports for submission to the World Bank.
- Ensuring that environmental and social specialists within the PMT review monitoring results and verify compliance with ESF requirements.
- Managing the overall project-level grievance mechanism and ensuring that grievances are recorded and addressed appropriately.
- Reporting significant environmental, social, health and safety incidents to the World Bank in accordance with the timelines specified in the ESCP.

<sup>27</sup> Institutional arrangements and environmental and social risk management responsibilities for TIMPII are described in the *Environmental and Social Management Framework (ESMF)*, the *Environmental and Social Commitment Plan (ESCP)*, and the *Stakeholder Engagement Plan (SEP)* prepared for the Project.



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- Providing technical guidance and coordination among DSI units and relevant institutions regarding environmental and social compliance.

### 8.1.2 DSI 7<sup>th</sup> Regional Directorate

The DSI Regional Directorate responsible for the Project area is responsible for supervising the implementation of ESMP requirements during project construction and operation.

Its key responsibilities include:

- Supervising construction activities and ensuring that mitigation measures defined in the ESMP are implemented on site.
- Reviewing Contractor Environmental and Social Management Plan (C-ESMP) and related sub-management plans.
- Conducting regular field inspections to monitor environmental, social and occupational health and safety performance.
- Reviewing environmental and social monitoring reports submitted by the Contractor and verifying compliance.
- Ensuring that corrective actions identified during inspections are implemented within the required timeframe.
- Coordinating with the PMT regarding environmental and social performance monitoring and reporting.
- Managing the local-level grievance mechanism and coordinating grievance resolution with the PMT.
- Supporting stakeholder engagement and consultation activities at the local level.

### 8.1.3 Contractor

The Contractor will be responsible for implementing all environmental, social, occupational health and safety (ESHS) requirements defined in this ESMP during construction activities.

The Contractor's responsibilities include:

- Preparing a Contractor Environmental and Social Management Plan (C-ESMP) consistent with the project ESMP prior to construction.
- Preparing and implementing site-specific management plans (e.g., Waste Management Plan, Occupational Health and Safety Plan, Emergency Preparedness and Response Plan, Community Health and Safety Plan and Traffic Management Plan).
- Employing qualified environmental, social and occupational health and safety specialists within the project team.
- Implementing mitigation and monitoring measures defined in the ESMP and the approved sub-management plans.
- Conducting environmental and social monitoring activities and maintaining monitoring records.
- Preparing regular environmental and social monitoring reports and submitting them to the DSI Regional Directorate.
- Immediately notifying the DSI Regional Directorate of any environmental, social or occupational health and safety incident.
- Ensuring that workers receive training on environmental, social and occupational health and safety requirements.



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- Ensuring that subcontractors comply with project ESMP requirements.

#### 8.1.4 E&S Consultant

The Environmental and Social Consultant provides technical support to DSİ and the Project Management Team during preparation of environmental and social instruments and during implementation monitoring.

The responsibilities of the Environmental and Social Consultant include:

- Preparing the ESMP and required sub-management plans for PMT and Regional Directorate approval.
- Providing technical support during disclosure, consultations and public participation activities.

### 8.2 Capacity Building and Training

The effective implementation of the ESMP requires that all institutions involved in the Project have adequate capacity to manage environmental and social (E&S) risks in accordance with the World Bank Environmental and Social Framework (ESF) and national legislation. Capacity building and training activities will therefore be implemented throughout the Project lifecycle to ensure that relevant staff and stakeholders understand and comply with the environmental and social instruments prepared under the Project, including the Environmental and Social Management Framework (ESMF), Environmental and Social Commitment Plan (ESCP), Labor Management Procedures (LMP), Stakeholder Engagement Plan (SEP) and site-specific Environmental and Social Management Plans (ESMPs).

Training activities will be delivered through workshops, technical sessions and site-based trainings. In order to strengthen institutional capacity at different levels, a training model will be adopted, whereby knowledge and training are transferred from the national level to regional, local and site-level actors.

The indicative training and capacity building approach is summarized in Table 8-1.

*Table 8-1. Indicative Training and Capacity Building Approach*

Level	Responsible Party	Audience	Topics / Themes
<b>National Level</b>	DSİ E&S Team	Project Management Team (PMT)	<ul style="list-style-type: none"> <li>▪ Requirements of the World Bank ESF;</li> <li>▪ ESMF approach;</li> <li>▪ identification and assessment of E&amp;S risks;</li> <li>▪ selection and implementation of mitigation measures;</li> <li>▪ E&amp;S monitoring and reporting;</li> <li>▪ incident and accident reporting;</li> <li>▪ preparation and implementation of land acquisition instruments;</li> <li>▪ handling of SEA/SH complaints</li> </ul>
<b>National Level</b>	PMT	Other DSİ PMT members	<ul style="list-style-type: none"> <li>▪ Occupational health and safety (OHS) including emergency preparedness;</li> <li>▪ specific aspects of E&amp;S assessment;</li> </ul>



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Level	Responsible Party	Audience	Topics / Themes
			<ul style="list-style-type: none"> <li>▪ stakeholder engagement and grievance mechanism;</li> <li>▪ gender equality and gender-based violence;</li> <li>▪ Code of Conduct (CoC);</li> <li>▪ E&amp;S monitoring and reporting</li> </ul>
<b>Local Level</b>	PMT	E&S focal points, contractor E&S teams	<ul style="list-style-type: none"> <li>▪ World Bank ESF requirements;</li> <li>▪ implementation of ESMP mitigation measures;</li> <li>▪ environmental and social monitoring;</li> <li>▪ incident reporting;</li> <li>▪ implementation of LMP including Code of Conduct, gender equality and OHS;</li> <li>▪ implementation of SEP and grievance mechanism</li> </ul>
<b>Local Level</b>	Social specialists of PMT	Relevant public institutions involved in land acquisition	<ul style="list-style-type: none"> <li>▪ Preparation, implementation and monitoring of land acquisition instruments;</li> <li>▪ stakeholder engagement; grievance mechanism</li> </ul>
<b>Site Level</b>	Contractor E&S team	Project workers	<ul style="list-style-type: none"> <li>▪ Occupational health and safety;</li> <li>▪ emergency preparedness and response;</li> <li>▪ safe use of machinery and equipment;</li> <li>▪ contractual E&amp;S requirements;</li> <li>▪ implementation of the Contractor ESMP (C-ESMP);</li> <li>▪ workplace conduct, SEA/SH prevention;</li> <li>▪ workers' grievance mechanism</li> </ul>
<b>Community Level</b>	E&S focal points	Community members and affected stakeholders	<ul style="list-style-type: none"> <li>▪ Community health and safety;</li> <li>▪ grievance mechanism;</li> <li>▪ awareness of SEA/SH prevention and reporting;</li> <li>▪ stakeholder engagement activities</li> </ul>

All training activities will be documented and recorded by the responsible parties. Training records will include participant lists, training materials and training dates. These records will be maintained by the Contractor and DSI and will be made available during environmental and social monitoring and reporting processes.

### 8.3 Reporting

Environmental and social reporting under this ESMP is designed to ensure regular monitoring of environmental, social and occupational health and safety (OHS) performance during the Project lifecycle. Reporting procedures follow the institutional arrangements defined under the TIMPII Environmental and Social Management Framework (ESMF), Environmental and Social Commitment Plan (ESCP) and Stakeholder Engagement Plan (SEP).

Environmental and social monitoring and reporting will be carried out through a structured reporting chain involving the Contractor, the DSI Regional Directorate and the Project Management Team (PMT).



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### 8.3.1 Contractor Reporting

The Contractor will be responsible for preparing and submitting regular environmental and social monitoring reports during the construction phase.

#### Weekly Environmental and Social Monitoring Report (Weekly ESMR)

Weekly reports will include:

- Summary of construction activities carried out during the week
- Daily environmental and social compliance checklists
- Photographic evidence demonstrating implementation of mitigation measures
- Records of minor incidents, near misses or chance finds (if any)
- Summary of grievances received and actions taken
- Issues requiring follow-up or corrective actions

#### Monthly Environmental and Social Monitoring Report (Monthly ESMR)

Monthly reports will include:

- Summary of completed works and construction progress
- Monitoring results in line with the ESMP Monitoring Plan
- Summary of weekly reports and observed environmental or social trends
- Non-compliances identified and corrective actions implemented
- Occupational health and safety performance, including incidents and near misses
- Training activities and toolbox talks conducted
- Waste management records and environmental inspection results
- Records of stakeholder engagement activities
- Summary of grievance mechanism entries (workers and community)

All weekly and monthly reports will be submitted to the relevant DSİ Regional Directorate for review and supervision.

### 8.3.2 DSİ Regional Directorate Reporting

The DSİ Regional Directorate will review the Contractor's submissions and conduct periodic site inspections to verify ESMP implementation.

Based on these activities, the Regional Directorate will prepare a Monthly ESMP Compliance Note including:

- Summary of ESMP implementation status
- Key environmental and social performance indicators
- Outstanding issues requiring corrective action
- Verification of monitoring results
- Summary of grievances received at the local level
- Findings from site inspections and photographic documentation

This monthly note will be submitted to the DSİ Project Management Team (PMT).



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### 8.3.3 PMT Reporting to the World Bank

The DSİ Project Management Team will consolidate monitoring information received from Regional Directorates and prepare Quarterly Environmental and Social Monitoring Reports for submission to the World Bank.

These reports will include:

- Implementation status of ESMP mitigation measures
- Environmental and social monitoring results
- Occupational health and safety performance
- Stakeholder engagement activities and disclosure activities
- Status of grievance mechanism implementation
- Corrective actions taken to address non-compliances

### 8.3.4 Incident Reporting

Any significant environmental, social, health or safety incident will be reported immediately through the following reporting chain:

**Contractor → DSİ Regional Directorate → PMT → World Bank**

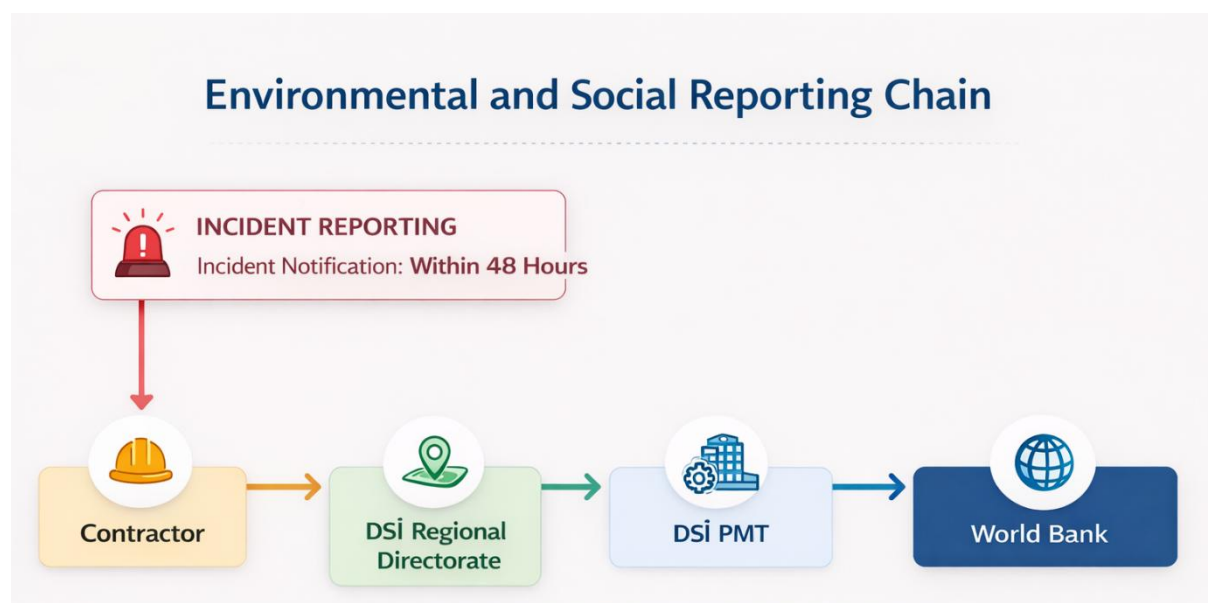


Figure 8-1. Incident Reporting Flow Chart

Serious incidents will be reported to the World Bank within 48 hours, in accordance with the Environmental and Social Commitment Plan (ESCP). A detailed incident investigation report, including root cause analysis and corrective measures, will be prepared and submitted within the timeframe defined in the ESCP.

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### 8.3.5 Documentation and Record Keeping

The Contractor and DSI will maintain all environmental and social documentation related to Project implementation, including:

- Environmental and social monitoring checklists
- Training records and attendance lists
- Waste transfer and disposal records
- Incident and accident logs
- Grievance mechanism records
- Environmental permits and compliance documentation

These documents will be retained as part of the Project archive and made available during DSI supervision missions or external audits.



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## 9 STAKEHOLDER ENGAGEMENT

### 9.1 Brief Summary of Previous Stakeholder Engagement Activities

The General Directorate of State Hydraulic Works (DSİ), under the Ministry of Agriculture and Forestry (MoAF), is involved in the implementation of the TIMP2, which is financed by the WB.

A Stakeholder Engagement Plan (SEP) has been developed for the Project to outline the methods for the project team to communicate with stakeholders. The relevant SEP includes a mechanism through which people can voice their concerns, provide feedback, or lodge complaints regarding the project and any project-related activities. This plan is published in both Turkish<sup>28</sup> and English<sup>29</sup> on the official website of the DSİ.

Public consultation meetings were held during the preparation of the draft E&S documents (ESMF, LMP, RPF, and this SEP) developed for all sub-projects under Component-1.

The announcements for the meetings were published in the local press and at public institutions, including the date, venue, and time of the meeting, the web address where the prepared E&S documents can be accessed, as well as the telephone number and e-mail address for further information.

The Project specific Stakeholder Engagement Plan will be prepared in line with WB's ESS10 and TIMP 2 Project's Stakeholder Engagement Plan<sup>30</sup>. Besides, a draft Stakeholder Engagement Plan was included to this ESMP document as a section including Grievance Mechanism. Please refer to section 9 of this ESMP.

### 9.2 Proposed Strategies to Incorporate the Views of Vulnerable Groups

Project related awareness raising and stakeholder engagement activities should be carried out by taking into account the specific restrictions that individuals face and their cultural sensitivities to ensure their full understanding of the Project activities and benefits of the Project. Project related awareness raising and stakeholder engagement activities should be carried out by taking into account the specific restrictions that individuals face and their cultural sensitivities to ensure their full understanding of the Project activities and benefits of the Project. Special emphasis shall be put on the inclusion of the opinions of disadvantaged/vulnerable groups/persons and their full enjoyment of the opportunities provided by the sub-projects.

The following measures will be taken in order to remove obstacles to full and enabling participation / access to information:

<sup>28</sup> TIMP2 Stakeholder Engagement Plan (Turkish).

[https://cdn.nys.tarimorman.gov.tr/api/File/GetGaleriFile/425/DosyaGaleri/7572/timp2\\_paydas\\_katilim\\_plani.pdf](https://cdn.nys.tarimorman.gov.tr/api/File/GetGaleriFile/425/DosyaGaleri/7572/timp2_paydas_katilim_plani.pdf). Access Date: February 2026.

<sup>29</sup> TIMP2 Stakeholder Engagement Plan (English).

[https://cdn.nys.tarimorman.gov.tr/api/File/GetGaleriFile/425/DosyaGaleri/7572/timp\\_2\\_draft\\_stakeholder\\_engagement\\_plan\\_february\\_2025.pdf](https://cdn.nys.tarimorman.gov.tr/api/File/GetGaleriFile/425/DosyaGaleri/7572/timp_2_draft_stakeholder_engagement_plan_february_2025.pdf). Access Date: February 2026.

<sup>30</sup> TIMP 2 Stakeholder Engagement Plan .

[https://cdn.nys.tarimorman.gov.tr/api/File/GetGaleriFile/425/DosyaGaleri/7572/timp\\_2\\_draft\\_stakeholder\\_engagement\\_plan\\_february\\_2025.pdf](https://cdn.nys.tarimorman.gov.tr/api/File/GetGaleriFile/425/DosyaGaleri/7572/timp_2_draft_stakeholder_engagement_plan_february_2025.pdf). Access date: March 2026.



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- Information provided face to face or by any other appropriate method specific to disadvantaged/vulnerable groups/individuals (e.g., visually impaired alphabet, sign language),
- Consultations conducted at locations that provide access to disadvantaged/vulnerable groups or individuals; and
- Any written or printed materials related to the project prepared in easy to understand (nontechnical) language and distributed as culturally appropriate.
- Project documents, brochures and announcements will be made available in Turkish; however, for migrant workers (including seasonal agricultural workers) and those who do not speak Turkish, the use of different languages shall also be taken into consideration to increase the effectivity of engagement activities and to ensure their participation.

### 9.3 Resources and Responsibilities for Implementing Stakeholder Engagement

The social specialist of the PMT will be in charge of stakeholder engagement activities. The entities responsible for carrying out stakeholder engagement activities are DSİ Regional Directorates and PMT.

The project's stakeholder engagement implementation arrangements are as follows:

- E&S focal points at the regional directorates of DSİ will carry out stakeholder engagements at community level.
- Resettlement focal points at the municipalities/governorships will support E&S focal points in the DSİ regional directorates carrying out stakeholder engagements related to resettlement issues.

### 9.4 Grievance Mechanism

A Grievance Mechanism (GM) is a system that allows not only grievances, but also queries, suggestions, positive feedback, and concerns of Project Affected Parties (PAPs) related to the environmental and social performance of a project to be submitted and responded to in a timely manner.

Within the Project, stakeholders or citizens can convey their grievances through national level GMs (Presidency's Communication Center [CİMER], Foreigners Communication Center [YİMER]) or Project GM.

#### **Project GM**

In accordance with the requirements of ESS10, a Grievance Mechanism will be established by the PMT in order to receive, resolve and follow the Project specific concerns and complaints of the stakeholders. The GM will be accessible for stakeholders and citizens and will respond to all feedback (including grievances, complaints, requests, opinions, suggestions) at the earliest convenience, and PMT will ensure that all grievances are effectively received, recorded, and responded within a predetermined timeline and on the basis of their contents, 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 complainant would be informed about the outcomes of the corrective activities.



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DSİ will uptake grievances at three tiers: (i) Branch Directorate, (ii) Regional Directorate, and (iii) General Directorate. The personnel receiving grievances at DSİ will be informed and trained about Project GM. For this reason, PMT will send posters, brochures, etc. to Branch/Regional Directorates of DSİ to assist them in directing the stakeholders to the GM. When necessary, a Complaint Committee will be composed to address the grievances. The members of this committee will be Project coordinator and grievance related specialists of the PMT and/or the department.

The personnel at the Branch Directorates, Regional Directorates, and the General Directorates will be also informed to register any grievances related to the Project and conveyed through CİMER or YİMER to the GM of the Project. The grievance mechanism and its uptake channels will be disclosed by posters at worksites, office of the mukhtars that are near to worksites or acquired lands, public notice boards of the municipalities, governorships, regional and branch directorates of DSİ.

The GM will also enable submission of anonymous grievances. However, the complainant will be informed that lack of name-surname/contact details may lead to delays or problems during the assessment and resolution of the grievance. The complainant will also be informed that the personal information (including name-surname, contact details) will not be shared by the third parties or disclosed. The information received from the complainant will only be used for assessment and resolution of the feedback/complaint received.

Some groups (elder or illiterate people, persons with disabilities, women living in the rural areas etc.) may experience difficulties to access the GM or may not access. Therefore, the following measures will be taken:

- The possibility to file an anonymous complaint will be open,

In addition, contractors will establish their GM to uptake any subproject related grievances and will ensure that their subcontractors are aware and direct any grievances they uptake. All grievances whether received from CİMER, YİMER, Project GM of the DSİ or the Project GM of the contractor will be logged in the same database.

Since DSİ has a three-tier GM, if the complainant is not satisfied with the proposed resolution of the complaint, he or she can escalate the grievance to upper tier. Once all possible means to resolve the complaint have been proposed and if the complainant is still not satisfied, then they should be advised of their right to legal recourse. DSİ's GM will also adopt and improve itself to handle labor complaints and suggestions (including inquiries for information or whistleblower complaints). In addition, for each subproject, the Contractors will be required to establish, maintain, and monitor Labor GMs for contracted workers. The Labor GM is described in detail in the Labor Management Procedures of the Project. The World Bank and the Borrower do not tolerate reprisals and retaliation against project stakeholders who share their views about Bank-financed projects.

DSİ 7<sup>th</sup> Regional Directorate will be responsible for overall management and supervision of the Sub-Project including compliance with SEP requirements as well as managing grievances. DSİ 7<sup>th</sup> Regional Directorate will has its own grievance mechanisms in place which allows its employees, contractors, and stakeholders to raise workplace related concerns and grievances. For this purpose, there are communication channels on the web-site of the DSİ.

Table 9-1 presents contact information for grievance mechanism.



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*Table 9-1. Grievance Mechanism Contact Information*

<b>DSİ Samsun 7<sup>th</sup> Regional Directorate</b>	Address	DSİ 7. Bölge Müdürlüğü Bahçelievler Mah.İstiklal Cad. No:138. İlkadım / SAMSUN
	Phone	0362 230 79 00
	e-mail	dsi7@dsi.gov.tr
	Web	<a href="https://bolge07.dsi.gov.tr/Sayfa/Detay/1060">https://bolge07.dsi.gov.tr/Sayfa/Detay/1060</a>
<b>DSİ 73<sup>rd</sup> Branch Amasya</b>	Address	Kirazlıdere, Mehmet Varinli Cd. No:148, 05200 Amasya Merkez/Amasya
	Phone	0358 218 40 60
	E-mail	dsi7@dsi.gov.tr
	Web	<a href="https://bolge07.dsi.gov.tr/Sayfa/Detay/1060">https://bolge07.dsi.gov.tr/Sayfa/Detay/1060</a>
<b>CİMER</b>	Phone	150
	Web	<a href="https://www.cimer.gov.tr/">https://www.cimer.gov.tr/</a>

## 9.4.1 Gender Based Violence Grievances

For Gender Based Violence (GBV)-and particularly Sexual Exploitation and Abuse (SEA) / Sexual Harassment (SH)-complaints, there are risks of stigmatization, rejection and reprisals against survivors. This creates and reinforces a culture of silence so survivors may be reticent to approach the project directly. Some survivors will choose to seek services directly and never report to the GM. To enable women to safely access the GM, multiple channels through which complaints can be registered in a safe and confidential manner will be enabled<sup>31</sup>.

Since the SEA/SH risk of the Project is assessed Moderate, Project GM will be adapted to receive SEA/SH allegations/complaints. A standalone SEA/SH Action Plan will be prepared for the Project and will include more detailed procedures on SEA/SH grievance management and a training program for staff at different levels. The protocols and procedures should be based on the following principles:

- All complaints received will be filed and kept confidential. For statistical purposes, cases will be anonymized and bundled to avoid identification of persons involved.
- Criminal cases will be referred to the public prosecutor.

## 9.5 Monitoring and Reporting

### 9.5.1 Summary of How SEP Implementation will be Monitored and Reported Upon

The SEP will be monitored based on both qualitative reporting (based on progress reports) and quantitative reporting linked to results indicators on stakeholder engagement and grievance performance. SEP reporting will include the following:

- (i) Progress reporting on the ESS10-Stakeholder Engagement commitments under the Environmental and Social Commitment Plan (ESCP)
- (ii) Cumulative qualitative reporting on the feedback received during SEP activities, in particular (a) issues that have been raised that can be addressed through

<sup>31</sup> World Bank. 2022. Good Practice Notes: Addressing Sexual Exploitation and Abuse and Sexual Harassment (SEA/SH) in Investment Project Financing involving Major Civil Works



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changes in project scope and design, and reflected in the basic documentation such as the Project Appraisal Document, Environmental and Social Assessment, Resettlement Plan, if needed; (b) issues that have been raised and can be addressed during project implementation; (c) issues that have been raised that are beyond the scope of the project and are better addressed through alternative projects, programs or initiatives; and (d) issues that cannot be addressed by the project due to technical, jurisdictional or excessive cost-associated reasons. Minutes of meetings summarizing the views of the attendees can also be annexed to the monitoring reports.

- (iii) (iii) Quantitative reporting based on the indicators included in the SEP.

### 9.5.2 Reporting Back to Stakeholder Groups

The SEP will be revised and updated as necessary during project implementation.

Quarterly summaries and internal reports on public grievances, enquiries, and related incidents, together with the status of implementation of associated corrective/preventive actions, will be collated by social specialist of the PMT and referred to the Project coordinator.

Information on public engagement activities undertaken by the Project during the year may be conveyed to the stakeholders through Project updates posted on website of the Project.



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## ANNEXES

Annex-1: Legal Framework

Annex-2: Official Letters

Annex-3: Environmental and Social Baseline

Annex-4: Waste Management Plan

Annex-5: Chance Find Procedure



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## Annex-1: Legal Framework



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**Annex-2: Official Letters**



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**Annex-3: Environmental and Social Baseline**



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#### Annex-4: Waste Management Plan



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## Annex-5: Chance Find Procedure

